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DEPARTMENT OF OVERSEAS TRADE

Economic Conditions in FRANCE

(Dated June, 1934)

REPORT

BY

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Embassy, Paris*

(The previous Report was dated 1928)



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DEPARTMENT OF OVERSEAS TRADE

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To foster British overseas trade, the Department controls the following services of Commercial Intelligence Officers:—

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The Department is represented in France by Sir Robert Cahill, C.M.G., Commercial Counsellor, and Mr. A. H. S. Yeames, Commercial Secretary, British Embassy, Paris.

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Particular attention has been given to the commercial side of consular work since the re-organisation of the service. In certain countries where no Commercial Diplomatic Officer is stationed the senior Consular Officer undertakes duties of a similar character.

Further information regarding the above services can be obtained on application to the Department of Overseas Trade, 35, Old Queen Street, London, S.W.1.

Members of United Kingdom firms are urged to call upon the Department's representative abroad when they visit an overseas country. It is also important that they should make a point of their representatives abroad keeping in close touch with the Department's officers.

NOTE.

It should be understood that the views expressed in annual reports are the views of the officers themselves, and are not necessarily in all respects those of the Department.

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COMMERCIAL SUMMARY

Area.—212,659 sq. miles. Distance north to south (Dunkirk-Perpignan) 571 miles. Distance west to east (Brest-Strasbourg) 553 miles.

Population.—At last census (8th March, 1931), 41,834,923. Inhabitants per sq. mile, 196.7. Sex distribution at census of March, 1926, males 19,309,568 (47.98%), females, 20,918,913 (52.02%). Population at 1st January, 1934 (estimated) 41,860,000.

Occupational classification (census of 1926):

Fishing	70,125
Forestry	63,863
Agriculture	8,065,961
Mining and quarrying	433,991
Manufactures	6,680,792
Transport	1,031,367
Commerce, banking and entertainments	2,448,732
Professional occupations	587,846
Domestic service	846,684
Army and Navy	350,539
Public services (administrative)	707,741
Public services (industrial)	106,453
Total number of occupied persons	21,394,094

Population of chief towns (census of 1931):

Paris	2,891,020
Marseilles	800,881
Lyons	579,763
Bordeaux	262,990
Nice	219,549
Lille	201,568
Roubaix	117,190
Tourcoing	81,972
Toulouse	194,564
St. Etienne	191,088
Nantes	187,343
Strasbourg	181,465
Havre... ..	165,076
Toulon	133,263
Rouen	122,957
Nancy	120,578

Weights and measures.—Metric system.

Currency units.—The franc (65.5 milligrammes of gold 900 fine) subdivided into 100 centimes. Coins: bronze, 5 and 10 centimes. Nickel, 5, 10 and 25 centimes and 5 francs. Aluminium-bronze, 50 centimes, 1 and 2 francs. Silver, 10 and 20 francs. Gold, proposed issue of 100-franc coins postponed. Bank of France notes: 50, 100, 500 and 1,000 francs.

Exchange rates.—Pré-war par, £1=25.22 francs. Present par rate £1=124.21 francs. Average daily sterling rates:—

1929	1930	1931	1932	1933
124.02	123.87	115.66	89.22	84.60

Index numbers.—(July, 1914=100). At December, 1933:—

Wholesale ... ..	...	...	...	...	389
of which, national products	...	...	...	...	436
imported products	...	...	...	...	304
Retail, in Paris ... ..	...	...	...	...	514
Cost of living, in Paris ... ..	...	...	...	...	526

Industrial production:

	1929	1930	1931	1932	1933
Coal (thousand tons)	54,922	55,027	51,063	47,257	47,941
Iron ore	51,030	48,821	38,784	27,762	30,423
Pig iron	10,364	10,106	8,217	5,549	6,328
Steel	9,699	9,412	7,808	5,604	6,519
Potash (K ₂ O)	531	546	396	321	322
Bauxite	643	538	348	393	478
Motor-cars (number)	245,610	230,700	201,600	164,000	195,478
Cotton yarns (thousand tons)	263	246	193	180	235
Cotton fabrics	157	152	126	122	155
Rayon	16.8	18.5	17.4	17.5	—
Sugar	816	823	1,081	782	912
Ships ... (tonnage launched)	81,607	100,917	103,419	89,310	33,290
Railways: freight conveyed (daily average number of loaded trucks)	65,138	65,364	53,934	47,321	45,268

Mercantile Marins.—1914. Steamers 1,994,400 tons, sailing vessels 561,373 tons. 1st January, 1933. Steamers 3,177,300 tons, motor-ships 214,000 tons, sailing vessels 93,600 tons.

Principal Ports.—With total weight of goods entered and cleared (million tons). Population indicated in parenthesis where not already given in table on page 7.

	1929	1930	1931	1932	1933
Rouen	9.37	9.99	8.80	8.09	8.41
Marseilles	7.25	7.81	8.69	6.60	6.32
Strasbourg	4.77	5.70	5.52	4.92	5.20
Dunkirk (31,763)	4.73	5.54	4.78	4.16	3.88
Havre	5.46	4.78	4.51	3.94	4.43
Bordeaux	4.87	4.58	4.46	4.05	4.11
Nantes	2.09	2.28	2.32	2.42	2.32
Caen (57,528)	2.12	2.02	1.89	1.45	1.63
Sète (36,953)	1.27	1.37	1.45	1.51	1.58
Boulogne (51,854)	1.24	1.15	1.24	1.04	1.15
La Rochelle (45,043)	1.02	1.30	1.03	0.96	0.86
Calais (70,213)	1.04	1.11	0.81	0.73	1.13
St. Nazaire (40,488)	1.01	0.86	0.88	0.50	0.32

Railways: total mileage (seven main systems), 1933 ... 27,700 miles.

Aviation.—Principal routes: Paris-London; Paris-Lyons-Marseilles; Paris-Sarrebruck; Paris-Lyons-Cannes; Marseilles-Ajaccio-Tunis; Marseilles-Tunis; Marseilles-Toulouse-Casablanca-Dakar.

Motor vehicles.—In circulation at 1st July, 1933 ... 2,358,326
of which, passenger cars, including cycle cars ... 1,385,146
commercial vehicles ... 449,485
motor-cycles ... 523,695

Bicycles (at 31st March, 1932) ... 8,117,000

Imports :

	1929	1930	1931	1932	1933
Weight (thousand tons)	59,461	60,920	58,097	47,649	48,515
Value (million francs)	58,221	52,511	42,206	29,808	28,425

Exports :

	1929	1930	1931	1932	1933
Weight (thousand tons)	39,906	36,680	30,336	23,623	25,055
Value (million francs)	50,139	42,835	30,436	19,705	18,433

Imports : (in million francs)

From	1929	1930	1931	1932	1933
United Kingdom :	5,828	5,273	3,724	2,457	2,167
Principally coal, engineering products, raw wool, raw rubber and gutta-percha, chemical products, raw hides and pelts, woollen fabrics, cotton yarns					
India :	2,758	2,103	1,163	790	792
Principally oleaginous seeds, raw cotton, jute, rubber and gutta-percha, tin					
Australia :	2,520	1,393	788	470	673
Almost exclusively consisting of raw wool					
Canada :	843	447	830	532	318
Principally cereals, fish, cellulose pulp					
South Africa :	724	625	345	207	308
Principally raw wool, hides and pelts, ores, cereals					
Germany :	6,613	7,937	6,142	3,619	3,044
U.S.A. :	7,160	6,148	3,800	2,918	2,851
Belgium :	3,920	4,199	3,633	2,441	1,966

[TABLE]

Exports (in million francs) :

To	1929	1930	1931	1932	1933
United Kingdom :	7,573	6,845	5,043	1,962	1,676
Principally silk fabrics, under- clothing, woollen fabrics and yarns, iron and steel, raw wool, wines and spirits, hides, agri- cultural products					
India :	450	339	237	166	112
Principally wines, brandies and spirits, pearls, woollen fabrics, silk fabrics, tools and metal wares, perfumes and soaps, iron and steel, rubber manufactures, drugs and patent medicines motor cars, cotton fabrics					
Australia :	237	182	95	90	68
Principally silk fabrics, chemical products, underwear, rubber manufactures, wines, brandies and spirits					
Canada :	587	459	319	159	110
Principally silk fabrics, woollen fabrics, wines brandies and spirits, underwear, hides furs and leather goods, cotton fabrics					
South Africa :	52	100	80	45	45
Principally underwear, tools and metal goods, wines brandies and spirits, silk fabrics, cotton fabrics, perfumes and soaps					
Germany :	4,743	4,155	2,749	1,690	1,703
U.S.A. :	3,335	2,435	1,543	957	868
Belgium :	7,224	5,442	3,582	2,241	2,140

<i>Public holidays</i> : January 1st	New Year
	Easter Monday
	Ascension Day
	Whit Monday
July 14th	Fête Nationale
August 15th	Assumption
November 1st... ..	All Saints' Day
November 11th	Armistice Day
December 25th	Christmas

Good Friday and Boxing Day are not generally observed as holidays in France. Shrove Tuesday is observed in Lille-Roubaix-Tourcoing, and Good Friday in the same district as well as in Marseilles.

NOTES FOR COMMERCIAL VISITORS

Visitors contemplating a sojourn in France of more than two months must obtain (in Paris, from the Prefecture of Police; or in the provinces, from the central police commissariat of the locality concerned) an identity card, the cost of which is 100 francs. Four small unmounted photographs, a certificate of domicile (obtainable from the hotel or from the concierge, if in an apartment, and certified by the police commissariat of the quarter), and the applicant's passport as proof of identity, will be required.

Commercial travellers who propose to offer goods or solicit orders must obtain a special identity card known as the "carte professionnelle de voyageur de commerce," issued at the Prefecture in each town. Applications must be accompanied by two photographs, a fee of 18 francs, and a certificate of the employer (which must be obtained before coming to France, and be legalised by the local French Consul). Customs duties must be paid upon samples at the time they are imported, if of commercial value, but the amount may be recovered when the samples are re-exported, *provided that the intention to re-export is made clear to the customs officer at the time of paying the duty, and a receipt obtained specifying that the samples have been admitted under the "temporary admission" system.*

It should be borne in mind that customs duties once paid cannot be recovered (except under the temporary admission system, to which allusion is made above), after the goods in question have passed beyond the control of the customs authorities. Goods may be left under the customs supervision pending a decision of any questions relative to their liability to duty and to its amount.

Those who propose to travel extensively in France will find it profitable to take a special subscription in advance, which entitles them to ordinary tickets at half-fare. Such subscriptions, available for use on one railway company's lines or on all seven systems, are issued for three months, six months, or a year. Those for use on only three systems, are issued only for periods of a year. (Three-monthly tickets for use on one system, first class Fcs.522.60, third class Fcs.243.25; on all seven systems, first class Fcs.554.10, third class Fcs.256.80; six-monthly on one system, first class Fcs.603.65, third class Fcs.261.30; on all seven systems, first class Fcs.851.45, third class Fcs.360.40). Commercial travellers, on production of their professional identity card, are entitled to a reduction of 50 per cent. on the ordinary charge for these subscriptions. If two or more subscriptions are required for the use of the heads or managers of a firm, the second may be obtained at a reduction of 20 per cent. and the third and subsequent subscriptions at a reduction of 30 per cent. each. Commercial travellers' samples, when carried as registered luggage, may be carried at a reduced rate.

[*Note.—A General Review, summarising the matters dealt with in this report, will be found in the final chapter.*]

CHAPTER I.—CERTAIN BASIC FEATURES OF THE ECONOMIC LIFE OF FRANCE

I. GEOGRAPHICAL DISTRIBUTION OF ACTIVITY

I INDUSTRIAL LOCALISATION

Main Industrial Power in the North and on Eastern Fringes: and in Paris Region.—French industrial power is massed in preponderant measure both in the North and East of France—mainly in those belts of territory that extend from the coast to the Swiss border and are never far removed from the Belgian, Luxembourg, and German frontiers—and in the Paris region. In two northern counties (Nord and Pas-de-Calais), both washed by the English Channel, and one lying along the Belgian frontier, is produced two-thirds of the national coal output, another 12 per cent. being mined in the Moselle, a frontier county in Lorraine. In the said two northern counties and in two or three more on the right bank of the Seine is produced 70 to 80 per cent. of the national output of yarns and fabrics in wool, linen, cotton, jute, besides a goodly proportion of artificial silk; and in the same area are the chief seats of important industries working up these textiles (under and outer clothing, carpets, hosiery, lace and embroidery, etc.). Metallurgy, heavy and light, engineering (electrical material, textile, sugar, mining and other machinery, machine and small tools, etc.) chemicals, light and heavy, oil-seeds, crushing, mineral oil refining, glass, brick, etc. manufacture are strongly represented. In the area are the important ports of Havre, Rouen, Dieppe, Boulogne, Calais, Dunkirk. The northern counties possess likewise the most advanced agricultural production in France: 80 to 90 per cent. of the sugar beet output, highest average of bushels of wheat per acre, considerable output of flax, abundant crops of potatoes, vegetables, chicory, etc. Important elements in the wealth of this Northern region, as well as of the Eastern region, are the industrious character of the population, their training for many generations in the trades which now occupy them, the satisfactory supply of labour, plentiful at normal times and capable of suitable and rapid replenishment from Belgium, Luxembourg, Poland, Italy and Czechoslovakia.

Eastern Borders. — In the East, the Lorraine frontier counties of Moselle and of Meurthe-et-Moselle produce 90 per cent. of the iron-ore output of France, and together with the frontier Ardennes county and the contiguous Haute-Marne county, 78 per cent. of the pig-iron and 87 per cent. of the steel, crude and semi-finished, 12 per cent. of the coal, a high proportion of rails, structural steel, foundry and hollow-ware, much of the finer glass and most of the mined salt. From Alsace is derived 100 per cent. of the potash, as well as of the mineral oil (Pechelbronn): Alsace and the neighbouring Vosges region (Epinal, etc.) have a great textile industry, producing at Mulhouse the bulk of French cotton thread, doing 50 per cent. of the cotton printing, and a notable proportion of other cotton and some woollen goods. At Belfort, Mulhouse, Strasbourg and Colmar are also either very important engineering works or artificial silk factories, tanneries, motor-car works and so forth. The agricultural wealth of Alsace-Lorraine is also very great, being distinguished by the output of wine, hops, vegetables, fruits. Modern industries of considerable importance have also their chief seats in other counties along the Swiss frontier: e.g., watch-making at Besançon, optical instruments at Moret, pipes at St-Claude, all manner of toys, fancy goods, combs, etc., at Oyonnax; the Peugeot concern, with its multifarious products other than motor-cycles, and motor cars, spreads in several villages near Montbeliard. Farther to the south, but still on the eastern fringe of the territory, is the region of Grenoble, the chief centre of the French glove industry, and the chief area for the utilisation of hydraulic power for making aluminium, electric steel, etc., and having an important electrical material output.

Paris Region.—Paris, like most great capitals and cities, is a very great industrial centre. Although within 10 miles of Notre-Dame is found the vast bulk of its industrial effort, yet the Paris region includes towns like Troyes (chief hosiery centre of France), Rheims (champagne), Creil (engineering, chemicals). Probably its most prominent single occupation nowadays is metal working: the motor vehicle manufacturing industry and its accessory trades alone employ perhaps 120,000 people. Other great engineering branches are electrical material and fittings, radio and cinema requirements, aircraft, bronze working, machinery, machine-tools, optical instruments. Metallurgy and other heavy metal working is well represented on the Northern outskirts of Paris, St. Denis being the main centre: the great works of Citroen, Renault and other makers of motor vehicles and motor accessories tend to be on the West and North-West outskirts. Outstanding among other principal classes of Paris industry are the food trades: the host of small trades comprised under the loose description of *articles de Paris* (fancy goods in ivory, mother-of-pearl, bone, tortoise-shell, mother-of-pearl brooches, studs, tiepins, hat-pins, beads, imitation jewellery, fans,

sunshades, umbrellas, lampshades, basket-ware, watches and clocks, ornaments in glass, celluloid, plaster, toys, games, smokers' articles, pouches, lighters, cigarette holders and cases, toilet accessories, feathers, ladies' bags, pocket books, paper-cutters, imitation flowers, finer jewellery and other fine personal ornaments, etc.), dressmaking and millinery: underclothing, outer clothing, boots and shoes, travelling requisites, motor-car upholstery: perfumery, chemicals: furniture: printing and bookbinding.

Characteristic occupations in Parisian life, and with a great sum total of adepts, are what are usually termed "the arts and crafts," both industrial and other: painting, sculpture, drawing, designing, engraving, working in leathers, textiles, woods, metals and divers materials. Their work is linked not only with the *articles de Paris* activities, but also with textile materials, dressmaking, jewellery and countless other inventive avocations, and with "production for art's sake" without immediate industrial end. Not least among the Paris trades is catering for the home and foreign visitor: the hotel industry, those providing amusements of all descriptions, and the transport trades, occupy large bodies of workers. Paris in general is not engaged in the elementary processes of manufacture: it receives its fuel, metals, textiles, leathers, chemicals, and what not, from other areas and carries out the required transforming processes.

Lyons and Other Centres. — The Lyons-St. Etienne area constitutes the other chief area of marked industrial concentration. The city of Lyons, which is the commercial centre of the silk industries, silk-spinning and weaving being disseminated in half a dozen counties principally to the south (and the artificial silk manufacture being in the neighbourhood of Lyons, at Valence and at Vals), has important engineering, electrical and mechanical, chemical, dyeing and finishing, leather, tobacco, and miscellaneous other trades. St. Etienne, a thoroughly industrial city of 200,000 people in the heart of the Loire coal area (which produced till a few years ago about 8 per cent. of the national output) is mainly engaged in coal, metallurgy, engineering (fire-arms, cycles, small tools, hammers, files, saws, nuts, bolts, chains, agricultural implements, etc.), silk ribbons and braid. At Firminy, St. Chamond, and other places near St. Etienne in the valley descending to the Rhone, are large steel and heavy engineering works (guns, locomotives, machinery, etc.). Not far from Lyons lie a number of small but rather important industrial towns, such as Vienne (woollen textiles), Roanne (cotton), Tarare (cotton), Villefranche (engineering), Givors (metallurgical), Bourgoin (silk, engineering), Oullins (P.L.M. Railway works).

Marseilles as a manufacturing centre is especially noteworthy as having far the greatest oil seed crushing and oil seed industries (soap, etc.), for its tile and brick industry, flour-mills, chemical

works, mineral oil refining since 1932, engineering, shipbuilding and repair yards, etc.

Outside the Paris area, the North and the East fringes, Lyons and Marseilles, there are cities with considerable manufacturing activity, such as Bordeaux, Toulouse, Nantes, Clermont-Ferrand, Limoges and others, but they tend to be somewhat isolated urban agglomerations and commercial centres in the midst of agricultural areas, not to possess an essentially industrial stamp, may conduct numerous industries on a small scale for area needs, or be noted for single trades (e.g. Limoges for porcelain and boots, Clermont-Ferrand for rubber tyres, Le Creusot for metal products, Brest for naval construction, Bourges for its State ordnance works, Nantes for food trades and shipbuilding, St. Nazaire for shipbuilding, Mazamet for wool pulling, Béziers for the wine trade, Chatellerault for fire-arms). Or they may be units of fair proportions on or near the seaboard, isolated from populous areas, whose main activities may be connected with the working of heavy seaborne raw materials, or export of local supplies, or with fisheries, or with national defence needs (e.g. Sète, La Rochelle, Caen, St. Malo, Toulon, Brest, Lorient).

Not only furthermore is a large proportion of French industrial production carried on in villages and small towns, but half the total population live in local units of not over 2,000 inhabitants. When comparing France with Great Britain it must be remembered that there are in France only five towns apart from Paris, with a population of over 200,000 : in Great Britain there are twenty. The total of all towns with over 100,000, excluding Paris and London, is in France sixteen and in Great Britain fifty-four.

II. COMMERCIAL CONCENTRATION

Supremacy of Paris as Distributing Centre of Home and Foreign Goods.—The major proportion of the large-scale or wholesale distribution of French and foreign products for the home market appears to be handled in Paris, which is in an outstanding manner the commercial, banking, financing and insurance capital of the country. The bulk of considerable industrial undertakings producing in the provinces now have their effective business headquarters in the capital, the greatest commercial undertakings have long been located there, and the movement of migration of the direction of business generally to Paris has become most marked since the war, stimulated by the evergrowing concentration and rationalisation in both industrial and commercial business of most kinds. To-day are established there for instance the head offices of the great metallurgical and engineering concerns, in some instances employing directly in various works remote from Paris 25,000 to 40,000 workers, with perhaps up to 20,000 more in affiliated concerns : of the central offices of the powerfully organised coal trade : of all the more important engineering firms : of the great electricity

groups for production and distribution for wide areas of France : of the great public contractors : of the trunk railways : of the three greatest navigation companies : of the chief shipbuilding firms : of the two chemical groups each with twenty-five to thirty works throughout France : of the four or five nation-wide oil distributing companies : of the Alsatian potash sales company, of the cement group, of the greater firms in the cotton, woollen, linen, silk, rayon and jute trades, as well as of the larger firms in the numerous making-up trades (clothing, shirt-making, hosiery, carpets, etc.), of the great sugar firms, of the two great rubber firms (e.g. Dunlop with works at Montluçon), and of countless others, whose productive activity is exercised at greater or less distance from the capital.

High Degree of Markets Concentration in Paris.—As Paris is itself far the greatest single centre in France of industrial output (and of output of the most varied kind and often on the largest scale—e.g., in engineering, motor-cars, articles de Paris, clothing) as well as of consumption, the presence of the majority of leading producers from the provinces institutes a remarkable concentration of the suppliers in most branches of industrial and commercial activity. The tendency has been strengthened by the formation in more recent times by various trades or sections of trades, of central selling organisations or of other prices-fixing arrangements by trade groups with central offices in Paris.

Principal Wholesale Markets still in Provinces.—The master markets for many commodities, principally raw materials and "colonial" products, however are still maintained elsewhere. Thus at Rouen for mineral oils, foreign coal : at Havre for rubber, South and Central American coffees, United States cotton : at Marseilles for oilseeds in general, Soviet Union and Roumanian wheat, bauxite, Egyptian and Indian cottons, certain North African, Levant and Far Eastern products : at Lyons for raw silk : at Roubaix for raw wool : at Lille for flax, certain chemicals : at Bordeaux for pit-props, turpentine, fine red and white wines, groundnuts, certain colonial products such as rum, vanilla, cane-sugar : at Dijon for Burgundy wines : at Rheims and Epernay for champagne : at Béziers and Montpellier for about 50 per cent. of the total French wine output ; at Cognac for brandy. Some rather minor commodities have their principal markets still in certain localities close to the place of production ; prunes at Agen and Bordeaux : Chasselas grapes at Moissac : truffles at Périgueux : walnuts at Grenoble : early fruits and vegetables at Avignon and neighbouring centres : Norman dairy products at Lisieux.

Paris as Distributing Centre for Home and Foreign Products.—Paris therefore, itself an immense supplier and an immense market, is also the meeting ground both of the chief

suppliers and of the chief purchasers of a very wide range of commodities from and for the provinces and foreign countries. Through Paris is directed a large proportion of the regular supplies for the provincial retail trade in manufactured goods. Many of the dozen or so great departmental stores in Paris, which are reputed to transact about 25 per cent. of the Paris local trade in the main lines of their business, possess or control large stores in places like Lille, Lyons, Bordeaux, Nice and elsewhere and buy also for the latter in the Paris markets. Certain other organisations with Paris as headquarters operate in the provincial towns large shops of the same type but on a smaller scale: one, which operated a few years ago about sixty provincial stores, is reported since to have joined hands with another which operated in half that number of places. The smaller multiple shop units, selling mainly foods, coffee, dry goods and miscellaneous articles, have made surprising advances in France since the war: there were 47 firms with 6,440 retail stores in 1913, in 1931 there were 107 firms with 20,500. These firms inevitably conduct a considerable proportion of their bulk purchases in the Paris market. The State services (army, navy, air, education, etc.), the railways, most of the great provincial producing undertakings with head offices in Paris already alluded to, tend to transact their own chief purchases in requirements for their works, as well as to do their selling, in the Paris market. The provincial cities do not appear to have the same relative commercial independence of the capital as do certain cities in Great Britain, such as Birmingham, Manchester, Liverpool, Sheffield, Glasgow, the national commercial concentration in the French capital appearing to be more marked. This is partly due to the predominantly rural character of the population, the topographical dispersal of the greater cities and their location often in thinly populated areas, or on the borders of the territory (e.g., Lille-Roubaix-Tourcoing, Nantes, Nancy, Marseilles, Bordeaux, Toulouse).

The chief market for the sale of foreign goods is also Paris. Foreign firms tend, for the reason just given, to appoint their chief agents in Paris, although representatives of foreign manufacturers of machinery and factory requisites may be found at times in closer proximity to the industrial areas (e.g. textile machinery agents in the Lille-Roubaix-Tourcoing district, Mulhouse or Lyons, or mining requisites agents in Lille).

Paris Likewise Chief Exports Market.—Paris is also the chief market for exports. In value among French exports of manufactured goods, textiles have normally constituted the predominant group (e.g. in the year 1913 they were 39 per cent. and in the ten years 1924-1933 the percentages were 50, 45, 42, 45, 43.4, 40.1, 43.4, 35.5, 30.8 and 30.6. Silks have usually made the largest contribution, followed by cotton, woollens, linen-drapery and made-up clothing. The major proportion of this foreign trade

in textiles is transacted in Paris, notably in silks, silk goods, and made-up clothing of various descriptions, but also in wool and cotton textiles. Selling to certain markets, e.g. North and South America, has hitherto been mainly done in the capital, when it has not been done by agents of French houses resident in the respective countries. In the recognised buying seasons for specific goods the large numbers of North and South American buyers who were wont to come to France preferred to do their purchases in Paris rather than to visit the chief local centres of the particular commodities in which they were interested, although some made their way to Calais or Caudry for inspection of machine laces and embroideries, to Lyons for silks, or Roubaix for woollens. In fact, as Paris supplies so many facilities for purchase of textiles owing to the presence of sample warehouses of the chief manufacturers, and affords so many attractions in other ways, few compelling reasons exist for seeking further afield. In another export market formerly of noteworthy importance, namely that of motor vehicles, Paris is the undisputed centre in France. Nor can any other city vie with the capital in the facilities which it offers for the presentation to foreign buyers of the thousand and one *articles de Paris*, of female raiment of all kinds, perfumes, jewellery, and other luxury objects which form such a great proportion of French exports visible and invisible.

II.—POPULATION

1. RESULTS OF 1931 CENSUS

Total Population.—The preliminary returns of the 1931 census show that the population of France on the 8th March, 1931, was 41,834,923, this increase of 1,091,026 compared with the census of March, 1926, being composed of 705,150 French citizens and 385,876 foreigners. The vital statistics subsequently issued reveal the excess of births over deaths in the 31 months ended 30th September, 1933, to have been 152,200. The excess of the officially recorded departures over arrivals for the same period was 42,000; but this figure was probably 40,000 to 50,000 below the reality, as considerable numbers of foreigners, notably Belgians and Spaniards, return to their native countries without coming within the records of the emigration officers. It may therefore be estimated that the total population of France at the end of 1933 was, in round figures, approximately 41,870,000.

Areas of Depopulation.—In 46 of the 90 counties into which France is divided, the population recorded by the 1931 census was greater than that of 1926, while in 44 counties it was less. Apart from the Seine and Seine-et-Oise, the two counties in which Paris lies, and Bouches-du-Rhône (Marseilles) with increases of

305,218, 228,092 and 172,123 respectively, no county was credited with an increase of more than 61,000, and in only five—Nord (chief towns Lille, Roubaix, Tourcoing), Moselle (Metz), Alpes-Maritimes (Nice), Rhône (Lyons) and Meurthe-et-Moselle (Nancy) did the population increase by more than 34,000. The greatest decreases were recorded in Haute-Vienne (15,438), Puy-de-Dôme (14,809), Côtes-du-Nord (13,257), Creuse (11,266) and Saône-et-Loire (10,499). The areas of increasing population are practically confined to the coastal and frontier regions. The central and south-western areas of France, save for the mining and industrial island formed by the Allier county (Montluçon, Moulins) appear to be losing population.

It was not until the year 1930 that the detailed returns of the 1926 census were published, permitting the comparisons between the figures of 1921 and 1926 which appear in the following paragraphs.

Sex Distribution.—The percentage of males in the total population increased from 47.54 in 1921 to 47.98 in 1926, while that of females decreased from 52.46 to 52.02. Within the five years the excess of females declined by one-sixth, from 1,908,000 to 1,609,000: in the last three pre-war censuses, 1901, 1906 and 1911 the respective excesses were 617,000, 645,000 and 683,000. In the age group 20 to 44 years in 1911 there were 7,303,460 women and 7,185,801 men; in 1921, 7,321,160 and 6,052,550; and in 1926, 7,847,993 and 7,067,956. The proportion of females per 1,000 males was 1,083 in 1926, as compared with 1,103 and 1,031 in 1921 and 1911.

Vital Statistics.—In 1931 the number of marriages was fewer by 36,340 than in 1930, births declined by 18,562 and the excess of births over deaths was 49,539, a figure that is lower by 50,000 than the balance recorded in 1930. Still-births decreased by 166 (28,058 against 28,224), and deaths of children under one year of age were fewer by 3,312 (55,444 against 58,756): this constitutes a notable improvement as compared with preceding years, the rate of infant mortality in 1931 and 1930 being only 76 and 79 per 1,000 living births as against 95, 91, 83 and 114 in 1929, 1928, 1927 and 1913 respectively. In 1932 there were further declines of 11,480 in the number of marriages and of 8,103 in that of births. In 1933 marriages increased by 588, but births were fewer by 39,566 compared with 1932. The excess of births over deaths advanced in 1932 to 61,364, but in 1933 dropped to 21,598, or 39,766 less than in 1932. The number of still-births declined to 27,537 and 26,025 respectively, and the improvement as regards infant mortality was maintained, there being 55,177 and 50,015 deaths of children under one year of age, corresponding to 76.4 and 74.7, respectively, per thousand living births. The following table

gives for 1913, and for the years 1926 to 1933, the numbers of marriages, living births, total deaths and deaths under one year :—

Year	Number of			
	Marriages	Living births	Deaths	
			(Total)	Under one year
1913	312,036	790,355	731,441	84,000
1926	345,415	767,475	712,751	74,698
1927	336,364	743,833	675,540	61,817
1928	338,804	749,347	674,046	68,100
1929	334,322	730,060	738,652	69,401
1930*	342,698	748,911	649,125	58,756
1931*	326,358	730,349	680,710	55,444
1932*	314,878	722,246	660,882	55,177
1933*	315,466	682,680	661,082	51,015

* Provisional returns.

As in previous years, the returns for 1931 show that the highest rates of natality were in the North, North-East, Normandy, Brittany and the Vendée, while the lowest rates were in the South and South-West and along the northern edge of the Central Plateau. The excess of births over deaths in 1931 was only 11 per ten thousand inhabitants, the lowest figure recorded since the war, save for the year 1929 when deaths exceeded births by 2.1 per ten thousand inhabitants. In that year France continued therefore, to rank, as far as this question is concerned, a long way behind England and Wales (35), Switzerland (47), Germany (48), Norway (60), Hungary (67), Czechoslovakia (71), Italy (101), Holland (125) and Portugal (132). The corresponding return for Belgium is not yet available, but in 1930 the figure for that country was 56. In 1929 deaths exceeded births in France by two per 10,000 of the population, this being the first time since 1911 when births were outnumbered by deaths in this country, and the only recorded instance of its kind in post-war years among 18 of the principal countries of Europe.

Slow Increase in Native Population.—The foregoing figures show that any increase in the total population is due rather to the immigration of foreigners than to native births—though, as shown elsewhere, the foreign population has tended to decrease since about the middle of 1930. In the four years 1927-30, the recorded net balance of immigrant over departing foreign workers amounted to 337,600, while in the same period the excess of births over deaths was only 234,800. French nationality was accorded in 1929-1932 to 37,890, 44,154, 47,456, and 53,233 foreign applicants.

Urban and Rural Elements.—Since 1846 the population in France has been classified as urban or rural according to residence in communes of over or under 2,000 inhabitants. In 1926 urban dwellers so defined constituted 49.1 per cent. of the total population, or 2.7 per cent. more than in 1921 and 5.9 per cent. more than in 1911. The urban proportion is, however, likely to be still higher when the detailed returns of the 1931 census are known. The rural character of the country, as compared with Great Britain, may be illustrated by the fact that the population of the 36 largest towns in France in 1926 was 7.6 million or 18 per cent. of the total, whereas that of the 36 largest towns in Great Britain in 1931 was 19.5 millions or 40 per cent. Of the total "active" or occupied population, the proportion engaged in agriculture declined from 39 to 35 per cent. between 1921 and 1926. Other figures respecting the numbers engaged in agriculture and industry are given in the paragraph devoted to occupational statistics.

French Town Population: Changes at 1931 Census.*—The number of large towns whose population increased since the time of the previous census was greater in 1931 than in 1926. The largest increases recorded are those of: Marseilles (+148,685), commented upon in the paragraph concerning population in French ports; Nice (+35,108), which continued to make rapid strides, having risen from 11th place to 5th in order of importance since 1921; Paris (+19,591) whose relatively small increase is doubtless due to the departure of many foreigners and provincials as a consequence of the lessened industrial and commercial activity in the 9 months preceding the census date; Villeurbanne (+18,263), the growing industrial suburb of Lyons; Toulon (+18,143); Toulouse (+13,793), where the national powder, ammonia and nitrogen factory has been much developed in the last few years. The extent to which the industrial crisis has hit important industries such as rubber manufactures, engineering, porcelain, lace, clothing, footwear, textiles, is reflected by the decline in the population of Clermont-Ferrand (−8,568), Limoges (−5,632), Saint-Etienne (−2,649), Calais (−1,416), Amiens (−1,365) Angers (−658), Mulhouse (−358), Lille (−358).

II. POPULATION OF FRENCH PORTS

General Increases.—Striking figures are revealed by the returns of the 1931 census in respect of Marseilles, second in rank among French seaports, whose population has increased since 1926 by no less than 148,685, or 23 per cent. (from 652,196 to 800,881). The greater volume of seaborne traffic handled (the

* In Appendix 1 will be found a table showing the movement of the populations of the principal towns in France since the census of 1921.

inward and outward traffic handled by the port of Marseilles, with its offshoots the Port de Bouc, Caronte and Martigues, to which access has been facilitated by the completion of the great Rove tunnel, was 19 per cent. greater in 1930 than in 1926) and the development of the oil refineries, soap factories, chemical, brick and tile works and other industrial activities of the district, for the accommodation of which additional space is now being utilised on the hitherto waste lands around the coastal lakes of Caronte and Berre, may perhaps explain to a considerable extent this increase. As to the ports of the Atlantic and Channel coasts, whose population, at the time of the 1926 census, showed marked declines, the 1931 census indicates a reversal of this tendency in nearly all cases: Havre (+7,054), La Rochelle (+3,522), Caen (+3,400), Nantes (+2,834) and Dieppe (+172) all record higher figures than at the three previous censuses of 1926, 1921 and 1911, while Bordeaux (+6,964), Saint-Nazaire (+1,077), Brest (+1,980) and Lorient (+1,260) also show a certain increase, though the two latter have not yet regained their 1911 levels. Dunkirk, on the other hand, although it has advanced to the position of third among French seaports for tonnage handled, shows a continuous decline of population since 1911, and now has a population less by 1,182 than in 1926; Boulogne (-985), Calais (-1,416), Cherbourg (-593) and Granville (-268) also show decreases, while the population remains almost stationary in the case of Rouen (+59), Sète (-52), Saint-Malo (-90) and Fécamp (+79). The following table shows the movements of population, in the case of 24 of the principal French ports, at the census of 1921, 1926, and 1931:—

POPULATION OF THE PRINCIPAL PORTS OF FRANCE

	1921	1926	1931	Increase (+) or Decrease (-) compared with 1926
	Population	Population	Population	
Paris	2,906,472	2,871,429	2,891,020	+ 19,591
Rouen	123,712	122,898	122,957	+ 59
Marseilles	586,341	652,196	800,881	+ 148,685
Strasbourg	166,767	174,492	181,465	+ 6,973
Bordeaux	267,409	256,026	262,990	+ 6,964
Dunkirk	34,748	32,945	31,763	- 1,182
Le Havre	163,374	158,022	165,076	+ 7,054
Lyons	561,592	570,840	579,763	+ 8,923
Nantes	183,704	184,509	187,343	+ 2,834
Caen	53,743	54,128	57,528	+ 3,400
Sète	36,503	37,005	36,953	- 52
Boulogne-sur-Mer	55,336	52,839	51,854	- 985
La Rochelle & La Pallice	39,770	41,521	45,043	+ 3,522
Calais	73,001	71,629	70,213	- 1,416
Saint-Nazaire	41,631	39,411	40,488	+ 1,077
Bayonne	28,215	31,436	31,727	+ 291
Dieppe... ..	24,402	24,945	25,117	+ 172
Brest	73,960	67,861	69,841	+ 1,980
St.-Malo-St. Servan	25,012	25,647	25,557	- 90
Nice	155,839	184,441	219,549	+ 35,108
Lorient	46,314	41,592	42,853	+ 1,261
Tonnay-Charente	4,696	4,537	—	—
Cherbourg	38,281	38,054	37,461	- 593
Granville	9,489	10,497	10,229	- 268
Le Tréport	5,858	5,719	—	—
Toulon... ..	106,331	115,120	133,263	+ 18,143
Fécamp	17,165	17,184	17,263	+ 79

III. OCCUPATIONAL STATISTICS

From 1921 to 1926 there was a decrease from 56.1 to 53.2 in the percentage that occupied persons formed of the total population, so that in 1926 the percentage was almost identical with that of 1906 (53.3) and of 1911 (53.4). The numbers engaged in the main occupational groups in 1926, with the corresponding figures for 1921, are given in the following table, returns for 1926 having been published only towards the end of 1930 :—

[TABLE]

Group	Total number of occupied persons		Percentage increase (+) or decrease (-)
	1921	1926	
Fishing	72,450	70,125	- 3.3
Forestry	69,839	63,863	- 8.6
Agriculture	8,881,260	8,065,961	- 9.2
Mining and quarrying	317,607	433,991	+ 36.6
Manufacturing	6,181,441	6,680,792	+ 8.1
Transport	1,184,414	1,031,367	- 12.9
Commerce, banking and entertain- ments	2,253,169	2,448,732	+ 8.6
Professional occupations	590,492	587,846	- 0.5
Domestic service	847,566	846,684	- 0.2
Army and Navy	425,459	350,539	- 17.7
Public services, administrative	733,775	707,741	- 8.9
Public services, industrial	162,772	106,453	- 34.6
Totals	21,720,604	21,394,094	- 1.5

Striking evidence of the rural exodus is given by the large decline (821,275) in the numbers engaged in agriculture and forestry. The decrease of 153,000 in the numbers occupied in the packing, handling and transport of goods is mainly attributable to a drop of 134,000 in the number of unskilled workers, doubtless due to the widespread replacement of human labour by machines in wrapping and packing goods (the number of female unskilled labourers declined by 100,000, or 50.4 per cent. and that of males by 33,700, or 21.5 per cent.); while all subdivisions of the transporting industry declined in numbers (23,600 in all) except transport by air, which showed an increase from 802 to 923. The greater activity in the coalmining industry, following upon the restoration of the destroyed mines in the war-damaged zone, is reflected in the increase of 116,384 in the personnel of mines and quarries, and the growth of the transforming industries has resulted in an increase of half a million in those engaged in manufacturing.

Growth in the Size of Industrial Establishments.—Ample evidence of the tendency, long manifest, towards greater concentration in industry is afforded by the relevant tables in the 1926 census returns. Whereas the total number of undertakings recorded was less by 33,843 than in 1921 (3,660,634 against 3,694,477), or by 105,830 if those not employing paid assistance are excluded, concerns employing from 51 to 100 persons increased by 1,206, those employing from 101 to 500 persons increased by 1,293, those employing more than 500 persons increased in number by 283. As the total personnel of the establishments increased by 7.92 per cent., from 8,888,142 in 1921 to 9,606,531 in 1926,

the average number of workers per establishment grew from 2.4 to 2.58. In 1921, 13.85 per cent. of the total of employed persons, or 1,232,000 persons, was found in establishments occupying from 101 to 500 persons and 13.87 per cent., or 1,233,000 persons in those occupying more than 500; in 1926 these percentages had risen to 15.40, or 1,480,000 persons, and 17.08, or 1,641,000 persons respectively. The percentage employed in establishments that occupied from 1 to 5 persons declined in the same period from 42.21 to 36.13. The following table will permit of a detailed comparison being made between the figures of the 1921 census and those of the census of 1926 :—

[TABLE] .

SIZE OF ESTABLISHMENTS.

(Figures of the 1921 census denoted by Roman characters, and those of the 1926 census by italics).

Industries	Total Number of estab- lishments	Number of establishments employing :							
		0 persons	1 to 5 persons	6 to 10	11 to 20	21 to 50	51 to 100	101 to 500	Over 500
Fishing	12,081 <i>11,143</i>	1,717 <i>1,473</i>	9,860 <i>9,189</i>	296 <i>280</i>	121 <i>96</i>	63 <i>63</i>	15 <i>27</i>	9 <i>16</i>	— <i>—</i>
Forestry and agriculture ...	2,609,477 <i>2,514,637</i>	1,234,871 <i>1,327,319</i>	1,330,848 <i>1,161,221</i>	34,916 <i>27,835</i>	6,613 <i>6,970</i>	1,992 <i>2,086</i>	210 <i>188</i>	27 <i>21</i>	— <i>—</i>
Mining and quarrying	4,513 <i>5,768</i>	138 <i>165</i>	2,514 <i>3,481</i>	575 <i>728</i>	517 <i>562</i>	386 <i>435</i>	148 <i>161</i>	155 <i>146</i>	80 <i>100</i>
Manufacturing	551,141 <i>602,030</i>	54,517 <i>44,664</i>	411,519 <i>462,501</i>	35,422 <i>44,381</i>	21,724 <i>28,767</i>	16,215 <i>19,658</i>	6,096 <i>7,180</i>	4,985 <i>6,112</i>	663 <i>897</i>
Transport	26,345 <i>23,838</i>	3,072 <i>2,653</i>	19,108 <i>17,726</i>	2,148 <i>1,616</i>	1,119 <i>921</i>	627 <i>699</i>	162 <i>166</i>	90 <i>135</i>	19 <i>32</i>
Commerce, banking and enter- tainments	391,103 <i>398,927</i>	124,182 <i>114,271</i>	238,388 <i>260,300</i>	15,299 <i>18,111</i>	7,581 <i>9,068</i>	3,961 <i>4,988</i>	1,032 <i>1,312</i>	593 <i>790</i>	67 <i>87</i>
Liberal professions	50,466 <i>62,312</i>	897 <i>946</i>	40,386 <i>41,611</i>	4,374 <i>4,583</i>	2,474 <i>2,642</i>	1,623 <i>1,783</i>	472 <i>464</i>	223 <i>268</i>	17 <i>16</i>
Domestic service	45,872 <i>49,322</i>	1,218 <i>1,209</i>	43,900 <i>47,184</i>	564 <i>697</i>	130 <i>164</i>	50 <i>66</i>	7 <i>7</i>	3 <i>6</i>	— <i>—</i>
Public services (industrial) ...	3,479 <i>2,667</i>	— <i>—</i>	1,752 <i>1,707</i>	447 <i>301</i>	401 <i>214</i>	396 <i>203</i>	220 <i>86</i>	208 <i>84</i>	55 <i>52</i>
Totals	3,694,477 <i>3,660,634</i>	1,420,612 <i>1,492,699</i>	2,098,275 <i>1,974,920</i>	94,041 <i>98,612</i>	40,680 <i>46,294</i>	25,313 <i>29,871</i>	8,362 <i>9,668</i>	6,293 <i>7,686</i>	901 <i>1,184</i>

Proportion of Manual and Non-Manual Workers.--The number of manual workers increased by about 500,000 and that of non-manual workers by about 34,000 between the census of 1921 and that of 1926. As will be seen from the table on page 28, the respective proportions in the main occupational groups did not appreciably alter, except in the case of manufacturing and transport, where the higher percentages of manual workers would seem to be due, in part at least, to the closing of small businesses and the absorption of their former owners into the ranks of the wage-earners.

[TABLE]

OCCUPATIONAL GROUPS : DISTRIBUTION OF MANUAL AND NON-MANUAL WORKERS.
(Excluding employers, unemployed and " isolated " workers).

Group	Numbers of Manual and Non-Manual Workers occupied.							
	1921				1926			
	Manual		Non-Manual		Manual		Non-Manual	
	Numbers	%*	Numbers	%*	Numbers	%*	Numbers	%*
Fishing	24,404	33.68	420	0.58	23,437	33.42	552	0.79
Agriculture and forestry ...	2,809,723	31.39	5,245	0.06	2,351,750	28.93	5,082	0.06
Mining and quarrying ...	294,198	92.63	13,170	4.15	407,166	93.82	16,349	3.77
Manufacturing	3,622,527	58.60	390,546	6.32	4,415,580	66.09	469,092	7.02
Transport	505,642	42.69	242,589	20.48	545,590	52.90	197,452	19.15
Commerce, banking and en- tertainments	248,362	11.02	836,571	37.21	317,888	12.98	936,325	38.24
Professional occupations ...	59,757	10.12	294,814	49.93	65,437	11.13	295,181	50.21
Domestic services	768,971	90.73	21,367	2.52	767,251	90.62	27,670	3.27
Public services	428,098	32.38	893,908	67.62	379,667	32.60	785,066	67.40
Total	8,761,682	40.34	2,698,630	12.43	9,273,766	43.35	2,732,769	12.77

* Percentage of total number of persons occupied in the industry, inclusive of employers, unemployed and " isolated " workers.

Proportion of Male to Female Labour.—Women workers constitute slightly less than two-fifths of the "occupied" population of France. The proportion was increasing from 1896 to 1921, but fell from 1921 to 1926, the number of females per 1,000 occupied persons being: 346 in 1896, 356 in 1901, 382 in 1906, 404 in 1921, and 372 in 1926. While occupied persons of both sexes formed 53.2 per cent. of the total population in 1926, male workers numbered 13,556,312 out of a total male population of 19,309,568, or 71.2 per cent., and female workers numbered 7,837,782 out of a total female population of 20,918,913, or 37.5 per cent. As compared with 1921, male workers had increased in number by 441,767 and female workers had declined by 768,277.

In the five years 1921-26 the abnormal state of affairs resulting from the heavy losses in man-power suffered during the war was to a considerable extent adjusted, and in the great majority of occupations the percentage of female labour recorded in the census of 1926 was lower than that of 1921. As illustration of this decline may be given: of the unskilled workers engaged in the handling and packing of goods female workers declined from 57.8 to 47.0 per cent.; in the silk industry, treatment and spinning of silk, from 75.6 to 65.9 per cent., silk weaving from 72.5 to 68.9 per cent.; in the manufacture of lace, embroidery and light fabrics from 84.5 to 80.3 per cent.; in the public administrations from 27.5 to 18.4 per cent. On the other hand, female workers in mines increased from 2.2 to 2.7 per cent.; and there were increases also in several branches of the chemical industries (*e.g.* pharmaceutical products, soaps and perfumes, electrochemistry and explosives), in several metal-working groups, and in the production of liqueurs and spirits. In all branches of the liberal professions (except the legal branch, in which the percentage increased from 15.1 to 19.6) there was a decline in the proportion of women workers.

IV. IMMIGRATION AND IMMIGRANT LABOUR

The total number of foreigners resident in France, at the census of March, 1931, was 2,890,923 (of whom 1,258,000 wage-earners), as against 2,485,047 in 1926 (1,096,000 wage-earners). In 1911 and 1921, respectively, the totals were 1,133,000 and 1,550,000. In view of the large number of departures from the latter half of 1931 onwards, consequent upon the general depression and the stricter limitation on the entry of foreign labour, it is probable that by the end of 1933 this total had declined to about 2,200,000. In 1931, the number of officially recorded departures was only 9,351 less than that of arrivals. As, however, very many foreign workers return to their native countries without being recorded, it may be assumed that, for the first time since 1927, the actual number of departures appreciably exceeded that of arrivals. In fact, the central federation of the metallurgical and mining industries in

February, 1934, assumed that the effective total of departures was threefold that of the recorded departures, and that the exodus for the three years since early in 1931 was between 400,000 and 500,000 workers. An official figure of December, 1934, indicated the net excess of departures over arrivals of foreigners since the March, 1931, census at 418,000. In 1932 the net excess of departures over arrivals was recorded at 89,021. The following table indicates the recorded arrivals and departures of alien industrial and agricultural workers for the years 1922 to 1933:—

Year.	Arrivals.	Departures
1922	181,652	50,309
1923	262,877	59,951
1924	265,355	47,752
1925	176,261	54,393
1926	162,109	48,683
1927	64,325	89,982
1928	97,742	53,759
1929	179,321	38,870
1930	221,619	43,789
1931	102,267	92,916
1932	69,492	108,513
1933	60,302	49,047
Totals... ..	<u>1,843,322</u>	<u>737,111</u>
Net increase, 1922-33 :		1,106,211

In Paris and the department of the Seine, where the 1931 census showed the presence of 459,498 foreigners, in 1926 and 1921 respectively foreigners numbered 402,782 and 257,726.

Nationality of Foreign Residents.—Of the total foreign population in France, numbering about 2,850,000 at the end of 1931, some 830,000 were Italians, 465,000 Belgians, 452,000 Poles, 360,000 Spaniards. British residents in France numbered 62,298 in March, 1926, but are now probably fewer than 55,000; slightly more than one-third of them are occupied persons (22,213 in 1926). The bulk of the 221,619 foreign workers introduced into France during 1930 consisted of Italians (58,408), Poles (54,907), Belgians (23,832) and Spaniards (22,170), while 58,000 of the remainder were fairly evenly distributed between Portuguese, German, Czechoslovak and Yugoslav nationalities. In 1931 the total number of immigrant workers was lower by 58 per cent., and there was some re-shuffling in the order of relative racial importance, Belgians being most numerous (23,629), followed by Spaniards (20,715), Poles (17,084), Italians (17,007), Germans (6,069), Czechoslovaks (3,128) and Yugoslavs (2,475). The great majority of the Belgians were seasonal workers engaged for the sugar-beet industry, most of the Spaniards for the vintage, and the bulk of the Germans for the execution of public works contracts on reparations in kind account.

ALIENS IN FRANCE			
Proportion of Foreign Nationality	Census 1921	Census 1926	Estimated Dec. 1931
1,000,000			
both sexes	450,960	760,116	830,000
male	348,986	326,645	465,000
female	45,766	309,312	452,000
of which	254,980	322,590	360,000
by class	99,149	123,119	121,000
German	75,625	69,278	90,000
Russian	32,347	67,219	73,000
British	47,356	62,298	55,000
Portuguese	10,788	28,883	35,500
Czechoslovak	5,580	32,989	23,500
Yugoslav	4,032	15,138	36,000
Luxemburger	29,269	28,270	
Turkish	5,040	26,076	
Greek	12,771	18,588	
American (U.S.A.)	12,394	17,966	
Hungarian	630	13,417	
Roumanian	11,187	13,249	
South American	8,318	10,691	300,000
Dutch	6,969	10,534	
Scandinavian	5,858	7,127	
Austrian	2,090	5,294	
Bulgarian	633	2,606	
Others	88,731	137,930	
Total foreigners	1,550,459	2,409,335	2,841,000
Total French	37,659,059	38,334,562	38,725,000
Total population	39,209,518	40,743,897	41,566,000

Regulations affecting Foreign Labour.—At the present time the French frontiers are practically closed to foreign workers seeking employment in industrial occupations, though considerable numbers still come in, at the appropriate seasons, for the requirements of agriculture. (In the last eight weeks of 1931 the average number of recorded arrivals for industry was about 400 weekly, and in 1932 the number was often below 200; as compared with several thousand weekly for some preceding years.) No foreign worker may enter the country without being in possession of a definite labour contract with an employer in France, approved by the Ministry of Labour or for Agriculture, as the case may be; and there is so much unemployment among French workers that the requisite Ministerial approval, as far as industrial workers are concerned, is accorded only in rare instances, where the applicant possesses some special knowledge or aptitude not to be found among the available French applicants for the vacancy. Every foreign worker already in France must be in possession of an identity card upon which the nature of his occupation is indicated, and he is not allowed to transfer to any other class of work.

Infraction of the regulations involves a fine for the employer and expulsion for the worker. Should a foreign worker become unemployed, every facility is offered for his return to his native land, rather than that he should seek another post; and employers are forbidden to engage a foreign worker if the vacancy can possibly be filled by a Frenchman. As regards workers in agriculture the position is different. The continual stream of migration from the rural areas to the urban has left the countryside without a sufficient labour force for the needs of agriculture, and each year large numbers of foreigners (chiefly Poles, Italians, Spaniards and Belgians) have to be introduced, a large proportion of whom return home at the end of the season. In 1930, out of a total of 221,619 foreign immigrant workers, 92,828 were for agriculture; in 1931 out of a total of 102,267, agriculture claimed 76,463; in 1932 56,675 out of a total of 69,482, and in 1933 48,092 out of 60,302.

Till the close of 1930, when the world economic crisis first began to be felt in France, labour supplies were inadequate for the needs of French industry, and an elaborate organisation was then employed to recruit foreign workers and to direct them towards the centres where they were needed. There was a preliminary selection in the workers' country of origin, with medical examination and tests of capacity. Upon arrival at the frontier control station (of which there were seven, at Toul, Marseilles, Perpignan, Hendaye, Modane, Mentone and Basle) a further medical examination was conducted and the accepted workers were set en route for the scene of their labours. As the available supply of workers tended in 1928-30 to fall short of French requirements (for instance, the flow of Italian workers had been greatly affected by recent legislative enactments in Italy), negotiations were undertaken with Poland, Czechoslovakia, Italy and Roumania to ensure larger supplies of workers. An arrangement with Roumania was signed at Bucarest on the 28th January, 1930, and similar arrangements were concluded with Yugoslavia, Italy, Poland, Czechoslovakia and Austria. Agreements also exist between France and Spain for the introduction into France of seasonal workers.

Vocational Distribution of Foreign Workers.—Prior to 1931, approximately 60 per cent. of the foreign workers entering France were absorbed into industrial occupations and 40 per cent. into agriculture; thus in 1930 the respective numbers were 128,791 and 92,828, and in 1929 they were 104,000 and 63,000. The tightening up of the regulations in 1931 caused a considerable modification in these proportions, and during that year only 25,804 industrial workers were admitted, while agricultural workers numbered 76,463. In the eleven years 1922-32, out of a total of 1,783,020 immigrant workers, 1,003,754 took up industrial occupations and 779,266 were employed in agriculture. In 1932 and 1933 the arrivals for industrial employment were 12,817 and 12,210, and for agriculture 56,675 and 48,092 respectively.

The results of the 1926 census show that in 12 out of 43 occupational groups the percentage of foreign workers exceeded 10 per cent. of the total number of persons engaged in the industry or trade in question, the highest proportions being present in the mining industry (36 per cent.), metallurgy (33 per cent.), quarries (20.7 per cent.), building construction and navvying (19.7 per cent.) and the ceramic industries (18.3 per cent.). The occupational groups in which there were fewest foreign workers were: the administrative branches of the public services such as postal and State railway workers (0.71 per cent.) fisheries (0.9 per cent.), railways (0.91 per cent.), and the navy (0.96 per cent.). Although the number engaging in agricultural pursuits formed, prior to 1931, about 40 per cent. of the arrivals each year, they constituted in 1926 only 2.6 per cent. of the total number of agricultural workers, this being explained by the fact, recorded elsewhere, that a considerable proportion of them (especially in the case of Italians and Spaniards and Belgians and Czechoslovakians in the sugar beet industry) return home at the end of the season, while a certain number of those who remain find their way, contrary to the regulations, into industrial occupations. The total number of foreign workers in March, 1926, was 1,378,089, of whom nearly half (677,160) were engaged in the transforming industries, rather less than one-sixth (213,038) in agriculture, one-ninth in commerce, banking and entertainments (147,359) and a similar proportion in mines and quarries (146,341).

Of the 128,791 immigrant industrial workers in 1930, 33 per cent. were absorbed into the mining and quarrying industries, 27 per cent. into building and public works, 14 per cent. into metallurgy and engineering: about 9 per cent. were unskilled labourers. In 1931, with a total of 25,804, these industries showed 6.9, 20.7, 7.1 and 11.1 per cent. In 1932, out of 12,817 industrial workers, 73.8 per cent. went into sugar factories.

The most recent official figure (1st December, 1933) estimates the number of foreign workers at 838,000.

Racial Distribution of Immigrants.—In some districts the proportion of foreign workers is remarkably high, a fact which has given rise to some uneasiness by reason of their relatively slow assimilation. For instance, in the Eastern economic region constituted by Savoy, Upper Savoy, Isère and the Upper Alps, where large works have sprung up because of the ready accessibility of abundant supplies of hydroelectric power, it was found that, out of a total of 110,000 factory workers, 35,000 were foreigners, of whom 31,000 were Italians; in the electro-chemical and electro-metallurgical works of that region, out of 10,900 workers 5,100, or 47 per cent., were foreigners; in 16 paper mills there were 1,600 foreign workers, forming 31 per cent. of a total of 5,200; in the lime and cement manufacturing centres of Isère, foreign workers

represented 45 per cent. of the personnel. At Louvroil, one of the most active metallurgical and engineering centres in the Sambre valley, an enquiry conducted in 14 establishments revealed that out of 3,601 workers, 770, or 21.4 per cent., were foreign. In the ore mining and metallurgical works of the East (*e.g.* Lorraine and Meurthe-et-Moselle) the percentage is far higher, reaching 60 to 70 per cent. in 1930 in the greater undertakings. In another large engineering and metallurgical works at Jeumont near the Belgian frontier, where the personnel in January, 1931, numbered 3,450, it was found that 70 per cent. were Belgians and only 20 per cent. French. In the Northern coal mining districts (Nord and Pas-de-Calais) the percentage of foreign workers in 1930 and 1931 was 38 to 40 : among the underground workers this percentage is about sixty.

In the Northern textile area of which the towns Lille, Tourcoing, Roubaix, all quite close to the Belgian frontier, form the head centres of the cotton, linen and woollen industries, over 60,000 Belgian workers in 1930 held special passports for coming into France for daily work in that whole area, whilst no fewer than 14,000 workers were newly enrolled in Roubaix and Tourcoing alone. Foreign workers in agricultural occupations, according to an enquiry conducted in 1927 (and the same figures were considered still to hold good in 1929) numbered 254,500, of whom nearly 33,300 were owners and 58,400 farmers or "métayers" *i.e.* cultivators on a profit-sharing basis with the owners. Italians (73,000), Spaniards (64,100) and Belgians (41,100) constituted by far the greater part of the foreigners engaged in agriculture, Italians being found chiefly in the South-East with extension up to Toulon, Spaniards between Bordeaux and Perpignan down to the Pyrenees, and Belgians in the North and Paris region.

III.—EMPLOYMENT AND WAGES

1. CHARACTER AND MEASUREMENT OF THE PROBLEM

General Position.—Throughout the three years 1928-30 the intense demand for labour, which had set in early in the year 1922 and had been interrupted somewhat only by the brief period of slight depression in January-April, 1927, continued unabated. Agriculture and industry alike in their shortage of labour power, introduced through the official channels alone 97,700 immigrant foreign workers in 1928, 179,300 in 1929 and 221,600 in 1930; but as regulations were not so rigorously applied in face of the clamant demands for labour in these years, the immigrant workers were probably far more numerous. The unemployment relief returns first began to show any serious upward trend in the month of December, 1930, when the number of relieved persons averaged 9,500; but for the first ten months of 1931 the average monthly

figure was under 40,000. In November and December it was 77,000 and 132,000, and averaged for 1932 no fewer than 264,000, the highest month being March with 303,000. A further advance occurred in 1933, the average being 275,000 and the highest month (February) 327,000. In December the figure was 285,866, as against 266,078 at the end of 1932.

Inadequacy of Existing Unemployment Indexes.—Official returns covering the vast bulk of persons unemployed at a given time comparable with the range covered in the United Kingdom returns as a result of the national system of unemployment relief are not available for France. Prior to January, 1931, indeed, the only available official return related to the number of those in receipt of relief from the voluntary local (municipal) unemployment funds, which for various reasons were far from indicating the real extent of unemployment or of the general under-employment at a given time. Of the 38,000 communes and local authorities only a limited number had instituted an unemployment fund to which the workless might apply for relief; and as there prevails still a marked dislike among the employed classes to apply for relief of this nature, a large proportion fail to apply even when a fund exists. A considerable proportion, owing to the widespread habits of thrift, are able to subsist for some time on their savings or to obtain succour from relatives, or, in view of the location of such a large proportion of industry in rural areas, to obtain employment in agricultural work, and refrain from recourse to public relief save in the last resort. The number of beneficiaries is also kept down by the normal provision that no member of a family whose income exceeds 18 francs a day is eligible for relief. By the practice widely pursued, especially in the staple industries, of reducing hours or closing undertakings on one or more days weekly, so as to avoid the disbandment of skilled labour that might be difficult again to muster when trade recovered, full unemployment has been avoided for a large number and thereby the general sum total of real unemployment is disguised. A diminution of no mean order has also resulted from the exodus of foreign workers who are practically compelled to return to their native countries on the termination of their contract if no work is available: thus the number employed in French coal mines has decreased since 1930 from about 298,000 to 258,000 in 1932, but the unemployed in the mining areas do not amount to 40,000; nor in the metallurgical industries of the East where the percentage of foreign workers may often be from 60 to 70 per cent. and where the output has sunk to half that of 1930, do the local unemployment figures show correspondingly high figures of the workless. A further inconsistency may be noted. The census of 1926, which was taken at a period of intense industrial prosperity, revealed 243,000 unemployed, that of 1921, taken when trade depression was extremely serious showed 523,000, yet the official figures of relief beneficiaries did not reflect in any such

measure the situation : in March, 1921, their total was 91,225, and in March, 1926, only 661.*

Registered Unemployed.—In recent years of good employment the weekly returns of persons in receipt of unemployment relief have varied from about 300 to 1,000; the average for the years 1924, 1925 and the first eleven months of 1926 being 695, 705 and 486 respectively. The last traces of the short business depression of 1927 were reflected in the relatively high (for France) figure of 16,583 in January, 1928. This number rapidly declined to 1,000 (August), and continued for over two years to fluctuate between 400 and 2,850. In November, 1930, the weekly average jumped suddenly from 1,192 to 3,095, and thenceforth rose continuously to attain 305,496 in the third week of March, 1932. The next three months saw a recovery to 232,000, but new record figures were reached in February, 1933 (331,816) and in February, 1934 (350,930). For the years 1928 to 1933 the weekly average of persons in receipt of unemployment relief were 5,514, 906, 2,018, 50,688, 263,873 and 274,890. The returns of employment exchanges show that the weekly numbers of unsatisfied applications for work were 26,514, 196,147, 303,792 and 335,074 at the end of 1930, 1931, 1932 and 1933 respectively.

New Index of State of Employment.—Since the beginning of 1931 there has been available another indication of the extent of unemployment, the Ministry for Labour having instituted a monthly enquiry among all establishments giving employment to more than 100 persons. The published results give, according to 22 separate trade categories, the number of persons in each, and the percentage working 48 hours and over, over 40 to 48, 40, over 32 to 40, 32, and less than 32 hours a week. Even this enquiry, however, is far from disclosing the real number of unemployed, for out of 10.4 million wage-earners recorded by the census of 1926 (exclusive of agriculture, fisheries and the public services), of whom some 6,800,000 are normally engaged in occupations subject to the Ministry's inspection, only about 2,650,000 work in establishments occupying more than 100 persons. The numbers of workers in such establishments at the beginning of December, 1932, was just under 2,414,841, or 244,000 fewer than a year earlier; the percentage working 48 hours and over 61.5 against 57.9. Allowing for the high proportion of foreign workers in the mining, metallurgical, engineering and textile industries, it may perhaps be assumed that 100,000 of this number (or about two-thirds of the total number of foreign industrial workers estimated to have returned to their own countries during 1932) were foreigners. There would remain a net balance of about 144,000 to be added to the totally unemployed. At least 100,000 more

* In Appendix 2 will be found a table showing the number of persons in receipt of unemployment relief at the end of each month from January 1926 to December, 1933.

may be added in respect of the $7\frac{1}{2}$ million workers normally occupied in establishments not included in the scope of the monthly enquiry. The Minister for Labour stated in February, 1931 (at a time when the number in receipt of unemployment relief was under 30,000, or only one-eighth of what it is now), that there were 350,000 persons totally without employment. On the basis of the Census and other official returns, the present number of totally unemployed may be estimated at between 700,000 and 800,000.

Partial Unemployment.—As to workers on a short-time basis, the Ministry of Labour returns show that in establishments occupying more than 100 workers, the number working less than 48 hours weekly grew from 16.7 per cent. in January, 1931, to 38.53 per cent. in November of the same year and to 43.07 per cent. in November, 1932. Expressed in terms of the total number of man-hours worked, there was a decline of 16.5 per cent. in employment between January, 1931, and November, 1931, and a further decline of 16.5 per cent. between November, 1931, and November, 1932. The following table shows the relative position in December, 1931-33 :—

EMPLOYMENT IN ESTABLISHMENTS AT LEAST 100 WORKERS.			
	1931.	1932.	1933.
Total number of workers	2,619,971	2,414,841	2,404,460
of whom :—			
Working 48 hours or over ...	61.51%	57.95%	64.07%
" over 40 to 48 hours	18.76%	19.80%	16.77%
" 40 hours	8.44%	9.93%	7.78%
" over 32 to 40 hours	7.28%	7.46%	8.80%
" 32 hours	2.41%	2.82%	1.88%
" less than 32 hours	1.60%	2.04%	0.70%

These figures, especially in the time-groups "over 32 to 40 hours" and "less than 32 hours," indicate the extent to which the principle of working fewer hours is being applied. Reports published in trade papers in the middle of the year 1932 showed that in the woollen industry workers were idle for from 16 to 24 hours a week, spinning mills being operated at 50 per cent. of capacity and weaving mills at 60 per cent.; that in the cotton industry workers were idle for from 8 to 24 hours a week, and mills operating at a similar percentage of capacity; that in the hosiery trade, workers were idle 16 or more hours a week, factories operating at 50 per cent. of capacity, and in some districts 30 per cent. of the looms being stopped; that in the guipure lace factories at St. Quentin, as well as in textile dyeing works, operation was only at 50 per cent. of capacity, while the reduction of hours among the dyers was from 12 to 24 weekly. In November, 1931, the Minister for Labour estimated that the number of workers on short time was slightly in excess of 2,000,000.

ii. UNEMPLOYMENT RELIEF

Method of Organisation.—The system of national compul-

sory contributory insurance against unemployment adopted in the United Kingdom, under which practically all persons liable to be thrown out of employment are entitled under prescribed conditions to benefits in that event, differs radically from the methods adopted in France. In that country unemployment relief is organised (a) by local unofficial bodies somewhat similar in character to the mutual aid societies or trade benevolent associations in Great Britain, and (b) by municipal or county councils, through offices known as "fonds de chômage"; and unless the worker is either a member of an appropriate organisation or resident in an area in which the local authorities have taken the initiative in the constitution of a relief fund, there is no source to which he can turn for relief in the event of unemployment.

Official Funds.—These funds may be municipal, county or inter-communal (*i.e.* inter local-authority). All towns of more than 50,000 inhabitants have, or are affiliated to, such a fund, and of 250 towns having more than 15,000 inhabitants, all but 23 are in a similar state; but an overwhelming proportion of the 37,700 remaining communes have as yet made no provision for the organisation of unemployment relief. This may be partly explained by the fact that in many small communes the number of unemployed is never considerable, and they can usually find work in agricultural pursuits when their normal occupation fails them. At the 15th February, 1934, the existence of only 1,313 official unemployment relief funds, whose operations extended to 3,944 communes, with a population of 22.7 million inhabitants, had been reported to the central authorities; and of these only 737 funds, covering 2,087 communes, with a total population of 16.6 millions, were active. (There are in all 38,004 communes in France, and a total population of nearly 42 millions). The progression in the number of relief funds actually providing relief is shown by the figures for the half-yearly periods December, 1930, to December, 1933, which were 73, 230, 276, 583, 624, 628 and 677. It is recorded in the return for the 15th February, 1934, that the total population of the communes in which unemployment relief funds have operated at any time since the commencement of the present trade depression is 18.1 millions.

Unofficial Funds.—These funds are vocational or inter-vocational organisations, supported mainly by members' contributions, but entitled, in certain circumstances, to a subsidy from the State. Membership of six months is required before benefits may be paid in the case of unemployment. The latest return available (for 1931), shows that in the first half of that year 113 funds, with a membership of 179,800, paid to 15,663 of their members allowances amounting to 1,918,600 francs; and in the second half of that year 125 funds, with a membership of 192,189, paid to 25,561 members relief to the extent of 3,017,200 francs, making a total

for the year of Fcs. 4,935,800, as against Fcs. 1,341,951 in the year 1929, and Fcs. 927,008 in 1930.

Scales of Relief.—The amount of relief payable daily to an unemployed worker varies in different parts of the country, but it tends to become standardised by reason of the fact that a maximum is set to the amount taken into consideration by the State when computing its subsidy to the individual funds, whether these be the official county or municipal organisations or the unofficial trade organisations. By a decree of the 31st December, 1931, new daily maxima, in respect of the official funds, were fixed as follows:—Fcs. 7 daily for the head of the family; Fcs. 4 for his wife, for each child over 16 not working, and for each additional dependent relative living in the same household; and Fcs. 3.50 for each child under 16 not working or earning less than Fcs. 4 a day; these payments, however, being limited to an over-riding maximum which ranges from Fcs. 19 daily for a family with not more than two children, to Fcs. 26 for a family with five or more children. Moreover, the maximum must not exceed one-half of the wages prevailing in the district for the occupation in question, inclusive of family allowances. No member of a family whose joint income exceeds Fcs. 18 a day is entitled to relief. In the case of the "unofficial" funds, the maximum for a family is the same, but the maximum for the individual is Fcs. 8 instead of Fcs. 7, and that for each other member of the family Fcs. 3.50. Any member of the household, other than the head of the family, who is a personal contributor to the local fund, is entitled to treatment as a separate individual and any relief paid to him is left out of account in reckoning the total sum paid to the family. The number of days in the year, for which a worker may receive unemployment relief, was formerly limited to 60 (in 1927). After successive increases to 120, 150 and 180 days, a decree of the 24th June, 1932, has abolished for the time being all limit to the number of days for which such payment may be made. In Paris and the Seine county, where the greater part of the country's unemployed are to be found (from one-half to three-fifths, if the Seine-et-Oise county be included), the amount paid to the individual is Fcs. 8.50, of which Fcs. 7 are borne by the State, one franc by the county and 50 centimes by the Municipality. By a decree of the 10th March, 1931, unemployment relief may be extended to persons working short time, if the total amount of their employment does not amount to four days a week.

State Subsidies.—In the case of the funds operated by county or municipal authorities, the State contributes (within the limits of the prescribed maxima respecting payments to individuals) from 60 to 90 per cent. of the total sums distributed, according to the proportion borne by the number of recipients of relief to the population of the area, the scale being as follows:—60 per cent. for the portion corresponding to 10 unemployed at most per 1,000 inhabitants; 70 per cent. for the portion from 10 to 20 unemployed;

80 per cent. for the portion from 20 to 30; and 90 per cent. above 30 per 1,000. The grant to unofficial funds corresponds either to 33 per cent. of the amount distributed in relief (for purely local organisations) or to 40 per cent. (in the case of larger organisations covering a wider area); while those funds which fulfil the prescribed conditions, but have not had occasion to pay out any relief during the year, receive a grant of 50 francs. To provide for the case of payments to persons working on short time, the proportion of unemployment is computed by dividing the number of days' relief paid by the number of working days in the accounting period; percentages of 60 to 90, as above, being applied to the resulting proportions.

In the financial year 1st April, 1931-32, the sum distributed by the official funds was 346.5 million francs, of which 219 millions were reimbursed by the State, the remainder being a charge on the local budgets. In the 2½ years from the beginning of April, 1931, to the end of September, 1933 (latest figures available), the amounts were 1,800 and 1,079 millions respectively. In the return relating to the operations of unofficial funds for 1931, it was recorded that in that year State subsidies amounted to Fcs. 1,959,395, while in the previous year the amount was Fcs. 501,873.

Obligation to Constitute Relief Funds.—At present *county* unemployment relief funds exist in only 65 of the 90 counties into which France is divided, while 13 others, which have no relief funds of their own, grant subsidies to municipal relief funds. The operations of these 65 county funds extend to 2,273 communes; there are 1,046 funds set up by individual towns; and there are another 25 inter-communal funds covering in all 101 communes or parishes. Under the prevailing conditions, considerable numbers of unemployed may find themselves unable to secure relief by reason of the absence of an appropriate fund in their residential area. In fact, the anomalous situation may well arise that whilst some workers discharged from their employment may enjoy the benefit of unemployment relief, others from the same establishment, but resident in a neighbouring parish, are debarred therefrom. A Government Bill designed to remedy this defect was introduced at the end of October, 1932. It proposed to invest the prefects of counties with power, either to compel the municipal authorities under their jurisdiction to set up relief funds of their own, to organise employment schemes, or to affiliate the community directly to the county fund. Owing to the change of government in December, 1932, no progress had been made with the Bill up to the time of writing this report.

Illustration of French Municipal Efforts to meet Unemployment.—Certain details of the special relief measures taken by the French authorities which are given in "Les Echos" of February 7th and March 6th, 1932, in "La Journée Industrielle" and elsewhere may be of interest by way of comparison as to methods employed in the present state of world depression.

Lyons.—The Mayor, M. Herriot, stated that the Municipality had provided funds to push forward the execution of road works already begun and had undertaken fresh public works. As all unemployed are not capable of doing public works, he had opened, in December, 1930, an Unemployment Fund of which the rates are those of the funds subsidised by the State, namely, Fcs.7 daily for heads of families; Fcs.4 for other members of families over 16 who were unemployed and Fcs.3.50 for those under 16 years. Apart from these measures, meal tickets were given by the Municipality to unemployed and their families not fulfilling the regulations for relief. Those who benefited in some form just mentioned numbered 550 in December, 1930, 4,266 in July, 1931, and 8,202 on the 14th January, 1932. In January, 1932, the town voted a loan for public works for unemployed. A fund due to voluntary subscriptions was also distributed for relief purposes.

Rheims.—The Mayor stated that two principles guided the Municipality in its work of unemployment relief; (1) to provide work as far as possible for the unemployed, and, when no work of the special kind for which the unemployed was fitted was forthcoming, to put him to easy work that would occupy him and improve his situation instead merely of giving him cash; and (2) by giving relief in kind to allow the maintenance of family life and the least possible suffering to wives and children. Little aid had come from the State, which had, up to the present, refused to accord subventions for help given in the form of labour tickets, and which had not aided the official or private organisations which distributed relief in kind (bread, meat, coal, clothing, etc.).

Havre.—The Mayor stated that the Municipality had decided to undertake public works on a large scale at a cost of 20 millions; construction of several schools, extension of the sewage system, improvement of several highways. There were already in course of execution several important works such as new passenger railway station, schools, baths, meeting halls.

Bordeaux.—The Mayor stated that since April, 1931, to February, 1932, unemployment had greatly increased. In February, 1932, there were 2,500 on the Municipal Fund at a daily cost of about Fcs.14,800; Fcs.617,000 had been spent by the Municipality including the State grants. The Municipality had occupied 1.2 millions for relief in its supplementary budget to be distributed by the Unemployment Fund. A special dockers' fund existed. A special service of distribution of food tickets operated in favour of unemployed who had to await replies to their applications for regular relief. Meals were provided in school refectories or canteens for children of registered unemployed in receipt of relief. The Municipality intended to undertake new buildings for gas and electricity services, swimming-baths, cattle-market, abattoirs, roads improvement, etc.

Paris.—In a statement to the Paris Municipal Council on March 18th, 1932, the Prefect of the Seine county reported that in 1931, 65 millions had been expended in unemployment relief; 28.8 of which had been provided by the State, 15.9 by the Seine county, and 20.8 by the Paris Municipality. In the Paris suburbs 44.1 millions had been spent (State, 18.5, Seine county 18.7 and local authorities themselves 6.9 millions). He gave particulars of a public works programme to allow the opening of numerous workshops and yards, and suggested a loan of 40 millions to be used for the industries of the Arts category (in renovation of furniture in the City Hall, improvements and modifications of various kinds in Museums, Libraries and other public buildings, orders for works of art, and so on).

National Equipment Schemes for Unemployment Relief.—The different great national equipment schemes which, notably in the course of their preparation or modification in 1931 and 1932,

had, as their main objective, the relief of unemployment, had not been determined in their final form, or had at all events not yet received parliamentary sanction at the time of writing (February, 1934).

III. WAGES

General Trend of Wages Movements.—In the period 1928-33 wages movements closely followed the general trend of industrial activity: a pronounced upward tendency persisted until the autumn of 1930, when set in a downward movement which was more rapid towards the closing months of 1931. Since that date no considerable alterations have occurred, the State policy of high protection for foodstuffs, together with the import restriction by quota on the vast majority of them and on many hundreds of manufactured goods having checked the fall of prices for necessaries. In the case of three graphs compiled by the French Statistical Office, and portraying the movements of (a) wages of miners, (b) hourly wages rates in the Paris metal-working industry, and (c) hourly wages in 38 occupations in provincial towns, all show an increase of about 12 per cent. in the summer of 1929 and of 18 to 20 per cent. in the autumn of 1930, as compared with the position in August/October, 1928. Since the setting in of the downward movement the curves have taken somewhat divergent courses, so that in May, 1932, that for miners' wages stood only $5\frac{1}{2}$ per cent. higher than in 1928, that for metal-workers $12\frac{1}{2}$ per cent., and that for workers in provincial towns 17 per cent. Up to 1934 only slight reductions had occurred in these groups.

Short-Time Effect on Real Earnings.—Short time has been in general vogue in the majority of industries since early in 1931. In several important trades 32 to 40 hours were worked weekly instead of the customary 48 to 52 which had prevailed throughout the previous nine years: and in some cases only four days were worked. Thus, of the 490,000 textile workers in mills employing over 100 persons, only 37.3 per cent. were working full time in September, 1932: 42 and 47 per cent. respectively in the metallurgical and engineering industries. Whereas in October, 1930, only 4 per cent. of the workers occupied in factories and workshops visited by the factory inspectors were working less than 48 hours weekly, two years later the proportion had risen to 47 per cent. Actual earnings have been accordingly appreciably lower in the occupations where piece rates are applied: as most workers in the industries employing the greatest bodies of workers (coal, iron and steel, engineering, textiles, etc.) are paid by the piece, the sum totals divisible and the dividends must have been very seriously reduced.

State Employees.—Wages and salaries paid to manual workers and other employees of the State underwent two revisions

in an upward direction in 1928 and 1929. The first of these (budget of December, 1928, which included a provision of 500 millions for the purpose), was applied in September, 1929, with retro-active effect from the 1st January; and the second (budget law of December, 1929) was applied in two stages, with effect from the 1st July, 1929, and the 1st October, 1930, respectively. Since the latter date the minimum salary or wage of State employees has been, in principle, Fcs. 9,000, and the maximum Fcs. 125,000 yearly. These sums exclude the various allowances, which most commonly are rent allowances (in Paris of perhaps 2,200 francs), or family allowances according to number of children. In some cases, however, allowances may constitute a very considerable addition to the nominal salary. Certain examples were recently provided in the French press, which reported that one State civil engineer, whose nominal salary was Fcs. 35,070, was shown to be actually receiving, with allowances, nearly Fcs. 254,500: another, with a nominal salary of Fcs. 34,067, received just under Fcs. 139,000.

Taking as 100 the scale in force in 1911, the present index figure as regards salaries or wages alone ranges from 745 (580 in Paris) for those whose pre-war earnings were below Fcs. 3,000 yearly, to 436 for those who formerly received more than Fcs. 25,000. The index figures are considerably higher if the allowances or bonuses for family charges, rent and cost of living be taken into account. In the case of employed persons with two children, the index figure averages 825 for those whose pre-war earnings were Fcs. 3,000 or less, and 453 for those who received more than Fcs. 25,000. The highest figure, 1,056 in towns of 70,000 to 100,000 inhabitants, appears in the case of workers whose pre-war earnings were less than Fcs. 3,000, and who receive allowances in respect of four children. (In 1928 the index figures ranged from 550 to 700 for small-salaried workers, and was 160 for the upper salaried workers.)

The wages paid to workpeople in Government offices in Paris are on a yearly scale. Thus, at the Ministry for Public Works, foremen's earnings range from 14,500 to 21,000 francs (as against 11,600 to 13,500 francs at the 1st January, 1928); skilled workmen receive from 11,500 to 15,500 francs (as against 8,900 to 11,600); and the wages both of semi-skilled men and of female workers are now from 9,000 to 10,500 francs, as against 8,000 to 9,000 francs previously. At the ministries overtime is paid at hourly rates ranging from Fcs. 5.50 for ordinary clerks to Fcs. 10.50 for chief clerks (prior to the 1st October, 1930, the rates were 4.50 and 8 francs respectively); and extra pay from one-third to double pay is granted for work between 7 p.m. and 7 a.m. or for Sunday work. Heads and assistant heads of sections, who are constantly required to work after hours, may be given an annual bonus not exceeding Fcs. 5,850 for the former or Fcs. 4,550 for the latter. Women typists in the ministries now

receive from 9,500 to 15,000 francs, as against 8,000 to 13,500 francs prior to October, 1930. Assistant secretaries in Government departments receive from 100,000 to 125,000 francs (60,000 to 75,000 formerly), chief engineers in the Ministry of Public Works receive from 50,000 to 60,000 francs instead of from 34,500 to 40,000, heads of sections in ministries 50,000 to 60,000 instead of 32,000 to 40,000 francs. The scale of family allowances in force for all grades since the 1st July, 1929, (the corresponding rates from August, 1926, to June, 1929) were: first child Fcs. 660 (604.80), second child Fcs. 960 (806.40), third child Fcs. 1,560 (1,209.60), fourth and subsequent children, each Fcs. 1,920 (1,411.20). The rent allowances have not been altered since the 1st August, 1926, when a new scale was brought into effect, ranging from Fcs. 2,240 yearly in Paris to Fcs. 372 in towns with 5,001 to 10,000 inhabitants.

The number of *permanent* public officials (excluding military formations) has grown from 400,156 in 1927 to 511,041 in the middle of 1933. With the inclusion of military personnel (permanent), the total becomes 701,000, with a yearly wage-bill of 14,664 millions, of which 3,464 millions represent allowances of various kinds paid in addition to salary proper. Auxiliary personnel number 135,000. The largest wage-groups are those whose salaries range between 9,000 and 11,500 francs (166,229 out of the total of 511,041) and those between 15,000 and 20,000 francs (122,894). Nearly 38,500 receive less than 9,000 francs, and 4,800 receive more than 50,000 francs.

The law of the 28th February, 1933, decreed for one year a special tax or levy, from March, 1933, on the wages and salaries of all civil and military personnel of the State (with certain exceptions), graduated from 5 per cent. or Fcs. 6,260, for salaries of Fcs. 125,000 per annum, to 0.4 per cent., or Fcs. 80, for those of Fcs. 12,000 to 15,000. As from January, 1934, further cuts of from 8 to 1.5 per cent. were enacted.

Municipal Workers.—The programme adopted by the Municipality of Paris in 1928, providing for a general increase in the scale of wages to be spread over three years, was executed in five steps, taking effect from January, 1928, January, 1929, July, 1929, April, 1930, and October, 1930; no further changes having occurred since the last-mentioned date. Workers in Category I. (unskilled workers, porters, watchmen, roadmen and similar classes), whose yearly wages as from the 1st January, 1928, ranged from a minimum of 8,710 to a maximum of 10,008 francs, now receive from 10,200 to 11,900 francs. Semi-skilled workers start at minima ranging from 12,100 to 13,700 francs, and may attain maxima ranging from 13,800 to 15,040 francs; the present rates for a few typical classes being (with 1928 figures in parenthesis): sewermen and workshop assistants 12,100 to 13,800 (10,080 to 11,376); lock-keepers, stokers, attendants of electrical machinery or drivers of electrical vehicles

12,800 to 14,500, the last-mentioned class receiving an additional allowance of Fcs.2 a day if in charge of machines of a power exceeding 100 C.V. or driving high-speed vehicles; paviers 13,700 to 15,040 (11,376 to 12,672). In the skilled category, to attain which examinations or tests must be passed, the 1928 rates ranging from 12,690 to 14,112 francs have now advanced to from 15,400 to 17,400 francs: this group includes turncocks, carpenters, wheelwrights, slaters, blacksmiths, electricians and so forth. The scales for female workers such as sempstresses, laundrywomen, cooks, hospital nurses, cleaners, range from a minimum of 9,000 advancing to 10,600 francs, to a maximum of 10,600 advancing to 13,900 francs. Forewomen receive from 14,800 to 16,800 francs, save in the case of stewardesses in charge of children in poor-law institutions, who commence at 10,500 francs, and, after attaining a maximum normally of 15,000 francs, may receive advancement to a higher grade carrying increments up to 19,000 francs. All classes receive a rent allowance of Fcs. 2,240 yearly if resident within a radius of 25 kilometres from the centre of Paris, and family allowances at the rate of Fcs. 660 for the first child, 960 for the second, 1,560 for the third, and 1,920 for the fourth and each subsequent child. Each worker is entitled to a month's annual leave (interpreted as meaning 26 working days) with full pay. As compared with the wages in force before the war, the present rates, exclusive of allowances, correspond to a co-efficient of increase very slightly below 5.

In provincial towns the scales of remuneration differ considerably, and a few cases occur in which higher wages are paid than in Paris (e.g. in Marseilles and, for some categories, in Nantes). Any general or group comparison, either with Paris or as between individual provincial towns, is practically impossible on account of wide divergences in the method of classification; some municipalities including in the "unskilled" group many classes of workers who in other towns are classified as "skilled" or "semi-skilled." A few specific rates may be quoted:—unskilled (labourers, porters, roadmen, etc.): at Marseilles (801,000 inhabitants), from 12,100 to 15,100 francs; at Lyons (580,000 inhabitants), from 9,500 to 11,225 francs; at Lille (202,000 inhabitants), from 9,000 to 9,900 francs; at Nantes (187,000 inhabitants), from 8,850 to 12,000 francs. Semi-skilled (workshop assistants, stokers, lock-keepers, sewer-men, etc.): at Marseilles, from 12,100 to 15,100 francs; at Lyons, from 10,700 to 13,300 francs; at Nantes, from 11,600 to 14,750 francs. Skilled men (turncocks, carpenters, slaters, electricians, smiths, etc.): at Lyons, from 11,300 to 17,500 francs; at Lille, from 9,000 to 13,000 francs. At Lyons, Lille and Nantes family allowances equal, or closely approximating, to those received by State employees, are paid. At Lille nearly all categories of municipal workers are furnished with dwellings, lighting and heating free of charge, and numerous groups are provided with clothing, for which a yearly deduction of Fcs. 400 is made from their wages. At Lyons all workers receive a cost of living bonus,

subject to revision every quarter, and at present amounting to Fcs. 266 monthly.

Transport.—*Railway workers* are assimilable in some respects to State employees as regards the general conditions of remuneration : thus they are guaranteed a minimum wage of 8,600 francs, have paid holidays and pension rights, family allowances, rent allowances. Since the census of March, 1926, when nearly 525,000 persons were recorded as railway workers, their numbers have undergone a marked reduction. At the end of 1932 there were in France rather more than 443,000 established railway servants and 19,700 temporaries (as compared with a total of some 360,000 before the war), but these numbers are reported to have decreased by a substantial percentage in 1933. Four increases in the scale of wages have taken effect in the period covered by this report, resulting in a total advance of 27.5 per cent. The basic wage, a minimum of Fcs. 3,800 yearly introduced in 1920, had already, by the 1st January, 1928, been advanced by 77.5 per cent. to Fcs. 6,754, exclusive of the various allowances mentioned in the next paragraph. On the 1st January, 1929, the coefficient was raised from 1.775 to 1.9; six months later it was increased to 2.0; at the 1st January, 1930, there was an addition of 6.5 per cent.; and at the 1st June, 1930, a further addition of 6.17 per cent.; so that the commencing wage of a railway worker of the lowest grade, not entitled to any extra allowances or bonuses, at the dates mentioned, would have been 6,745, 7,220, 7,600, 8,100 or 8,600 francs per annum. No modifications have taken place since the 1st June, 1930. Concurrently with the fixing of the new basic scale in 1920, the number of steps, or classes, through which the worker has to pass from the lowest to the highest grade, was increased to 36 (prior to the war it varied with the different companies : on the State system, for instance, it was 14), so that the rate of advancement is now slower than formerly.

In addition to the basic wage, French railwaymen receive : (1) substantial housing allowances varying according to the size of the town where the employee is situated, and ranging from Fcs. 3,000 per annum in Paris to zero in towns where the cost of living is lowest; (2) family allowances, whose amount varies both according to the number of children below the school-leaving age and according to the size of the town. For each of the first two children the yearly payment ranges from Fcs. 630 in towns where no housing allowance is paid, to Fcs. 1,005 in towns such as Paris, where the maximum housing allowance of Fcs. 3,000 is paid; for the third child the allowance, formerly ranging from 1,068 to 1,668 francs, is now (since the 1st July, 1929) from 1,290 to 2,040 francs; for the fourth and for each subsequent child, the allowance, formerly the same as for the third child, was raised in July, 1929, and now ranges from 1,410 to 2,160 francs according to the amount of the housing allowance payable. The cost of living bonus that was formerly

paid has now been discontinued, being considered as having been replaced by the housing and the family allowances. The special bonuses paid to certain grades have been increased in proportions similar to those applied to the basic wages. Thus, the driving allowance or "*prime de parcours*" for engine-drivers and stokers (the amount of which may vary considerably according to the more or less exacting nature of their task) may now attain Fcs. 7,950 a year, as against a maximum of Fcs. 4,000 in 1928 or 2,300 previously; while the minimum now ranges from 1,860 to 2,520 francs. About 5,300 to 5,400 francs for the driver, and two-thirds of that sum for the stoker, may be taken as a general average. Among other bonuses may be mentioned the Christmas or New Year gratuity and the annual "*prime de gestion*," or bonus based upon the success of the company's working during the year; the former ranging from about 130 francs in the case of an unskilled worker to 7,000 or 8,000 francs in that of a divisional inspector, while the latter would be from about 100 to 1,500 francs for the same two grades.

All permanent workers are furthermore entitled to a pension, the minimum amount of which, for an unskilled worker of the lowest grade, who has served the requisite number of years, is now Fcs. 6,400 yearly, plus certain additions if he has children below school-leaving age. The company contributes to the pensions fund a sum equivalent to 15 per cent. of the worker's earnings, while the worker's contributions consist of: (a) 5 per cent. of his earnings; (b) the whole of his first month's wages after his appointment to the pensionable staff (this sum being actually deducted by twelfths from succeeding months' wages); and (c) the first month's payment after each increment that he receives (likewise deducted by twelfths). According to an actuarial calculation, the companies should now hold a fund of some 20 to 22 milliards for pensions purposes.

As compared with pre-war wages, the present scales show a coefficient of increase (according to the companies' calculations) ranging from 4.75 to 8.11, though the validity of these figures is contested by the workers' association. A few examples may be given: a first-class engine-driver who has attained the highest class in his occupational group (theoretically after about 13 or 14 years' service), now receives Fcs. 47,900 yearly as against Fcs. 9,750 in 1913; a stoker, or a stores foreman, at the top of his group, receives Fcs. 13,795 as compared with Fcs. 2,600; an office messenger, or other unskilled worker, having attained the maximum wage payable in the lowest group, receives Fcs. 10,840 as against a former Fcs. 1,400. In each case the totals are inclusive of the customary bonuses and gratuities, but do not include family or residence allowances.

Workers in the Paris *public transport services* (underground railways, tramways, omnibus and river steamboats) have become assimilated to municipal workers in Paris and, as from the 1st

January, 1933, are entitled to family allowances, pensions and other advantages on the same scale as those accorded to employees of the municipal authority. As from that date all wages were increased by about 500 francs per annum, and the rent allowance, formerly Fcs. 1,005, was more than doubled, becoming Fcs. 2,240. The yearly wages of drivers and conductors now commence at 12,840 francs and advance to a maximum of Fcs. 15,195 (from August, 1926, to December, 1927, the amounts were 9,084 and 10,644 francs respectively). Family allowances amount to Fcs. 660 for the first child, 960 for the second, 1,560 for the third, and 1,920 for the fourth and each subsequent child. Drivers are paid a "freedom from accident" bonus which averages about Fcs. 1,000 yearly, and conductors receive a commission on the sale of books of tickets, amounting to about 330 francs. The "current economy" premium formerly paid to drivers, and the percentage on receipts that was enjoyed by all grades of workers, have been abolished. Receipts in kind include free treatment and medicines when ill, and the supply of uniforms. In addition to the weekly rest-day and nine public holidays yearly, the worker is accorded a month's annual leave with full pay.

By an agreement made on the 18th May, 1929, between the Central Committee of Shipowners and the National Federation of Seamen's Associations, the following new scale of monthly wages came into effect in the *mercantile marine*: boatswains 665 francs; carpenters and second boatswains 650 francs; able seamen 585 francs; ordinary seamen 515 francs; leading firemen and greasers 665 francs; firemen 635 francs; trimmers 585 francs; apprentices 305 francs; cabin boys 230 francs. This agreement has now lapsed, but the crews of the chief shipping companies, especially those working passenger lines, are still being paid on the 1929 basis. A number of companies running cargo vessels (colliers, tramp steamers, etc.) have applied reductions of 10 per cent., or even 20 per cent. in some cases. The rates of remuneration of officers are not covered by any collective agreement, and vary considerably according to the port, the company and the importance of the vessel. The larger navigation companies pay their officers from 18,000 to 20,000 francs a year at the beginning of their career, and their captains from 60,000 to 100,000 francs (exceptionally 120,000 francs in the case of mammoth liners). Engine officers receive between 15,000 and 80,000 francs and surgeons and pursers between 26,000 and 50,000 francs.

The new scale of monthly wages, noted in the preceding paragraph, corresponds to increases ranging from 8.3 to 9.6 per cent. for all except the last two grades (apprentices and cabin boys), who received increases of 7 per cent. only.

From about 1926 onwards at most of the principal French ports, the practice has become fairly general for employers and employed to conclude agreements providing for rates of wages for *dockers* to be revised periodically in proportion with the movements of the

cost of living index. Owing, however, to divergences of opinion respecting the relevancy or sincerity of the published index figures, strikes have been numerous, and recourse to arbitration has been necessary in several instances.

At *Havre* in February, 1931, a strike was declared, consequent upon the employers' proposal to reduce the basic wage from Fcs. 41.50 to Fcs. 39 in accordance with the newly published cost of living index. Subsequently, agreement was reached on the basis of an arbitral award dated the 10th April, 1931, the conditions of which still hold good in the main, although they have since been modified in some respects. Under this award, ordinary dockers received: for daywork, Fcs. 20.75 for shift of four hours; for nightwork, Fcs. 28 for the shift from 6.30 to 10.30 p.m., or Fcs. 88 for the night spell from 6.30 p.m. to 7.30 a.m. (with a break of one hour from 12.30 to 1.30 a.m.) for Sunday work, Fcs. 30 for the morning shift or Fcs. 90 for the all-night shift; for overtime, from Fcs. 7.50 to Fcs. 8.50 an hour; bonus ranging from 2.00 to 2.50 francs when handling cargoes liable to cause damage to garments. The scale for coal-heavers was slightly higher: daywork Fcs. 22.50 per shift; nightwork Fcs. 29.50 per shift or Fcs. 92.50 for the all-night spell; Sundays and holidays Fcs. 31.50 per shift; overtime from 7.50 to 9.00 francs an hour. In December, 1932, another strike occurred as a protest against the proposal to reduce the standard wage to Fcs. 39, in accordance with the showing of the latest cost of living index figure. Again the Mayor's arbitration was invoked, and he decided in favour of the Fcs. 39 rate. The general conditions of the April, 1931, award are maintained, and the workers undertake, in the event of a dispute, to submit the question to arbitration and to refrain from ceasing work pending a decision. At *Rouen* in December, 1932, a daily wage of Fcs. 32 was in force, and at *Dieppe* Fcs. 29. At *Nantes* an agreement concluded in February, 1931, for nine months, and since continued in operation by mutual consent, provides for a general rate of Fcs. 5 an hour, or Fcs. 40 for a day's work comprising two shifts of four hours with a break of two hours for the midday meal; Fcs. 7.50 an hour, or 50 per cent. extra for Sunday work or for overtime during the day; Fcs. 8, or 60 per cent. extra, for overtime at night during the week, or overtime worked on Sundays or bank holidays; Fcs. 9, or 80 per cent. extra, for overtime at night on Sundays or bank holidays; premiums of Fcs. 5 or Fcs. 7 when working at abnormal hours under a two- or three-shift system; Fcs. 4 daily when handling dirty or unhealthy cargoes; from two to five francs a day allowance when obliged to travel some distance to the place of work; and an elaborate system of special rates for piece-work. At *Dunkirk*, where an agreement in force since 1926 provides for half-yearly revisions of wages in accordance with the cost of living index figures, a strike begun in the middle of December, 1932, was settled on the 12th January, 1933, on the basis of an increase of 50 centimes (making the daily

wage Fcs. 39), with the retention of the existing overtime rate of Fcs. 10 an hour. From April to the 22nd July a reduced rate of Fcs. 38.50 became applicable. At the latter date, in accordance with the new cost of living index (598 as at May 25th) the rate should have been reduced to Fcs. 36, but the workers protested that this index figure, compiled for the Nord county as a whole, did not truly reflect conditions at Dunkirk. The employers admitted this, and were prepared to apply a new rate of Fcs. 38 daily. As the dockers would not accept the proposal, the employers reduced the rate to 36, 32 and 28 francs successively, *pari passu* with a decreasing output by the workers who were adopting a "ca' canny" policy. In mid-January, 1934, a new daily rate of Fcs. 38 was applied, with payment for overtime on a scale ranging from Fcs. 8 an hour upwards. At *La Rochelle* in February, 1931, dockers were agitating for a daily wage of Fcs. 40, plus the Fcs. 1.30 then being deducted from the men's pay as representing their contribution to the social insurance scheme. No information is available respecting the result of the agitation. At *Bordeaux* checkers, clerks and delivery men were in June, 1932, receiving Fcs. 39 daily, with Fcs. 58.50 for Sunday or bank holiday work, Fcs. 5 or Fcs. 7.25 an hour for overtime, variable rates for nightwork, according to the hour of the night, and an allowance ranging from Fcs. 6 to Fcs. 18 daily when travelling some distance to the place of work.

Wages in the Paris Area.—Paris and its suburbs form probably the greatest compact industrial area in France. The returns of the annual (October) enquiry conducted by the French Statistical Office and covering 21 skilled occupations in the Paris area show that the average daily wage for these trades continued to advance until October, 1930, remained practically stationary during the next year, and fell by 5 per cent. between October, 1931, and October, 1932; the relevant figures for the years 1928-32 being: 42.75, 49.56, 53.99, 53.83 and 50.72 francs, corresponding to index figures (basis, 100 in 1911) of 526, 620, 665, 662 and 625. Hourly rates of wages, while showing a similar tendency, declined by 4.2 per cent. between 1931 and 1932, the figures for 1928-32 being 5.25, 6.10, 6.64, 6.61 and 6.34 francs, corresponding to index figures of 600, 697, 759, 756 and 725. In the same years the cost of living index figures were 531, 565, 597, 605 and 516.

Included in the 21 trades covered by the enquiry are: printers-compositors (hourly wage Fcs. 6.70: index 837) and bookbinders (Fcs. 5.35: 892) tailors (Fcs. 5.75: 767); cabinet-makers (Fcs. 6.35: 706); smiths (Fcs. 6.10: 610); locksmiths (Fcs. 6.25: 694) and most branches of the building trades. The marked difference between the indices for the daily and the hourly earnings is due to the fact that in 1911 the ten-hour day or 59-hour week predominated for most occupations, whereas the eight-hour day is now the legal standard. In October, 1932, the highest daily earnings were those of stonecutters (Fcs. 74), ornamental sculptors

(Fcs. 60) and compositors (Fcs. 53.60); in 13 other trades earnings were from 48 to 51 francs. Since 1932 only slight variations have occurred, the cost of living index in November, 1933, showing also 516. Wages in the important metal-working trades, covering several hundred thousand workers, and in the building trades, are given separately in this section.

Wages in the Provinces.—A similar enquiry is conducted in the provinces in October of each year by the Statistical Office, through the *Conseils de Prud'hommes* (local organisations composed of representatives of employers and employed, which have among their functions the settlement of certain labour disputes) or mayors of county towns, where no such councils exist. The returns for October, 1932, show that the average daily earnings of male workers in 31 out of the 43 trades to which the enquiry extended, ranged from 30 to 35 francs; earnings in five trades being higher, and in seven trades lower, than these levels. The average hourly earnings of male workers declined by 2.2 per cent., and the daily earnings by 3.1 per cent., between October, 1931, and October, 1932. Hourly rates for the years 1928-32 were 3.45, 3.83, 4.08, 4.08 and 3.99 francs, corresponding to indices (base 100 in 1911) of 750, 832, 887, 887 and 868; and daily rates were 28.57, 31.34, 33.66, 33.60 and 32.54 francs, corresponding to indices of 619, 685, 730, 729 and 706. Female workers outside Paris belonging to seven trades (dressmakers, laundresses, milliners, embroiderers, lace, vest and shirt makers) were paid in October, 1932, an average of Fcs. 2.35 an hour (index 1,022) or Fcs. 19.03 a day (index 831), as against Fcs. 2.42 and 19.73 respectively in 1931, and Fcs. 1.97 and 16.06 in 1928. Between 1928 and 1932 the average daily wage of male workers in the trades reviewed increased by 13.9 per cent. and that of female workers by 18.5 per cent. The following table summarises the movements, fuller details of which will be found in the table contained in Appendix 3:—

AVERAGE DAILY AND HOURLY WAGES IN 43 MALE AND 7 FEMALE OCCUPATION IN FRENCH PROVINCIAL TOWNS IN OCTOBER 1911, 1928, 1930 (HIGHEST YEAR) AND 1932.

Average daily (francs)				Average hourly (francs)				Index figure 1932 (1911=100)					
1911	1928	1930	1932	1911	1928	1930	1932	Daily	Hourly				
M a l e s				4.61	28.57	33.66	32.54	0.46	3.45	4.08	3.99	706	868
F e m a l e s				2.29	16.06	19.79	19.03	0.23	1.97	2.42	2.35	831	1,022

Since 1932 only slight reductions have taken effect in most provincial centres.

Building Trades.—In the Paris area the average daily earnings in October, 1932, of painters were Fcs. 47, of glaziers Fcs. 48,

of joiners Fcs. 49, and of plumbers, masons, carpenters, slaters and locksmiths each Fcs. 50. These rates, which were from 4 to 9½ per cent. lower than in October, 1931, corresponded to indices of from 556 to 648 as compared with 1911. In towns outside Paris in October, 1932, the average daily wage of a plumber was Fcs. 32.85, of a mason Fcs. 34.54, of a carpenter Fcs. 34.93, corresponding to indices of 693, 719 and 692 respectively. At Havre carpenters, plumbers and painters were earning Fcs. 4.50 an hour and masons Fcs. 4.75, the wage rates in each case showing no change as compared with 1930, and increases of about 25 per cent. in comparison with 1926. At Toulon, after a brief strike in September, 1932, agreement was reached on the basis of a minimum wage of Fcs. 4.50 an hour for builders' labourers, hours of working to be restricted to eight save in special circumstances. Rates of overtime were fixed at Fcs. 6 an hour during the daytime and at Fcs. 9 after 8 p.m. or on Sundays. A bonus of Fcs. 14 for a day, or Fcs. 7 for half a day, is payable when the worker has to travel to a distance. At St. Malo the following new rates were fixed at the end of August, 1932: ordinary pay from Fcs. 3.40 to Fcs. 4.25 an hour, for a working day of eight hours: 50 per cent. extra for nightwork; 20 per cent. extra for overtime and Sunday work; plus family allowances. In general, no reductions in building trade wages have occurred up to January, 1934.

Coal Mining.*—In the coal industry, whose effectives have fallen from over 333,000 in 1927 to 243,000 at the end of December, 1933, wages underwent a very slight reduction in 1927 and 1928, but then resumed their upward course. As a result of three increases, granted in 1928 and 1929, amounting in all to from 19 to 20 per cent. according to the classes of workers, wages attained their maximum level in 1930. In that year the average daily earnings of underground workers in the industry were Fcs. 40.07, or 6.72 times the pre-war earnings of Fcs. 5.96; while the general average for all workers was Fcs. 36.99, or 6.35 times the 1913 rate of Fcs. 5.40. Three reductions were applied in May, 1931, February and April, 1932, the total decreases ranging from 12 to 14½ per cent. in different fields. Underground workers, therefore, received on an average Fcs. 38.71 daily in 1931 and Fcs. 35.72 in 1932, while the corresponding figures for underground and surface workers combined were Fcs. 35.72 and Fcs. 32.87 respectively: for the first nine months of 1933 underground workers averaged 35.36 francs, and underground and surface workers 32.54 francs. As the average daily output of the miner has continued to advance (from 840 kilogrammes in 1927 to 988, 1,042 and 1,153 kilogrammes in 1930-32), the cost of labour per metric ton of coal extracted has dropped by nearly 20 per cent.; the cost per ton in the years 1927 to 1932 was successively Fcs.

* See table in Appendix 7.

51.24, 47.82, 49.49, 53.34, 49.57, and 41.97. For the first nine months of 1933 daily output averaged 1,228 kilogrammes per miner, and the labour cost per ton 39.33 francs. There is little difference between the wages paid in the three principal coal-mining districts: for underground workers the daily earnings in 1932 averaged Fcs. 35.46 in the Nord, Fcs. 36.03 in the Pas-de-Calais and Frs. 36.35 in the Loire; and for all workers Fcs. 33.00 in the Nord, Fcs. 33.65 in the Pas-de-Calais and Frs. 32.34 in the Loire. These are the cash wages, including on the average about Fcs. 2 of family allowances. Other payments in kind, such as employers' contributions to mutual aid and pensions funds, equivalent to $7\frac{1}{4}$ per cent. of wages, coal furnished gratis or at very low prices, dwellings (supplied for the bulk of the workers at rents which in 1923-30 represented about thirty shillings yearly for a four-roomed dwelling) allotments, sports grounds, recreation halls, and so forth, correspond to an addition of perhaps 20 to 21 per cent. to the cash remuneration.

The wage reductions mentioned in the preceding paragraph were only put into operation after much opposition on the part of the workers. In the Nord and the Pas-de-Calais the companies' original proposals for a cut of 10 per cent. in two equal amounts on the 23rd March and the 1st May, 1931, evoked a threatened cessation of work. Mediation by the Prime Minister finally resulted in the acceptance of a reduction of 6 per cent., to be effected in two stages of 4 per cent. on the 1st April and 2 per cent. on the 16th May, 1931. Meanwhile reductions of from 7 to 8 per cent. had been enforced in other fields, and the workers in these areas demanded a revision when the terms of the settlement in the Nord were announced. Similarly in the early months of 1932 employers in the Nord and the Pas-de-Calais proposed to reduce wages by 12 points (equivalent to a reduction of 10 per cent.), but after much discussion and further threats of a strike, agreement was eventually reached on the basis of a cut of 9 points only (8 per cent.), a first reduction of six points coming into force on the 1st February and a second of three points on the 1st April, 1932. In the Loire basin a proposal to reduce wages by 10 per cent. as from 1st February, 1931, was modified, and a cut of 8 per cent. only applied as from the 16th February; while in the Gard a reduction of 7.5 per cent. (instead of 10 per cent. as originally proposed) was put into effect from the 1st February.

Metal-Working Trades—The employers' organisation known as the *Groupe des Industries métallurgiques, mécaniques et connexes de la région parisienne* conducts in January and February of each year an enquiry into rates of wages paid by over 1,000 engineering concerns in the Paris area, employing about 200,000 workers, or approximately one-fourth of the total number of workers employed in the metal-working industries

throughout the country. The results of the 1933 enquiry show that, contrary to what has occurred in most other industries, wages in the metal-working trades have increased since the corresponding months of 1932, thus partly offsetting the general reduction of about 7 per cent. recorded a year earlier. For the ten sub-headings included in the table given Appendix 4, the increases range from 0.2 per cent. for apprentices to 2.83 per cent. in the electrical branch, with an average increase of 1.65 per cent. As compared with the four quarters of 1930, when wages stood at the highest levels attained since the war, there has been a decline averaging about 6 per cent. for the whole of the workers comprised in the enquiry (the index figure having dropped from 734 to 687). The following table sets out the movement of average hourly rates of wages (weighted) for skilled, semi-skilled and unskilled workers in the first quarter of the years from 1922 to 1933: skilled workers are calculated to represent 50 per cent., semi-skilled 30 per cent. and unskilled 20 per cent. of the total wage-earners comprised.

HOURLY WAGES IN PARIS AREA, 1922-33

First quarter of	Skilled	Semi-skilled	Unskilled	Average
	Frs.	Frs.	Frs.	Frs.
1922	3.22	2.35	1.99	2.68
1923	3.49	2.51	2.01	2.90
1924	3.73	2.91	2.36	3.21
1925	3.92	3.27	2.49	3.83
1926	4.41	3.70	2.74	3.46
1927	5.14	4.23	3.21	4.48
1928	5.20	4.39	3.28	4.57
1929	5.73	4.85	3.68	5.06
1930	6.55	5.30	4.22	5.71
1931	6.66	5.40	4.24	5.80
1932	6.18	5.15	4.11	5.45
1933	6.34	5.15	4.09	5.53
Index figure, 1933 (1914 = 100)	640	730	773	693

These averages are exclusive of family allowances, which amount to Fcs. 30 monthly for the first child, Fcs. 40 for the second, Fcs. 50 for the third, and Fcs. 80 for each subsequent child. They are also exclusive of the maternity and child-nursing bonuses paid by the employers in this trade. The Family Allowances Clearing Fund of Paris and District group for the metal-working trades includes 2,600 firms with about 400,000 workers, with 102,000 families and 167,000 children within the age limits qualifying for allowance. It distributes annually 75 million francs in benefits.

In view of the importance of the metal trades in the Paris area it is of interest to indicate the average weighted earnings of

principal skilled classes in 1928 and 1933, with their respective index figures:—

Groups	1st Quarter, 1928		1st Quarter, 1933	
	Fr.	Index	Fr.	Index
Metallurgy (cold roller)	4.23	513	5.02	609
Smelting (hand moulder)	5.56	556	6.41	641
Foundry-work (moulder)	6.56	531	6.75	546
General engineering: motor-car parts, 55 per cent.; other branches, 45 per cent. (fitter)	5.05	505	6.39	639
Electrical construction (electrical fitter)	4.73	502	6.25	663
Metallic construction (fitter-erector) ...	4.54	514	6.21	703
Automobile construction: luxury cars, 35 per cent.; standard cars, 65 per cent. (sheet-metal worker)	5.81	581	6.65	665
Boilermaking (coppersmith)	5.64	564	6.75	675
Art bronze work (erector)	6.07	573	6.61	624
Hollowware (tinsmith)	5.15	515	6.33	633
Family allowances: an addition to the above hourly wages of				
For 1 child	0.144	590	0.144	590
For 2 children	0.337	614	0.337	614
For 5 children	1.344	738	1.344	738

The table in Appendix 3 gives details respecting a large number of separate classes of metal-workers. On the whole, the tendency is for the earnings of unskilled workers to approach more closely to those of skilled (in 1928 the proportion was 1 : 1.58, but by 1933 it had become 1 : 1.27); while those of semi-skilled workers display no very positive tendency, though in 1933 they had lost a little ground as compared with 1928. Apprentices receive a payment which rises in the second and third years. At present the hourly rates range from 79 centimes to Fr. 1.17 in the first year, rising in the third year to from Fr. 2.30 to 2.93; while the piece-work rates (paid in second and third years only) rise from a minimum of Fcs. 2.25 an hour to a maximum of Fcs. 3.48 an hour. Female semi-skilled workers in February, 1933, were receiving, according to trade, group averages ranging from Fcs. 3.37 to 4.93 an hour, or from Fcs. 4.06 to 5.19 an hour on piece-work; and unskilled an average of Fcs. 3.23 (piece-work 3.67).

No appreciable changes were recorded in 1933.

In the provinces wages have increased since 1928 by percentages ranging, in different occupations, from about 14 to 25 per cent.

Textile Industries.—Throughout the French textile industries, which at the 1926 census employed 834,000 persons, wages rates have displayed since the spring of 1931 a downward tendency, enforced mainly by the bad condition of the principal foreign markets for French woollens, silks, cottons, laces, nets,

embroideries, under and outer garments, rather than justified by any fall in the cost of living. By September, 1932, the reductions had attained on the average 10 per cent., and further cuts since put into effect probably represent at least another 5 per cent. These cuts have not been accepted without determined resistance on the part of the workers: thus in August, 1930, about 90,000 northern textile workers of various branches struck for six weeks, in May, 1931, a similar number were on strike for ten weeks against proposals to reduce wages by 10 per cent., and many more localised strikes subsequently occurred (*e.g.* in January, 1933, in Armentières, etc.). For the bulk of the workers actual earnings have decreased to an even greater degree owing to the scale of output having declined in greater measure.

In the producing branches of the industry, as distinct from the establishment or administrative branches (*e.g.* engineers, electricians, labourers, packers, vanmen, checkers, porters, overseers, clerical workers) the greater part of the work is done on a piece-rate basis. The diversity of rates applicable for the multitudinous varieties of fabrics and of garments, the lack of uniformity in the rates applied even in the same industrial centre for the same operations, and the general paucity of published information, render it particularly difficult to give truly representative figures respecting scales of pay in the textile industry. Witness to the diversity in earnings was borne by the French National Economic Council, in its report of April, 1932, which records that one of the workers' associations which attempted to draw up a uniform schedule for weavers' wages in its own area alone, was obliged to renounce the project in consequence of protests from the workers themselves!

The figures given in the succeeding paragraphs are in all cases, unless otherwise indicated, exclusive of family allowances, which are general in the larger establishments in the textile industries, and which, according to the National Economic Council, may be taken as equivalent to about 3.5 per cent. of the wages. The new rates in force since November, 1931, in the Roubaix-Tourcoing area may be given as typical of the general scale of payments: they are, for one child, Fc. 1 per working day; for two children, Fcs. 3; for three children, Fcs. 10; and an additional five francs for each child beyond the third. Nor do the wages figures include the numerous additional benefits in cash or in kind, which for a number of years past have been fairly generally provided by the larger establishments, such as cost of living bonuses, invalidity insurance, crèches, domestic economy classes, cheap dwellings, gardens or allotments, etc. The value of these additional payments was estimated by the National Economic Council in April, 1925. It would appear that further increases to the extent of about wages.

In the *woollen* industry (179,250 workers in 1926), wages rates in September, 1928, were 20 per cent. higher than in December, 1925. It would appear that further increases to the extent of about

17½ per cent. took place between 1928 and 1931, for in June of the latter year in the chief centre, which is located in and around Roubaix-Tourcoing, the hourly earnings of worsted spinners were Fcs. 5.20, those of wool spinners Fcs. 4.75, of weavers of woollen and worsted cloth Fcs. 4.00, of unskilled labourers Fcs. 3.25. Wool-combers at Roubaix-Tourcoing and at Halluin (Nord) were obliged to accept in January, 1932, a reduction of 10 per cent., which the employers declared to be necessary to bring rates into line with those practised in Alsace and elsewhere. In the Fourmies and Avesnes district in the northern frontier area spinners of combed wool (whose earnings were already only 50 per cent. of normal on account of the mills working only three days a week) had their cost of living bonus reduced from 38 to 31 per cent. of wages as from the 15th December, 1931, and further reduced to 28 per cent. as from the 16th January, 1932. At one of the smaller weaving centres in the Nord county, occupying 1,000 workers, an all-round reduction of 9½ per cent. was made as from the 18th January, 1932. Among woollen textile operatives in the Rouen district (Elbeuf and Louviers) hourly earnings in October, 1928, were: ravellers or tearers-up, Fcs. 1.50 to 1.70; carders (male and female), Fcs. 1.70 to 1.90; spinners (on piece-work), Fcs. 2.10 to 2.50; piecers, Fcs. 1.60 to 1.90; weavers (male and female, on piece-work), Fcs. 1.80 to 2.20; dyers, Fcs. 1.60 to 1.75; unskilled labourers, Fcs. 1.60 to 1.75. To the foregoing rates should be added a cost of living bonus of Fcs. 0.50 per hour and a coefficient of increase amounting to 20 per cent. of the combined total, as well as family allowances (where due) at the rate of 40, 80, 135, 200, 280 francs monthly for one to five children and 100 francs for each child beyond the fifth. By 1931 the rates had materially increased, spinners' wages then being reported as Fcs. 5 an hour and those of weavers as Fcs. 3.50. At Mazamet, to the east-north-east of Toulouse, daily earnings in September, 1928 were: spinners, on piece-work, an average of Fcs. 25; male combers Fcs. 20.75; unskilled labourers Fcs. 20.75; female weavers (piece-work) 13 to 18 francs; female combers Fcs. 14.25; female winders 12 to 13 francs. In 1930 male weavers' earnings were Fcs. 3.45 an hour, or Fcs. 27.60 for an eight-hours day.

In the *cotton* industry (in which there were 197,000 workers at the 1926 census, or, if the bleaching, finishing and dyeing branches be included, 244,000), wage reductions first appeared about December, 1931, when the Lille mill-owners announced a cut of 5 and 7 per cent. in the wages of male and of female workers. Cuts of from 4 to 8 per cent. were then put into effect in the Vosges, and similar reductions applied in Alsace and in Normandy. In 1933 many firms enforced reductions, and in February, 1934, the chief spinning area (northern) decided to make one of 6 and 8 per cent. for men and women respectively. The following rates may be taken as fairly representative of hourly earnings in the Roubaix-Turcoing district early in

1932: for male operatives, spinners (carding) Fcs. 4.75, spinners (combing) Fcs. 5.25; warpers Fcs. 4.45; sizers Fcs. 4.30; weavers Fcs. 3.70 to 3.90; unskilled labourers Fcs. 3.25; for female operatives, warpers Fcs. 4.00; weavers Fcs. 3.30 to 3.50; roughers Fcs. 3.00. These rates work out, for the skilled personnel, at from Fcs. 29.60 to 42.60 a day, or from 740 to 1,050 francs for a month of 25 working days; and for the unskilled labourer, at Fcs. 26 a day or 650 francs a month. These figures are exclusive of family allowances. In the Haut-Rhin county in Alsace in December, 1928, the hourly earnings of cotton spinners were from Fcs. 3.45 to 4.05, warpers Fcs. 2.60 to 3.20, weavers (male and female) Fcs. 3.20 to 3.80, bleachers Fcs. 2.75 to 2.95, cloth printing-machine operators Fcs. 3.70 to 4.30, unskilled men Fcs. 2.50 to 3.10, drawers (female) Fcs. 2.20 to 2.80. No appreciable changes appear to have taken place during the next two years, but early in 1931 reductions of 8 to 10 per cent. were applied. About 20 per cent. should be added to the foregoing figures for the cost of living bonus, family allowances and insurance. At Rouen, cotton operatives' wages in December, 1928, were about Fcs. 2.50 to 2.65 an hour. Cotton weavers at Armentières joined with the linen workers in January, 1933, in a strike against wages reductions, although the former were not affected by the dispute respecting the number of looms to be worked, as they had already accepted from 6 to 10. (See paragraph on wages in the linen industry.) A settlement was finally reached on the basis of a reduction of 5 per cent. in the scale of wages previously in operation. At Roanne and Thizy (where the customary daily or quarterly bonus had already been suppressed since December, 1931), a 5 per cent. reduction in existing scales of wages was announced in June, 1933, by employers in the spinning, weaving, finishing and dyeing branches.

In the days of the still high prosperity of the *silk-weaving* industry, that is until 1931, wages moved upwards. Thus, between August, 1928 and the end of 1929 they increased by from 15 to 20 per cent. in Lyons itself, and from 10 to 15 per cent. in the surrounding country towns; and in 1930 further increases averaged 10 per cent. Since the middle of 1931, however, reductions of at least corresponding magnitude have taken effect, bringing present scales of wages to the level of 1928. As the majority of workers are paid on the piece-work basis, actual earnings are far lower by reason of the reduced activity and the consequent short time. In 1928, however, the average earnings in Lyons area for a working day of eight hours were: warpers Fcs. 36; quillers Fcs. 33; weavers operating two looms Fcs. 36; pickers Fcs. 27; winders Fcs. 30 (outside the town Fcs. 25). In the *dyeing, printing and finishing branches* approximate monthly earnings at the same period were: dyers (skilled men) Fcs. 1,200; unskilled men Fcs. 675; hand block printers (men) Fcs. 1,800; finishers (men) Fcs. 1,000 (women) Fcs. 750. The majority of hand block printers

and silk finishers are on piece-work rates, and their earnings vary considerably.

Flax spinners' wages at Lille were reduced by 5 per cent. late in 1931, and a further 5 per cent. as from January, 1932. One firm enforced in December, 1931, a reduction of 50 centimes an hour (equivalent to 20 per cent.) but, as the hours of working were at the same time increased from 40 to 48 weekly, no decline in actual earnings resulted immediately from the change. The linen-weaving mills of Armentières were the scene, in the early part of 1933, of a prolonged struggle over a combined question of wages rates and more looms per worker, affecting 30 mills and 6,170 operatives. The task of working out the weekly pay has become extremely complicated as a result of successive adjustments since the War which have comprised the application of a coefficient to the old hourly rate, the addition of a temporary cost-of-living bonus, increase of the whole by a certain percentage, etc., and made accordingly a fixed hourly wage of 70 centimes, plus Fcs. 2.30 for cleaning looms on Saturday, an allowance for output, and a bonus of Fcs. 6.27 per 100 francs or fraction thereof. A further complication results from the fact that output is calculated per pick. The proposed new scale appears to be so intricate that only after it has been in operation for some time can its precise effect on the earnings of the operatives be definitely ascertained. The new wage-list is based on the centimetre instead of on the quarter-inch, different varieties in widths have been unified, and wages will be computed per 1,000 picks. According to one of the published estimates, a female winder who was able to make in a 48-hour week, 20 packets of average thread, would earn Fcs. 137.97 under the old scale and Fcs. 132.50 under the new, this being on a basis of Fcs. 6.60 the packet plus Fcs. 2.50 for cleaning. (Under the new scale the cost-of-living bonus is abolished.) If the weekly output were only 15 packets, the earnings would be Fcs. 113.42 under the old scale and Fcs. 100 under the new. A temporary settlement of the dispute was effected in April, 1933, workers returning at the old scale of wages less 5 per cent. It was arranged that for the next few months a weekly calculation would be made of the wages which each operative would have earned had the new scale per thousand picks been applied, and the scale will then be modified if necessary, to ensure that no worker's earnings are reduced by more than 5 per cent. Weavers will be required to work four semi-automatic looms only in the case of certain specified fabrics.

Printing Trades.—In the Paris region, where the printing trade attains considerable proportions, compositors were receiving on an average Fcs. 6.70 an hour in October, 1932, this being 25 centimes less than in 1931, 50 centimes less than in 1930, and 8.37 times the scale prevailing in 1911 (80 centimes). Binders' wages, which average Fcs. 5.35 an hour, have not undergone any change in the last three years, and are 8.92 times the pre-war rate of 60

centimes. Newspaper operators have a scale of wages quite distinct from that of men engaged in ordinary printing establishments. The new rates for newspaper men, in operation since the 1st February, 1933, are: linotype compositors, Fcs. 59.40 for day-work or Fcs. 70.20 for nightwork; overtime pay ranging from 11.35 to 17 francs an hour during the day and from 13.40 to 20.10 francs during the night. Men in charge of rotary presses receive (according to the different types of machine) from 54.55 to 63.75 francs for the day, or from 62.10 to 71.85 francs for the night, first assistants getting 51.30 francs (day) or 56.70 francs (night), second and subsequent assistants 47.25 and 52.65 francs respectively, and winders 43.20 and 47.25 francs respectively; while overtime is paid for at the rate of one-sixth of a day's pay for each hour. Stereotypers receive Fcs. 52.50 when on the day service, or Fcs. 60.50 when on the night service, for the production of a 6-page paper, with one franc extra for each additional folio, and overtime pay at the rate of one-fifth of a day's pay per hour; special bonuses are paid in addition, for extra editions, changes in pages, and so forth. There has been in force for a number of years, an agreement under which wages rates are subject to revision in February and August of each year, in accordance with the cost of living index. At Toulouse in December, 1930, in accordance with an agreement respecting the modification of wages rates in accordance with variations in the cost of living index, the following increased scales were applied; operators of composing machines (linotype operators and the like) Fcs. 48.50 daily; skilled typographic and lithographic workers, Fcs. 44; skilled female workers Fcs. 22. In the same month at Angers (Maine-et-Loire) the following new scales of daily wages were fixed: machine operators Fcs. 43; lithographers Fcs. 42.80; printers from Fcs. 40.50 to Fcs. 41; compositors Fcs. 40 (female compositors 78 per cent. of a man's wage); binders and trimmers Fcs. 40. An additional 33 per cent. is paid for overtime; workers are entitled to six days' annual leave with full pay after a year's service; and wages are to be revised in the future proportionately to any fluctuations in the cost of living index. According to the result of the October, 1932, enquiry conducted by the French Statistical Office, compositors at Toulouse were then receiving Fcs. 4.10 an hour. At Bordeaux also (where the general average of printers' wages, as recorded by the October, 1932, enquiry, was given as Fcs. 6.75 an hour), by an agreement entered into at the end of December, 1932, for a period of three years, wages rates are to be revised in January and July of each year in accordance with any variation in the cost of living index.

Paris Dressmaking Trades.—In the leading dressmaking houses the wages of good finishers were increased in 1928 by 8 per cent., from 770 to 832 Fcs. monthly, raised again in 1930 by 12½ per cent., to 936 Fcs., and lowered to Fcs. 866.60 in 1933. Those of medium finishers, after attaining in 1928-29 a maximum of Fcs. 776, were reduced in 1930 to Fcs. 748.40 and increased to Fcs.

758.35 in 1933. Wages of junior finishers and of apprentices followed a course similar to that of good finishers, and in October, 1933, stood at Fcs. 433.35 a month for the former and from 208 to 260 Fcs. for the latter. In the less important dressmaking and underwear establishments, wages reached their maximum in 1930 and remained unchanged until the autumn of 1931. Up to that time a sliding scale had been in force, which provided for a modification in wages whenever the official index figure of the cost of living had risen or fallen 25 points since the last revision. In November, 1931, a new agreement was concluded between the employers' and the workers' associations, whereby in future wages would vary with every change of five points in the cost of living index. Between November, 1931, and October, 1932, there were successive reductions amounting in all to about 12 per cent., followed in the ensuing year by a very slight increase for some categories, so that in October, 1933, the scales in force for the principal categories of workers were: first hands Fcs. 194.40 weekly; second hands Fcs. 139.20; third hands Fcs. 93; apprentices from Fcs. 46.25 to Fcs. 55.40. In Appendix 5 will be found a table giving, for both grades of establishments, the variations that have occurred year by year since 1925. One of the clauses in the agreement above-mentioned is to the effect that workers, after a year in the employ of one firm, shall be entitled to at least one week's annual holiday with full pay.

Agricultural.—Although the numerical importance of the agricultural element in the population of France has declined somewhat since the war, it still constitutes the largest single occupational group: 38.6 per cent. of the occupied or 20.1 per cent. of the total population at the census of 1926. Owing to the smallness of the ordinary holdings, the number of owners or independently working occupiers is larger by far than that of wage-earners, the former numbering 5,725,735 at the census of 1926 and the latter 2,234,190. The results of the latest (1932) enquiry into agricultural workers' wages show that, on the whole, they have risen in the last few years to about the same extent as those in other occupations. The average daily earnings of farm labourers in 1930 were 52 per cent. higher than in 1924, or 9.2 per cent. higher than in 1928 (22.50 francs as compared with 14.80 and 20.60 francs). Wages of male farm servants and those of waggoners advanced by 10.1 per cent. between 1928 and 1930 (from 18.94 and 21.56 francs to 20.85 and 23.73 francs respectively), and those of female farm-workers and servants by 8.5 per cent. (from 14.20 and 13.58 francs to 15.41 and 14.74 francs respectively). From 1930 to 1932 there was a small drop in the general level of agricultural wages, which, however, attained only a fraction of one per cent. save in the case of waggoners, whose wages were reduced by 3.1 per cent. to Fcs. 23.00. The daily rates in 1932 for the other four categories of workers mentioned above were: 22.35, 20.75, 15.38 and 14.72 francs respectively.

A return of average and minimum agricultural wages is compiled biennially by the Prefect of each county to serve as a basis for the calculation of compensation under the Agricultural Workers' Accident Compensation Law of the 15th December, 1922. These county averages of wages, which include remuneration in kind, show wide variations according to the geographical situation of the county (e.g., whether in Brittany, Normandy, Vendée, Languedoc or Limousin), character of occupation, proximity to coal or iron mines or to great textile centres, or large cities. Thus, in the immediate vicinity of Paris the average annual wage of a day labourer was fixed in June, 1932, at 14,050 francs inclusive of estimated value of all payments in kind; in the Pyrénées-Orientales (chief town Perpignan) it was 7,840 francs; in the Alpes-Maritimes (chief town Nice) it ranged from 7,540 to 7,830 francs. On the other hand, in counties where there is little industrial activity (e.g., Loire-Inférieure, Gers) it was 4,500 francs or less, descending even as low as 4,000 francs in Ariège and the Hautes-Alpes. Shepherds' earnings appear to vary more widely than in previous years: in about one-third of the 90 counties they are between 6,500 and 8,500 francs, but in 12 counties they exceed 9,000 (the Oise, with 10,500, and the Hérault, with 10,412 francs, being the highest), and in a dozen others they are 5,000 francs or less.

The following table gives the annual wages for male and female farm labourers and farm servants and for male carters, in several counties near Paris and in other counties having important industrial towns or interests, or large centres of population. It may be noted that in 1926 (census year) the proportion of female to male farm workers was shown to be appreciably lower than at the previous census: women forming only 28.4 per cent. of the total, whereas they previously formed 35 per cent.

AGRICULTURAL WAGES IN 1932.

(Francs per annum, including board and lodging).

County	Farm Labourer		Farm Servant		Carter
	Male	Female	Male	Female	Male
Paris Region :					
Seine	9,750	8,250	—	—	IX,250
	to				to
	14,050				16,750
Seine-et-Oise	6,000	3,750	6,600	4,500	7,680
Seine-et-Marne	7,500	4,500	7,812	4,774	8,680
Oise	6,000	4,125	6,720	5,400	7,250
					to
					8,200
Eure-et-Loir	7,000	—	6,800	6,000	7,200
					to
					8,000
Nord (Lille)	6,000	4,200	7,200	5,040	7,500
Somme (Amiens)	6,000	3,625	6,400	4,200	7,620
Seine-Inférieure (Rouen)	6,000	4,500	6,000	5,000	7,000
Calvados (Caen)	7,200	5,400	6,480	6,840	—
Ille-et-Vilaine (Rennes)	5,400	4,800	6,000	4,500	6,000
	to	to	to	to	to
	6,600	5,400	6,400	5,100	6,600
Indre-et-Loire (Tours)	6,160	4,200	6,400	4,400	6,880
Gironde (Bordeaux)	5,500	2,500	6,000	3,300	6,000
Indre (Chateauroux)	6,985	4,490	6,825	6,135	7,620
Rhône (Lyons)	6,250	5,000	6,000	4,500	—
Pyrénées-Orientales (Perpignan)	7,840	4,760	7,400	5,300	8,400
Haute-Garonne (Toulouse)	4,800	3,300	5,800	3,600	5,900
Alpes-Maritimes (Nice)	7,450	3,500	6,200	4,160	9,520
	to				
	7,830				

In considering these wages it will be borne in mind that the farm servants and farm labourers have different lengths of working periods. The former appear to have from 300 to 320, the latter from 260 to 300, working days in the year. The estimated values of the payments in kind for lodging and food vary widely: lodging for the above men workers is rated usually at anything between 5,000 and 875 francs per annum in the Paris area or near other great centres, and elsewhere at from 300 to 400 francs. The corresponding food values are, for the former group, from 9 to 20.50 francs a day, and for the latter, from 8.50 to 14 francs, but there is too wide a diversity for these to be taken as representative figures. On the whole, wages have advanced very considerably near the great cities, but have undergone little modification in many rural areas.

IV. FAMILY ALLOWANCES

Origin and Growth.—In the recent social history of France probably the most signal innovation in the relations between employers and employed has been the widespread introduction of family allowances. These allowances are payments, additional to wages, made solely on the ground of the family charges of employed persons, without any precise relation to services rendered. The practice, which originated in the great war, was subsequently developed to an ever increasing extent by most employers in several great industries (e.g. coal, mining, metallurgy, engineering, transport, building, printing, textiles, etc.). The action of the State in this respect rather precipitated its widespread application. The first Act providing unearned benefits solely on the score of family burdens was that of April, 1917, under which married permanent State employees (clerical as well as manual workers) with remuneration not exceeding 3,600 francs and with one child, and those with not more than 4,500 francs, in the case of two or more children, were to receive 100 francs per child. In 1918, maximum earning limitations were suppressed, and all State employees became entitled in accordance with the number of their children of eligible age. The actual rates of benefits payable per child have been frequently altered by legislation. In 1923, the annual rates were 604, 806, 1,210, and 1,411 francs for one, two, three, four (and for each above four) children, so that all State employees with five young children were entitled to receive an annual allowance of 5,442 francs. Since that date one alteration (December, 1929) has been made, raising the above rates to 660, 960, 1,560 and 1,920 francs, and thus making the annual allowance for five children 7,020 francs. By the Act of 1924 the pension or superannuation allowances of State employees are furthermore raised by 10 per cent. if the beneficiaries have reared 3 children up to the age of 16, with 15 per cent. for each further child so reared: and if, when pensioned, they are rearing children under 16, they are entitled to the same benefits for family burdens as if they were still in active service.

From the State viewpoint this action was in conformity with the public policy of promoting natality, which has been legislatively manifested in various directions, such as in the measures of general application relating to aid to deserving families, maternity allowances, natality bounties, or in those providing the heads of large families with special benefits under old age pensions and industrial accidents acts, under income-tax, and legacy and succession duties, or for housing, acquisition of property, railway travelling, military service. As the State employees with assimilated persons (county, municipal, railway employees) number over one and a quarter million persons, their example no doubt strongly influenced the rate of extension of the practice, which

was favoured in the years 1919-1930 by the intense shortage of industrial labour and by the resultant keen competition therefor, as well as the public employees of all classes, so that the approximation with employers that greater stability of staff would be secured by the employment of the largest possible number of married persons with children.

Made Obligatory by Act of 1932.—The general adoption of the principle was gradually advocated in many quarters; and in March, 1932 an Act was passed making compulsory the payment of family allowances by all firms or persons in industry, commerce, agriculture, or in the liberal professions, who regularly employ any staff otherwise than upon commission. Prior to the passing of this Act some 5 million employed persons of all kinds, including the State employees, are stated to have been in receipt of the allowances. Since 1920 the increase had certainly been noteworthy for the non-State or private employees; the central organisation, which then grouped 56 benefit funds representing about half a million employed and distributing 65 million francs, reported in July, 1932, that it then grouped 245 funds with 1,850,000 adherents which distributed annually 380 million francs. To this total must be added the numerous firms that paid allowances without being members of an organisation for that purpose, as well as the public employees of all classes, so that the approximation of five million beneficiaries would seem not too wide of the mark. It is anticipated that, as a result of the decrees published, or those to be published in 1934, about three million more employed persons will become beneficiaries under the Act of 1932.

Application to Certain Basic Trades in 1933-34.—The Act was not brought into operation until the 1st October, 1933, when it was applied by decree to the textile, building, mining, metallurgical, metal-working, and chemical industries in about twenty counties. Decrees relating to most, if not to all of the remaining counties are expected to appear in 1934: in these trades it was already in general application under private action. In February, 1934, the Act was extended to numerous branches of the food, paper, printing, cardboard, rubber, leather, timber, stone-working, ceramic, transport and other industries; and as from the 1st April to several branches of the clothing industries, to unskilled workers, packers and warehousemen. Its application to banks and insurance companies is fixed for May 25th; and to cabinet-making, musical instruments of wood, fancy goods, brushware trades and to law-courts employees for October 1st. It was also announced that other decrees were in preparation for applying the Act to a number of wholesale and other trades.

General Regulations.—Payment is due in respect of all children supported by the employed person, who have not passed

the school-leaving age (normally 13 years), or up to the age of 16 in the case of apprentices or children pursuing their studies, or debarred by illness or infirmity from earning. The Minister of Labour is required to fix by public decree for each county minimum scales, which may be flat rates applicable to all employments therein or specific rates for specific occupations. Numerous decrees promulgated in August, 1933, fixed the minimum rates. In the Seine County, (Paris), for which they are the highest, they are: one child, Fcs. 1.20 daily, or Fcs. 30 monthly; two, Fcs. 2.80 or Fcs. 70; three, Fcs. 4.80 or Fcs. 120; for each after the third child, Fcs. 3.20 or Fcs. 80. They are lowest in the Cantal County: Fcs. 0.60, 1.20, 2.80 and 1.60 daily, or Fcs. 15, 30, 70, and 40 monthly. These allowances are far lower than the scales already paid by the State, railways, and various groups in the mining, metallurgical, textile and other trades to which they were made statutorily applicable. (Vide chapter on Wages in this Report). Certain groups of employers already paying family allowances on a higher scale than the statutory minima, have already taken steps to reduce former rates. Thus the important Association of Textile Manufacturers of the Roubaix-Tourcoing district put into effect as from the 1st March, 1933, reduced scales as follows (former rates in parenthesis). One child, Fc. 1. (Fc. 1); two, Fcs. 2.40 (Fcs. 3.50); three, Fcs. 4.40 (Fcs. 10); four, and each subsequent, Fcs. 3.20 (Fcs. 5); at the same time they introduced a distinction between French and foreign (non-resident in France) staff by basing payments to the latter on the value of Belgian currency, or about 30 per cent. lower than the allowances to French workers. Other employers, e.g., in the building, iron and steel, engineering trades, have similarly revised their scales in a downward direction. This action was not solely dictated by the effect of the introduction of the obligatory allowance: it was due to the general trade depression, causing very frequently the reduction of wages proper, and in some cases that of family allowances only, without interference with wages rates.

Machinery.—In contrast with the course adopted for the execution of the Social Insurance Law, the State has not set up any new State organisation or separate machinery for the administration of family allowances. The existing funds, set up by employers for controlling and ensuring the regular payment of the due allowances to their employed, are left untouched. Employers not already affiliated to such funds must, however, either join an existing approved organisation of this type, or set up a new one, to be approved by the Ministry. Failure to comply is punishable by fine.

IV.—COST OF LIVING

I. GENERAL SUMMARY

The optimistic expectations of many who predicted that the

legal stabilisation of the franc, in June, 1928, would quickly be followed by a general scaling down of prices, were not altogether realised. Since the panic period of 1926, when (in July) the general index of wholesale prices attained the height of 854, prices moved rapidly downwards until, in October, 1927, they reached their lowest point of 600; but then followed an upward trend, continuing almost unbroken until in March, 1929, a level of 653 points was reached. From that date the movement has been almost continuously downward; and in December, 1933, the general index stood at 389 points. Retail prices, on the other hand, continued to rise for 2½ years after the passing of the stabilisation law. In September, 1930, they passed the previous record figure of 628 attained in November, 1926, and in February, 1931, attained a level of 650. Since that date there had been an almost continuous decrease until July, 1933 (467), but it advanced between August and December to 514.

The tables in the following pages show that, whereas the wholesale prices index figure has fallen by 54½ per cent. since the highest point reached in 1926, the retail index has fallen by only 18 per cent., and that with a time-lag of several years after the effective decline in wholesale prices. This tardiness in transferring to the consumer the benefit of reductions occurring at the point of production or of importation, has been the subject of so much unfavourable comment that a Government committee was nominated to enquire into the reasons for the continued high cost of living, and to suggest measures for combating any unjustifiable maintenance of prices that might exist. The general trend of the index figures respecting the cost of living of a working-class family of four persons (father, mother and two young children) would appear to corroborate the allegations that there is an unduly long delay in passing on to the consumer the benefit of reductions in wholesale prices. In the fourth quarter of 1926 the cost of living index stood at 545, being the highest level hitherto attained. A year later it had fallen to 498, but in 1928, 1929 and 1930 it rose again by 33, 34 and 32 points, respectively, although wholesale prices had been rapidly declining during the greater part of that period. From the commencement of 1931 a definitely downward trend became apparent, and during that year a fall of 66 points was noted in the index figure. In point of fact, owing to the limited number of commodities whose prices are taken into account, even this figure does not tell the whole story. The food element is considered to represent 60 per cent. of the total family expenditure. The prices of only 11 foods are taken, namely bread, fresh meat, bacon, butter, eggs, milk, sugar, cheese, potatoes, beans and edible oil. Many other foods (e.g., wine, beer, coffee, chicory, fish, fresh and preserved, jams, fruits, pastes, salads, cocoa, tea, most of which figure largely in the menu of the ordinary working-class family) are disregarded, and it is among those omitted foods that some of the largest increases in price were to be found (cf. wholesale indices for

coffee and cocoa). In the case of rent (which is assumed to comprise 12 per cent.* of the total expenditure), the index figure takes account only of the increases sanctioned by the successive post-war rent restriction laws, and it is manifestly inadequate as regards the constantly increasing number of families occupying dwellings erected since the war, to which these restrictions are not applicable, and the many who, for divers reasons, find it more convenient to live in hotels. In the paragraphs that follow, will be found a note on the steps taken to ensure a greater degree of accuracy in the index figures and to provide a closer watch upon the relative movements of wholesale and retail prices.

II. NEW SERIES OF INDEX FIGURES FOR PRICES

Radical changes were made in 1931 in the method of calculating both wholesale and retail prices indices. The index figures published hitherto related to a comparatively small number of foods and raw materials (45 articles for the wholesale and 13 for the retail index), most of which were subject to little or perhaps to no taxation, and neither beverages nor many essential articles of household consumption were included. It had long been recognised that the practical value of the published indices as elements in the computation of real variations in the cost of living was greatly diminished, both on account of the limited number of commodities considered and because of the lack of uniformity in the practice of the local commissions upon whom devolved the task of recording prices variations. Index figures, since they were first instituted (and especially since the war), have acquired greatly enhanced importance as an element influencing the determination of wage changes; and it happened in many cases that the deliberations of local commissions degenerated into a sort of tug-of-war, in which officials, representatives of employers, and representatives of wage-earners, instead of remaining impartial recorders of ascertainable facts, appeared to conceive their function to be that of trying to ensure the adoption of such figures as would be most favourable to the interests which they represented. A committee of enquiry was set up in 1930 by the Ministry for Commerce and, following upon its recommendations, new instructions were issued in 1931 to the local commissions concerned. There are now published two sets of wholesale indices, four sets of retail indices, and two sets of cost of living indices, four of them having as basis the prices ruling in July, 1914, and the other four the average of prices in 1930. Three of them (one in each category) continue for the time being to be calculated on the old basis (July, 1914=100), in order to preserve a continuity of records for purposes of comparison; and in the case of the other five, the number of commodities taken into consideration is considerably extended and steps have been taken to ensure a greater degree of uniformity among the returns from different parts of the country.

* Altered to 10 per cent. under the new system based on 1930 prices: but here it is the index on 1914 basis that is under discussion.

Wholesale Prices.—From the table printed below, it is possible to observe the variations in the monthly official index of wholesale prices from 1928 to December, 1933, calculated according to the method employed since 1920. This index is based upon the price movements of 20 foods and 25 industrial materials, 29 of which are home products and 16 imported. The foods consist of: (a) 8 vegetable products—wheat, flour, rye, barley, oats, maize, potatoes, rice; (b) 8 animal products—beef (two qualities), mutton (two qualities), pork (best quality), salted meat, butter, cheese; and (c) 4 miscellaneous foods—sugar (two kinds, raw and refined), coffee, cocoa; and industrial materials are subdivided into: (a) 7 minerals and metals—pig iron, iron, copper, tin, lead, zinc, coal; (b) 6 textiles—cotton, flax, hemp, jute, wool, silk; (c) 12 miscellaneous—salted hides, skins, tallow, colza oil, linseed oil, alcohol, paraffin oil, carbonate of soda, nitrate of soda, benzol, timber and rubber. The 16 imported commodities included in the above groups are: maize, rice, coffee, cocoa, copper, tin, lead, zinc, cotton, flax, jute, wool, ox-hides, refined paraffin, nitrate of soda, rubber.

[TABLE]

INDEX OF WHOLESALE PRICES.

(Base, 100 in July, 1914).

	Number of commodities	Index Figures								
		Averages			June 1931	Dec. 1931	June 1932	Dec. 1932	June 1933	Dec. 1933
		1928	1929	1930						
General Index	45	634	623	543	477	413	408	390	396	389
National products	29	619	635	591	539	471	475	444	433	436
Imported "	16	660	602	458	365	308	287	293	329	304
Foodstuffs										
Combined index	20	587	584	528	529	463	480	430	416	415
Vegetable products	8	604	568	466	537	475	479	359	390	360
Animal "	8	537	599	599	539	448	480	492	423	448
Sugar, coffee, cocoa	4	662	585	503	482	466	483	450	462	465
Raw Materials										
Combined figure	25	675	658	558	433	370	346	356	379	367
Minerals and Metals	7	592	620	524	408	367	325	335	383	362
Textiles	6	758	689	473	332	264	239	254	286	263
Miscellaneous	12	676	662	630	509	436	423	430	433	433

During the 2½ years from January, 1927, to March, 1929, the general index of wholesale prices showed no definite tendency, but fluctuated between 608 and 653; the latter level, attained in March, 1929, being the highest point touched since the end of 1926. A definitely downward tendency then set in, and for over three years continued without interruption (except during the first five months of 1932, when there was a jump of 14 points): in March, 1933, the index figure stood at 385, or substantially lower than at any time since 1922, when the average for the year was 337. As compared with the average of 1928, wholesale prices in December, 1931, and December, 1932, showed a reduction of 35 and 38.5 per cent. respectively. The great decline in prices of important foreign commodities such as wool, cotton, copper, rubber, coffee, etc., is probably the chief factor in this fall in the index figure. Up to March, 1929, when the above-indicated highest point was reached, the index for imported products was consistently higher than that for home-produced commodities (665 against 647 in March, 1929), but from that time onwards, starting with a sudden fall of 40 points, it has fallen the more rapidly of the two, there being sometimes a margin of over 200 points between them. In December, 1933, the index for imports was 304, as against 436 for national products; and the margin would doubtless have been more pronounced, but for the substantial increases in customs duties, imposts or quotas on foreign goods. Textiles show the greatest extremes, touching 775 in January, 1929, and falling as low as 239 in June, 1932, though there has since been a persistent increase, and being 263 in December, 1933. In the foodstuffs group, while the index for vegetables has kept pace with the generally downward trend of prices, that for meats (in which prices of home products only are taken into consideration) remains at a high level.

As distinct from the foregoing index, which is simply an arithmetical coefficient reflecting actual price fluctuations, the new wholesale index figure is intended to serve as an indicator of variations in the margin between wholesale and retail prices, and thus to reveal any tendency on the part of the dealers or intermediaries to extract excessive profits from the consumer. Closely related to the new retail index figure based on the average of prices ruling in 1930 (see succeeding paragraph), it is a weighted index taking into account the same quantities of the same commodities, save that their number is reduced from 67 (retail) to 57 (wholesale) by reason of the fact that certain commodities (notably in the case of meat), counted at separate articles for retail purposes, form parts of one and the same article when wholesale transactions are in question. Current prices are communicated monthly to the Ministry for Commerce by the association of wholesale dealers in food stuffs, and appropriate percentage additions are made to allow for the cost of delivery to the retail shop, excise and octroi duties and so forth. The returns for December, 1933, showed that wholesale prices had then fallen by 5.2 per cent. as compared with

December, 1931, but were almost identical with those of December, 1932. The retail index, after remaining higher than the wholesale until September, 1932, has since kept within 0.1 per cent. of the wholesale index (see second table on page 77).

Retail Prices.—The retail index figures now published are four in number, consisting of:—

- (a) that published since 1920, based upon prices in July, 1914, and taking into account the cost of 13 commodities. It is proposed eventually to suppress this index and to replace it by
- (b) an index figure also based upon 1914 figures, but taking into account the prices of 29 articles of diet; and
- (c) a similar index relating to 34 articles. This list includes the same 29 commodities as in (b), with the addition of the five items coal, paraffin, gas, electricity, soap.
- (d) A set of index figures based on the average of prices in 1930, and incorporating 55 articles of diet, 4 of heating and lighting, 17 of clothing and underwear, and 10 of household use.

The *old index figure* of retail prices (July, 1914, =100) is based on 13 commodities only, 11 of these being foods. It includes bread, fresh meat, bacon, butter, eggs, milk, sugar, cheese, potatoes, beans, edible oil, paraffin and methylated spirits. Unlike the index of wholesale prices, it does not represent an arithmetical average, but is a weighted index figure taking into account the cost of fixed quantities of commodities supposed to represent a normal annual consumption by a family of four persons (e.g., 700 kilogrammes of bread, 200 of meat, 250 of potatoes, 300 litres of milk, 20 dozen eggs, 20 kilogrammes apiece of butter, bacon, cheese, sugar, etc.). The list includes three commodities omitted from the wholesale food group: eggs, milk and haricot beans. For the purpose of the indication of general retail prices the list has long been recognised to be scanty, for it omits the ordinary beverages like coffee, tea and wine, and the cost of clothing, footwear, locomotion, fuel, lighting; and it is for this reason that the new index figures mentioned in (b), (c) and (d) have been introduced. From the following table it will be seen that there was a general rise in retail prices from the beginning of 1928 to the middle of 1929, then a downward tendency for a few months, followed by further rises to a maximum of 650 points in February, 1931. Since that date the decline in prices was uninterrupted until July, 1933 (467): in December, 1933, the index figure stood at 514. The average for the year 1932 was 536, corresponding to a fall of 4½ per cent. compared with 1926-27, of 2½ per cent. compared with 1928, and of 12½ per cent. compared with 1929-31: for 1933 the average was 490.

INDEX FIGURES OF RETAIL PRICES IN PARIS.

(Base, 100 in July, 1914).

Month	1926	1927	1928	1929	1930	1931	1932	1933
January ...	480	—	530	599	609	649	561	504
February ...	—	—	522	602	598	650	565	500
March ...	—	581	524	607	591	647	564	495
April ...	—	—	532	615	586	641	566	487
May ...	—	—	546	626	590	634	562	479
June ...	—	580	557	624	593	632	548	476
July ...	574	—	547	606	601	615	534	467
August ...	—	—	540	606	626	595	511	475
September ...	590	532	544	602	637	588	502	481
October ...	—	—	566	612	637	571	501	499
November ...	628	—	585	618	647	555	510	508
December ...	599	523	596	614	649	557	505	514
Averages ...	554	556	549	611	614	611	536	490

The list of commodities serving as basis for the new retail index figures mentioned under (b) and (c) differs in the following respects from the list of 13 articles formerly taken into consideration:—

- (i) Meat and bacon, formerly counting as two items only, are now subdivided into eight, comprising two kinds of beef, two of veal, two of mutton and two of pork;
- (ii) Fish, flour, alimentary pastes (macaroni, etc.), rice, lentils, dried peas, lard, wine, coffee, chicory, chocolate, and salt, are added;
- (iii) While paraffin is retained, methylated spirits are deleted from the list, and coal, gas, electricity and soap added.

Of the three new sets of retail index figures introduced in 1931, the most comprehensive is that which is based upon the average of prices prevailing in 1930 for specified quantities of 67 foodstuffs, considered to represent the average monthly consumption of a person resident in Paris. They include:—

Beef (4 kinds) ...	3.6 lb.	Bread ...	26.5 lb.
Veal (4 ") ...	1.9 "	Butter ...	1.3 "
Mutton (4 ") ...	1.4 "	Sugar ...	2.8 "
Pork (2 ") ...	10 oz.	Milk ...	17.6 pints
Rabbit ...	7 "	Wine (red and white) ...	21.1 "
Chicken ...	8.8 "	Beer ...	3 bottles
Fish (5 kinds) ...	2 lb.	Eggs ...	11 units
Potatoes ...	14.3 "	Macaroni, etc. ...	14.1 oz.
Other vegetables		Rice ...	10.5 "
(9 kinds) ...	Various units	Flour ...	8.8 "
Fruit (3 kinds) ...	" "	Coffee ...	8.8 "
Dried or preserved		Chocolate ...	8.8 "
vegetables ...	2.5 lb.		
Pork-butcher's wares			
(4 kinds) ...	1 "		

together with specified quantities of cheese, jam, prunes, canned peas, sardines, edible oil, vinegar and salt. The expendi-

ture that would have been involved for the purchase of these quantities of foods each month during 1930 was calculated (seasonal fluctuations being corrected by appropriate substitutions—*e.g.* one sort of salad for another, peaches for apples, and so on), and the average of the theoretical monthly expenditures thus computed was adopted as the new standard for the retail prices index. As already mentioned similar quantities of the same commodities are taken for the purpose of the new wholesale prices index. The general level of retail prices at the commencement of 1931 was eight per cent. higher than the average of 1930. It declined to 87.4 per cent. in December, 1931, rose again to 94.9 per cent. in the following June and showed a declining tendency till August, 1933 (78.6). By December, 1933, it had risen gradually to 83.5.

Comparability of French Retail and Wholesale Indices.—The old index figures based upon the prices ruling in July, 1914, did not provide any acceptable basis for comparisons between wholesale and retail prices, as they did not relate to the same commodities, nor were the methods of their calculation the same. This is no longer the case as regards the new series of index figures based upon 1930 prices, as special endeavour has been made to ensure that like quantities of like commodities shall be considered, both for the wholesale and for the retail index. They are still, however, open to the reproach that many items of unavoidable everyday use are excluded from the list of commodities whose prices are recorded.

III. COST OF LIVING INDEX

The expenditure of a working-class family of four persons forms the basis of a third index, compiled by local regional committees. The movements of the index relating to Paris will be gathered from the following table :—

COST OF LIVING IN PARIS.

Index figures for a working-class family of four persons
(Base, 100 in 1914).

Period	Food	Heating and Lighting	Rent	Cloth- ing	Miscel- laneous	Com- bined figure
1924, average ...	379	359	200	428	440	369
1925, " ...	418	372	210	464	470	400
1926, " ...	529	482	243	588	564	505
1927, " ...	536	550	265	569	593	514
1928, " ...	539	519	287	586	590	519
1929, " ...	583	501	325	602	602	556
1930, " ...	606	622	350	622	625	581
1931, " ...	611	614	355	535	605	569
1932, " ...	548	609	368	499	589	526
1930—						
1st quarter ...	579	633	350	626	625	565
2nd " ...	593	607	350	626	625	572
3rd " ...	626	615	350	626	625	592
4th " ...	636	633	350	610	625	597
1931—						
1st " ...	641	633	350	554	610	590
2nd " ...	642	596	350	552	610	589
3rd " ...	607	609	360	526	600	565
4th " ...	555	619	360	508	600	531
1932—						
1st " ...	561	620	360	499	600	531
2nd " ...	567	592	360	499	590	535
3rd " ...	534	606	375	499	575	517
4th " ...	531	617	375	499	590	516
1933—						
1st " ...	542	617	375	499	590	523
2nd " ...	532	585	375	499	590	516
3rd " ...	530	600	375	504	590	516
4th " ...	548	613	375	504	580	526

Experience has shown that the rather wide degree of latitude allowed to the numerous regional committees upon whom devolved the duty of computing the local index figures, resulted in an utter lack of comparability between the indices for different parts of the country, and sometimes in the announcement of figures which were incredible, if not demonstrably inaccurate. For instance, at the end of 1930 the index figure for the Vosges county was given as 500 and that of the Hautes-Pyrénées county as 800, whereas it could not be admitted that there existed so wide a margin of difference in the actual cost of living in those parts.

The Central Committee, therefore, in 1931, substituted a new system, based upon the prices of 1930, and coming more or less into line with the new wholesale and retail prices indices. A new standard type of "family budget" was drawn up, from which the local

committees are now permitted to deviate only within certain narrow limits clearly defined. There are two small changes in the proportionate allocation of the family's total expenditure; the percentages allocated to food (60 per cent.), to fuel and lighting (5 per cent.) and to clothing (15 per cent.) remain unchanged; but that for lodging is taken as 10 per cent. instead of 12 per cent. as formerly, and that for miscellaneous expenditure as 10 per cent. instead of 8 per cent. As far as possible the nature and the quantities of the commodities whose prices enter into the calculation of the index are the same throughout the country, though a certain amount of variation is necessary to allow for the different manner of living in different parts. The local committees may only introduce small modifications, such as the proportions, within the 5 per cent. allotted to fuel and lighting, to be allowed for coal, wood, gas, paraffin, electricity; or, in the allocation for meat, the relative quantities of beef, veal, mutton, pork, etc. The local committees compulsorily draw up an index figure twice a year, in the first fortnight of May and November; and may, if they choose, draw up supplementary indices in February and August. A few of the committees continue to draw up an index figure on the old 1914 basis as well as the new one, but they are rapidly dwindling in number, and by March, 1933, had become reduced to Paris, Dijon, Marseilles and Bordeaux. Before long the old index will cease altogether to be published. On page 73 will be found a table showing the index figures on the 1914 basis, brought up to the latest dates at which the respective committees have issued them: and in pages 77 and 78 the *new weighted index* figures relating to individual and family consumption, based on 1930 averages, are given for 1931-33.

The following table enables a comparison to be made between the wholesale, retail and cost of living index figures:—

COMPARATIVE TABLE OF INDEX FIGURES.
(Base, 100 in July, 1914).

Period	Wholesale 45 commodities	Retail*		Cost of living
		13 commodities	34 commodities	
1922 (average) ...	337	301	—	295
1923 " " ...	428	332	—	333
1924 " " ...	499	380	—	369
1925 " " ...	496	425	—	389
1926 " " ...	718	554	—	505
1927 " " ...	630	556	—	513
1928 " " ...	633	549	—	519
1929 " " ...	623	611	621	556
1930 " " ...	543	614	618	581
1931 " " ...	462	611	609	569
1932 " " ...	407	536	546	526
1932 (1st quarter) ...	431	563	561	534
" (2nd " ")	418	559	556	535
" (3rd " ")	398	516	538	517
" (4th " ")	391	505	531	516
1933 (1st " ")	388	500	532	523
" (2nd " ")	387	481	515	516
" (3rd " ")	392	474	510	516
" (4th " ")	385	507	519	526

* See note in text (pp. 68 and 73) respecting new weighted index established since the beginning of 1929.

NEW WEIGHTED INDEX FIGURES
OF
WHOLESALE AND RETAIL PRICES OF 67 FOODSTUFFS IN PARIS.
(Base, 1930=100)

Month	1931		1932		1933	
	Wholesale	Retail	Wholesale	Retail	Wholesale	Retail
January ...	109.8	108.0	88.8	89.7	88.0	85.1
February ...	106.9	107.3	92.6	92.6	87.8	86.0
March ...	105.5	107.7	90.4	90.5	85.2	84.9
April ...	105.6	105.8	92.4	93.8	83.5	82.7
May ...	101.6	107.2	90.7	93.2	81.6	81.7
June ...	102.7	102.2	94.4	94.9	83.7	84.5
July ...	103.7	102.7	92.1	89.2	82.8	83.4
August ...	95.9	97.0	84.7	86.1	76.3	78.6
September ...	91.9	95.7	83.1	83.3	81.1	81.3
October ...	86.7	90.7	86.5	84.2	81.2	81.1
November ...	87.0	89.2	88.1	86.4	83.5	83.1
December ...	86.5	87.4	87.5	84.8	83.6	83.5
Average ...	98.6	100.1	89.3	89.1	83.2	83.0

COST OF LIVING OFFICIAL INDEX FIGURES FOR PARIS AND CERTAIN

PROVINCIAL TOWNS.

(Base, 100 in 1914).

Town	Index Figures						
	Lowest since 1921	Second quarter					
		1927	1928	1929	1930	1931	1933
Paris	289	525	519	556	572	589	516
Amiens	270	626	618	626	613	592	*
Angers	294	525	528	554	558	*	—
Bordeaux	303	624	594	621	580	627	543
Dijon	295	631	600	626	594	649	542
Grenoble	338	579	591	620	665	655	*
Lyons	247	492	468	490	489	*	—
Marseilles	310	625	631	660	661	682	621
Nancy	277	512	508	537	532	*	—
Rouen	295	530	519	555	544	*	—
St. Etienne	334	571	587	625	627	*	—
Tours	321	555	508	553	563	*	—

* Index figure on old basis no longer published.

NOTE.—1933 figures are not strictly comparable with earlier ones, as new basis of calculation adopted. Quite a large difference in some cases, notably Grenoble, where (in 1932) a 726 for foodstuffs on old basis became 684 on new basis.

NEW INDEX FIGURES.

COST OF LIVING OF A WORKING-CLASS FAMILY OF FOUR PERSONS.

(Base, 1930=100.)

Half-year ended		Paris Region	Average for Whole of France
May	1931	101.3	100.9
November	1931	92.0	92.8
May	1932	91.9	91.3
November	1932	90.9	89.8
May	1933	89.3	86.6
November	1933	91.2	88.0

iv. HOUSING

The Loucheur Law (1928).—Definite progress towards the partial solution of the housing problem has been achieved since 1928. In July of that year was enacted the great measure for accelerating the construction of small dwellings, known after the Minister responsible for its passing as the Loucheur Act, which provided for the building, within the period down to the end of 1933, of 200,000 "cheap" dwellings and of 60,000 dwellings of moderate rental value. The limits of such "moderate" letting value were defined as a value representing at the maximum 3.6 times the maximum figure fixed for the "cheap" dwellings (in Paris for three rooms with kitchen and total surface of at least 45 square metres, the maximum rent was fixed at 1,570 francs, and for the same in provinces at 1,310 francs); and the cost of their construction was confined within certain limits. The expenditure on the 200,000 dwellings was reckoned at 7 milliards allowing 35,000 francs per unit, and that of the 60,000 dwellings at 4.2 milliards (average of 70,000 francs per unit). It was anticipated that 50,000 dwellings could be built yearly in the five-year period at this total cost of 11.2 milliards. The main State contributions in cash were to be: (1) 25 millions for 1928 and 150 millions yearly for 1929—1933, to be applied as direct subventions for the acquisition or construction of dwellings to become the property of industrial pensioners or other specific beneficiaries, and (2) payment of the margin of interest over 2 per cent., for which the approved organisations would be liable on the building loans (*e.g.* the *Caisse des Dépôts et Consignations* was to lend 750 millions annually, for which the building organisations would pay only 2 per cent. interest, the State making up the balance required). The State disbursements under this head, which were 25 millions in 1929, were expected to rise to 240 millions in 1934: the total has probably reached by October, 1933, about 800 millions as a consequence of the large volume of the advances made. The numerous indirect or direct subventions of the State under previous legislation for the encouragement of the building of dwellings for the less well-to-do classes remained intact: *e.g.* exemption from various land and local taxation, said to represent one-fifth of gross rent; exemption for 15 years from date of construction from rent tax; loans and subventions to public authorities for building under certain conditions dwellings for large families; remission of the stamp and registration duties and facilities for payment of land transfer duty, in the case of approved building societies.

Twelve Milliards of Credits for Loucheur Scheme.—By the end of 1931 funds had been provided for the building of 142,500 cheap, 5,659 improved (*amélioré*) cheap, and 14,600 moderate rent, dwellings: total 162,759. The second class, which

had been instituted by the Bonnevey Act of June, 1930, was intended to enable the building for manual workers of improved dwellings that would be superior to the cheap but less ambitious than the "moderate rent" type. The 1932 programme provided finance for 61,000 more dwellings (49,000 cheap, 7,800 improved and 4,200 moderate rent) so that there remained 36,000 out of the original 260,000 to finance. The sum total of the advances granted both to the cheap dwelling associations and to the real property credit societies is stated in an official report to have reached 8.6 milliards by 31st December, 1931, excluding housing subventions under the December, 1922, Act, and the sum granted up to that date for 'improved cheap' and for 'moderate rent' dwellings. In February, 1932, the Public Health Budget reporter estimated that 4.2 milliards more would be required to realise the Loucheur scheme: for that year three milliards were allocated, and for 1933 one milliard was voted by the Chamber. For 1932 the advances applied for by the approved real property credit acquisition reached over 1.9 milliards, and for 1933 1.5 milliards. The actual settlements have not yet reached apparently 12 milliards. As a result of the financial stringency in 1932, the three milliard allocation for that year had been made payable partly in 1932 and partly in 1933: by September, 1933, the payments for 1932 in respect of "cheap dwellings" had amounted to 1,060 millions and for "improved" cheap dwellings to 462 millions.

Further Resources.—Apart from these advances through the State, which are made at 2 per cent. on first redeemable mortgage for cheap dwellings up to 80 per cent. of building cost and at 4 per cent. in the case of the moderate dwellings up to 40 per cent. of cost, from the annual direct State subventions and from the various indirect State aid through exemption from certain taxation and duties, regular further financial resources are obtained by the payment in advance of the 20 or 60 per cent. of the cost by the would-be owners of the respective types of dwellings. In Paris and in most large centres these advances would be provided by the municipal or other public housing authorities.

Number of Loucheur Dwellings in 1933.—Precise figures are not available as to the number of dwellings constructed under the Loucheur Act, but it is generally accepted that the prescribed total of 260,000 will not be reached by the end of 1933. Up to the end of 1931, when the Prime Minister declared that 10 milliards of credits and 600 millions of subventions had been allotted and that 150,000 dwellings of all categories had been erected, construction had not kept pace with the original programme: early in 1933, the chairman of the Cheap Dwellings Superior Council estimated that about 180,000 cheap dwellings had then been constructed. Financial stringency retarded in 1932 and 1933 the

realisation of the approved State advances, so that it is not clear that the figure of 200,000 cheap dwellings will be reached by the end of this year. Of the 'improved' cheap dwellings it is probable that 9,000 to 10,000 will also have been erected, and perhaps 15,000 of the moderate rent category. At the end of 1931 credits had been approved for only 14,600 of the latter category: for 1932 fresh applications were inconsiderable, and for 1933 no credits at all were sanctioned. It is anticipated that in future, credits destined for them will be transferred to the 'improved' cheap dwelling type under the Bonnevey Act of 1930. The Paris public authorities, who had directed their efforts to a far greater extent to this type rather than to the other types, renounced it in 1932. Collective buildings with their dwellings of moderate rentals were erected in considerable numbers on the site of the dismantled fortifications, but the rentals proved unattractive to those for whom they were destined. For two, three, four, or five-roomed dwellings with kitchen, the rents were, at first, 3,930, 4,720, 5,660 and 6,600 francs.

General Character of new Loucheur Dwellings.—The bulk of the new Loucheur dwellings in Paris are situated on the site of the old fortifications, at the gates of the City, or in the near suburbs, on the periphery of the City in large collective buildings, which have been erected by the public housing offices. In certain important provincial towns collective buildings have also been erected, but a proportion of the provincial Loucheur dwellings are small houses for one family; in some cases for two or more, occasionally for perhaps six to ten families. A principal purpose of the Act, as it has been of French cheap housing legislation for a generation, is that the new dwellings should become the property of the less well-to-do classes, and in particular of wage earners. In Paris proper this object appears hardly to be fulfilled at all: the public authorities remain the owners and the managers of the great collective buildings of which the occupiers are tenants. In the Paris suburbs there is more evidence of advantage having been taken of the Act by would-be small house-owners. In the more central parts of Paris and of the majority of large French towns the single family house is out of the question owing to the high value of land consequent upon the predominance of the collective dwelling system: the price per square metre is far too high for purchase even for the erection of collective cheap dwellings under the Loucheur Act.

Widespread Activity in Housing Improvement Schemes.—Private initiative has held almost entirely aloof in France from the building of small or medium dwellings in recent years. The statutory regulation of rents for the bulk of dwellings until 1939 acted as one principal deterrent. Building and other companies, especially in Paris, devoted their principal activity to the construction in great numbers of modern expensive flats upon sites

purchased regardless of cost. Private individuals in large towns who, before the war, often invested their capital in the construction of single buildings with perhaps ten to twenty small flats, recoiled not only before the vastly augmented cost of sites, of transfer duties, of building wages and materials, but also before the possibility of further State regulation of rents and of right of occupation by tenants. The only solution of the crisis of housing for the less well-to-do classes, which was rendered more acute by expropriation and the speculative buying of houses for demolition, was the active participation of the public authorities in the promotion of this category of dwellings.

For some years the movement for housing improvement has accordingly penetrated into every corner of France; and nearly all the county and municipal authorities are participating in housing schemes. In 63 counties has been established a county public cheap dwellings office, and in 240 municipal areas, spreading over 88 of the total of 90 counties, are municipal or district public housing offices. For the immediate Paris area there is one for the County of the Seine and one for the Paris municipal area. The former has already constructed 18,000 dwellings, and has several new schemes on the point of realisation, having still in January, 1933, no less than 133 hectares (330 acres) of building land at its disposal. One feature of its blocks of flat buildings is the provision in each of certain general utilities or amenities such as public bathing establishment, laundry, crèches, kindergarten, dispensary, library, entertainment hall, and so forth. The Paris Municipal Office has constructed and manages about 16,000 dwellings. Large numbers of these buildings have been built along the thirty kilometres of boulevard which makes the circuit of Paris along the lines of the dismantled fortifications. For its blocks of dwellings it has erected special childrens' playing-grounds, medical and other services of a general welfare nature. The other large or small towns throughout France have generally followed suit, but have not been obliged to create collective buildings on so large a scale.

Present Position.—In view of the investigations of French housing reformers made previous to 1928, and of the facts elicited by the Census of 1926, it is manifest that the construction of 200,000 or 260,000 new cheap or improved small dwellings does not solve the housing problem of the country. Calculations based on that Census are stated by French housing experts to indicate that for the 14 towns of over 100,000 inhabitants (excluding Paris), the number of persons per 1,000 of the population occupying over-crowded (*surpeuplés*) dwellings showed the high average of 86. In certain towns it was higher: e.g., 224 at St. Etienne, 141 at Nantes, 138 at Havre, 96 at Lille, 92 at Rouen, 87 at Nancy. Roubaix, Bordeaux, Nice, Toulouse, Marseilles, Lyons showed respectively 28, 48, 52, 51, 68 and 78 per 1,000. "Overcrowded"

is defined as dwellings with over two persons per room. Paris, on this criterion, showed 86 per 1,000. For towns with populations of over 5,000, but under 100,000, which had a total population of 13,000,000 people, a French writer has estimated that 5.2 millions therein lived in "overcrowded" or in "insufficient" dwellings (insufficient being defined as a dwelling with between one and two persons per room); and he concluded that about five million more rooms or $1\frac{1}{4}$ million more new dwellings of four rooms were required to make good the defective housing conditions shown at that Census. Since 1926 much new building had taken place, but as an ideal minimum there remained (February, 1933) the need for 800,000 new dwellings. Another expert writer (in 1928) suggested that 400,000 new dwellings were needed in Paris, and 250,000 in the provinces: and the same writer (in 1932) considered that after the execution of the present programme in the Paris area only a net increase of 50,000 cheap dwellings will result after deduction of those demolished in recent years, whereas a net increase of 150,000 is required to secure the disappearance of "overcrowded" and "insufficient" dwellings. Estimates and opinions of various reformers show much divergence as a consequence of the absence of authoritative statistics of the situation, but there is general agreement that a good deal remains to be done in the fields both of urban and rural housing to improve the housing of the less well-to-do classes.

The greatest advance has been made in Paris and in the North. In the Paris area the advance as regards high rented dwellings has been remarkable in Paris proper, and as regards the suburbs the movement has been great. The war destruction, the practical cessation of the regular process of building of dwellings in 1914-1919, the after-war restriction on rent raising and on eviction, caused indeed a very heavy setback in French housing progress. In the country generally, however, progress since 1920 has been very substantial. In the North and East about 150,000 dwellings (nearly all one or two family houses) were reconstructed after war destruction, and in many small towns much new building has taken place. In the Centre and South noteworthy progress is visible: e.g., in the suburbs of Lyons, at Nice, along the Riviera generally, in the Bordeaux and Bayonne areas. And apart from the mere construction of new houses many municipal authorities have made vast financial efforts towards the same end of better housing by securing the clearance of slums, the demolition of whole blocks, of whole streets, and even of whole series of unhealthy dwellings, e.g., in Paris, at Marseilles, at Limoges. In these and in several other towns they have executed betterment schemes closely allied to any scheme of improvement of general housing conditions such as the greater provision of open spaces, of better water, of better drainage, of better lighting, and of better public utility services in general.

Relatively Large-Scale Housing Provision by Industrial Employers.—In France the provision of dwellings for employed persons is relatively widespread; and in several important industrial branches it is made on a very extensive scale. An official enquiry covering 2,822 establishments employing 2,635,336 persons revealed that at the end of 1931, 514,140 persons (19½ per cent. of total), employed in 57 per cent. of these establishments were housed, and that, in addition, employers had participated in workers' housing schemes to the extent of 498 million francs. Of those housed, 461,000 were in separate houses or flats and 53,000 in single rooms or in bachelors' dormitories. The number of separate houses was 236,608, and that of houses with two or more dwellings, 98,246.

The coal mining industry, which is most conspicuous as a provider of housing, has greatly increased the number of its dwellings. In the chief area of the Pas-de-Calais and the Nord, the number of miners' dwellings grew from 44,225 in 1913 to 97,513 in 1931: at the latter date 69 per cent. of all the miners were housed by the collieries. In the Lorraine coal mines, with their 8,115 dwellings and 3,000 beds for bachelor workers, 52 per cent. are housed. In other coalfields, miners' dwellings have been doubled in number: in the Loire between 1924-27 over 1,000 dwellings housing 5,354 persons were built or reconstructed. For 150,000 out of the 250,000 workers now employed in French coal mines, housing is provided by the collieries. The capital expenditure of the mines of the Pas-de-Calais and of the Nord on housing schemes is estimated at two milliard francs, and that of the remaining French collieries at about one milliard. In the Northern area these modern company dwellings of four and five rooms with electricity, running water, douches, etc., are let at from 150 to 250 francs *per year*.

In the Alsatian potash area the bulk of the workers are likewise housed in admirable dwellings of recent construction. In the iron ore mining region of the East, which produces over 90 per cent. of total ore and employed up to 1931 about 30,000 workers, practically all the ore miners in many localities are housed in company houses, of which the greater proportion have been built since 1920. The metallurgical industry makes large provision for its workers. In the East and North, wherein is effected 90 per cent. of the iron and steel output, several great concerns like de Wendel at Hayange, Moyeuve and Joëuf, Marine et Homécourt at Homécourt, Rombas and Micheville, Acéries de Longwy at Longwy, the Raty at Saulnes, the Pont-à-Mousson, Denain et Anzin at Denain and Escaudain, and many others, provide many hundreds, and even perhaps thousands, of dwellings. At Le Creusot the Schneider firm places 3,600 dwellings with gardens, as well as 2,400 gardens separately, at the disposal of its employed persons at low rents: in other places (e.g. at Caen) its affiliated company has executed in recent years a housing scheme on a large scale. In all cases the rents are below the normal market price for similar dwellings. The bulk of

the dwellings of the metallurgical employers have been built or reconstructed since the war. Apart from the achievements of individual firms, the central iron and steel organisation has created a special credit institution which has lent over 100 million francs to firms in the metallurgical and engineering trades for building workers' dwellings: in this way over 4,000 dwellings have been erected in recent years.

Railway companies (e.g. Nord, Est, Paris-Orléans) have also been active in this direction: in 1929 they were providing dwellings for 69,450 out of 487,075 workers (14 per cent.). They also promote housing schemes for their employed, by loans to building societies, by supplying material at cost price, by granting reduced freight rates. Certain chemical companies have likewise been conspicuous: thus the Kuhlmann concern provides 2,500 dwellings (near Creil, near Rouen, near Marseilles). The oil companies, which have in the last five years created eight or ten new large refineries, have built at the same time workers' dwellings on a large scale. The great rubber companies (Dunlop, Michelin) developed very large housing schemes in the years 1923-28. In the textile industries one finds numerous instances where the masters have themselves built workers' dwellings in varying numbers, perhaps from 10 to 200, or where they have collaborated financially in the realisation of considerable schemes: in recent years perhaps the most conspicuous instances have been in the case of the new rayon factories.

It should be noted that, in most cases where considerable housing provision is made by employers, various important adjuncts, calculated to conduce to the greater welfare of the particular community, are supplied. These usually include garden allotments, recreation, theatre or concert halls, lending library or reading room, sports grounds, gymnasium, baths, canteens, restaurants, co-operative stores, medical service, hospital, infirmary, crèche, perhaps convalescent homes or old-age homes. In the mining area one frequently finds that even the provision of primary education is assumed; certain metallurgical and engineering firms undertake the complete general and technical education of the children of the employed.

This unusually large housing provision made by the ore, potash and coal mining, metallurgical, chemical, oil refining, and rubber industries, and by isolated firms in other industries, is mainly explainable by their localisation in rural areas. The installation of the special form of activity in an isolated spot, or small village, or small town, may have involved the provision of dwellings for the oncoming immigrant labour: or, when establishments underwent remarkably rapid development, they were obliged to find suitable and adequate quarters if they were to attract or retain their workers. The extension of the housing provision by employers in the ten years 1921-1930 was stimulated by the intense industrial prosperity, which was concurrent with an acute shortage of, and competition for, labour.

CHAPTER II.—AGRICULTURAL PRODUCTION

I.—AGRICULTURE

1. GENERAL CONDITIONS

The agricultural industry, although relatively it has been steadily losing ground, remains the principal single occupation of the French nation; and the census of 1931 showed that 48.8 per cent. of the population still lived in local administrative units (communes) of under 2,000 inhabitants, compared with 50.9 and 53.6 per cent. in 1926 and 1921. The "occupational" returns of the 1931 census are not yet available, but at the previous census of 1926, 38 per cent. of the total occupied population were engaged in agricultural or forestry pursuits, or 36.6 per cent., if only those directly occupied on the land are reckoned. Two-thirds of the latter are small owner cultivators, and the vast majority (over four-fifths) of all occupy holdings of not more than about 25 acres. Another noteworthy feature of French agricultural conditions, and a consequence of the prevailing very small scale farming (e.g. in 1924, out of 1,565,000 vine growers' holdings 70 per cent. were under 2.4 acres, with another 13 per cent. from 2.4 to under 4.8 acres), is that agricultural wage-earners number not greatly more than half the independent cultivators.

In the production of staple foods and drinks much advance has been made. The area under wheat, far the most important crop especially for France, has indeed declined since 1913 by over a million hectares, but the decline has been stayed since 1928, and the yield per hectare has greatly improved, having averaged 14.48 quintals for the 10 years 1923-32, compared with 13.57 for 1901-10. In oats, barley, rye, maize, fodders, hops, the output is plentiful. The area under potatoes has also somewhat diminished, from 1,547,000 hectares in 1910 and 1913, to an average of 1,464,000 for 1925-30, but the yield per hectare, which was 55 and 88 quintals in 1910 and in 1913, averaged 96.5 for 1925-30. Vegetables and fruits are produced in great abundance, and leave large margins for export. The important sugar beet industry has far more than recovered the destruction of the war: the output of refined sugar for the years 1910-14 was 677,000 tons, but for 1929-32, 897,000 tons. In milk, butter and cheese the country is practically self-sufficient, and, in livestock generally, production has quite reached home demand, save perhaps in sheep. Wine output averaged 55.75 million hectolitres for the 10 years 1904-13, and (including the output of Alsace-Lorraine) 59.98 million for 1920-29; in 1930, 1932 and 1933 mildew and parasites affected the vines and reduced the yield to 42, 47.6 and 49.7 millions, but 1931 gave 57½ millions.

French agriculture derives much profit likewise from the production of many commodities whose industrial transformation yields considerable commercial value either directly or through by-products. Noteworthy in this connection are sugar and distilling beet, flax, hemp, in the North : hops in Alsace, oilseeds, rape, poppy, and olives especially in the South, flowers and herbs for perfumery along the Mediterranean, apples in Normandy and Brittany, tobacco mainly in the South-West, timber, especially the pine forests near the Bay of Biscay. From such sources perhaps the most valuable commercial products are industrial alcohols, edible oils, perfumes, turpentine, beer, cider, tobacco.

French Agriculture and World Prices Collapse.—French agriculture was much affected by the internal and external surpluses of many principal commodities in the years 1929-31. Home prices tended to fall, and prices in several European countries and in overseas lands underwent a complete collapse as a result both of over abundance and of accentuated under consumption through industrial depression. In 1930 and 1931 commodities were exported from many foreign countries with little regard to cost price, and as France remained one of the few remaining countries with an effective market and without restrictions on foreign payments, she unduly attracted foreign exports. French farmers saw themselves threatened with wheat from Canada, the Argentine, Hungary or Roumania, fruits from Southern Europe and America; hops and beer from Czecho-Slovakia, meats from America, Holland, Germany, cheeses and butter from Holland or Italy, these and many other things to be sold at very low prices. In 1931, imports of live animals and dead meats (322,000 tons) were fourfold those of 1913 (80,000 tons) and threefold those of the boom years 1928 and 1929 : eggs and dairy products (100,000 tons) were more than twice those of these two years (39,400 and 49,600) : cereals, vegetables, fruits, etc., which totalled 329,000 and 403,400 in 1928 and 1929, rose to 596,800 in 1931. The agricultural interests strongly protested against the danger of a prices collapse for their products, and the various far-reaching measures adopted by the Government had the effect of maintaining internal prices for most agricultural products. Only in 1932 did home prices of foods show any considerable diminution in France. Wheat may be cited as an example of the protracted maintenance of price by artificial means : mainly thanks to a Customs duty of 80 francs per 100 kilogrammes, which at times proved to be 100 per cent. or more of the world wheat price, the price of home wheat was kept high. As will be seen in this chapter, other methods besides Customs were also invoked to protect the home market and maintain prices as regards a host of other agricultural commodities.

II. WHEAT

Two fairly good wheat harvests in 1927 and 1928, followed by an exceptionally heavy yield in 1929 (averaging 17 quintals to the hectare, equivalent to 25.1 bushels to the acre), brought about a radical change from the position in 1926, when it was necessary to compel the blending of 10 per cent. of rye, rice, barley or manioc with all wheaten flour. Owing, however, to the continued decline in the area under wheat (in 1929 it was less by 3,417,000 acres, or 21.1 per cent. than in 1913) the importation of a considerable quantity of foreign wheat is necessary to meet a normal consumption of about 96 or 97 million metric quintals. After a poor harvest in 1930 (the lowest yield since 1919) and a fairly good one in 1931, there was another plentiful crop in 1932, averaging 16.81 quintals to the hectare, or 25.05 bushels to the acre. From the following table it will be seen that in 1929, 1932 and 1933 the wheat harvest was in excess of pre-war figures.

WHEAT AREA AND PRODUCTION IN 1913 AND 1923 TO 1933.

(Note: 1 hectare=2.47 acres: 1 quintal=1.97 cwt.)

Year	Area under wheat		Yield per hectare
	Hectares	Quintals	
1913*	6,542,230	86,919,059	13.29
1923 ...	5,333,100	74,998,400	14.06
1924 ...	5,511,900	76,525,130	13.88
1925 ...	5,613,840	89,904,820	16.01
1926 ...	5,249,350	63,077,400	12.02
1927 ...	5,287,150	75,150,440	14.21
1928 ...	5,243,330	76,554,020	14.60
1929 ...	5,397,000	91,785,990	17.01
1930 ...	5,374,070	62,080,860	11.55
1931 ...	5,196,090	71,881,710	13.83
1932 ...	5,434,410	90,771,310	16.81
1933 ...	5,405,990	92,170,560	17.05

* Excluding Alsace-Lorraine.

A marked improvement has to be recorded since the war as regards the proportion of yield to acreage. Only twice (in 1926 and 1930) has the yield per hectare fallen below the 1913 level; and whereas the average yield in 1901-13 was below 14 quintals per hectare, it advanced to 14.04 quintals for the quinquennial period 1923-27 and to 14.76 quintals (or 22 bushels to the acre) for the period 1928-32.

Wheat Imports.—After the exceptionally large imports of 21.7 million quintals* in 1927, necessitated by the poor harvest of the previous season, imports in 1928, 1929 and 1930 fell back to more normal levels of 10.2, 14.1 and 10.4 million (the average for 1921-28 was just over 12 million quintals); but again jumped to high figures in 1931 and 1932, with 23.7 and 21.1 million quintals (3.8 million quintals in the latter year being declared for 'temporary admission' only). With these wide fluctuations in imports resulting from the varying yield of the harvest, it was found that foreign suppliers tended to secure a growing share of the market, to the detriment of the home producer. To keep this tendency within bounds, a decree was promulgated whereby it was forbidden to employ a greater proportion than 3 per cent. (raised to 10 per cent. as from July, 1930) of foreign wheat in flour for all ordinary purposes. The authorised percentage has since been several times modified; for the second half of June, 1931, 30 per cent. of foreign wheat was allowed, but by the 24th November, 1931, it had been reduced again to 3 per cent. The obligation to "stretch" or dilute wheaten flour with 10 per cent. of rye, rice, barley or manioc is no longer enforced, but millers are still permitted (under the terms of a law of the 10th September, 1927) to incorporate up to 6 per cent. of oats in their flour.

Wheat Exports.—Though France is not normally a wheat exporting country (her exports of that commodity averaged only 4,600 metric quintals for the three years 1927-29), the exceptionally heavy yield of the harvest in 1929 left her with an appreciable surplus for which foreign markets had to be found. The position was aggravated by the fact that at least half of the foreign wheat imported under the temporary admission system, for subsequent re-export in the form of flour, found its way instead into the home market, to the prejudice of French agricultural interests. Accordingly, on the 20th November, 1929, a law was enacted whereby importers of foreign wheat under the temporary admission system are no longer allowed, upon payment of the duty, to dispose of their wheat for home consumption. They are obliged under pain of a penalty, to re-export within three months a quantity of wheat or flour corresponding to that which they imported. It is also provided that a refund, which may attain as much as Fcs. 50 per 100 kilogrammes (the amount of the customs duty payable prior to May, 1930), may be paid in respect of all imported wheat re-exported within three months of the date of its importation, whether still in the form of wheat or in that of flour. The effects of this measure were quickly apparent, for in the early months of 1930 exports greatly developed, and in the complete year attained 4,462,891 quintals, whereas in previous years they had been of negligible proportions: 2,440, 4,224 and 7,129 quintals in 1927-29 respectively. Exports of wheaten flour also advanced from the

* 10 quintals = 1 metric ton.

low levels of 55,869, 21,919 and 20,703 quintals in 1927-29, to 2,874,542 quintals in 1930, 3,550,353 in 1931, and 1,474,608 in 1932.

In July, 1933, in expectation of a large harvest, an incentive was provided by the "Wheat Law," which aims at regulating the prices of wheat in the home market, and fixed a minimum price of 115 francs. Under one of its sections, a bounty, not exceeding the customs duty on wheat (80 francs), may be granted in respect of native soft wheat exported either in that state or as flour.

III. OTHER CROPS

In the case of the secondary cereals also, 1928 proved a poor year, but the harvests of 1929 and 1932 proved unusually bountiful, the figures in most cases surpassing those of 1927, which had been well over the average. Potatoes showed a high yield in 1927, 1929, 1931, 1932. In the years 1913, and 1929-31 potato exports were 1.81, 2.37, 2.06 and 1.84 million cwts., of which the United Kingdom took .33, 1.23, 1.09 and 1.08 million. The extension of the Colorado beetle pest into Brittany, whence come the bulk of the exports to the United Kingdom, led to the arrest of this trade in 1932. Both sugar and fodder beet crops were plentiful in 1930 and 1932. The following table shows the figures for 1913 and for each of the years 1927 to 1933 :—

PRINCIPAL FRENCH CROPS OTHER THAN WHEAT.

(In millions of metric cwt.)

	1913*	1927	1928	1929	1930	1931	1932	1933
Rye	12.7	8.6	8.7	9.3	7.2	7.5	8.6	—
Oats	51.8	49.8	48.8	54.2	41.5	45.9	48.2	57.0
Barley	10.4	11.0	11.6	13.0	9.2	10.4	10.9	12.5
Potatoes	135.9	175.3	112.6	161.7	139.2	163.0	164.8	150.2
Sugar Beet	59.4	60.0	50.1	68.4	94.4	62.0	75.9	65.6
Fodder Beet	252.2	289.6	197.8	260.0	305.1	222.9	306.3	281.2
Buckwheat	5.7	4.2	3.1	3.4	3.5	3.7	3.7	3.0
Indian corn	5.4	5.3	3.1	4.7	5.7	6.3	4.1	4.2

* Excluding Alsace-Lorraine.

Under a decree dated 26th August, 1933, the imports of several secondary cereals, namely, oats, rye, buckwheat, dari, millet and canary grain (alpiste) are subjected to quota, and for the quarter ended September 30th, 1933, those for oats and rye were fixed at 8,000 and 9,000 tons respectively, with an addition of 1,850 tons for rye flour.

iv. LIVESTOCK

Despite the intense growth in mechanical traction, and the almost complete disappearance of the horse-drawn vehicle in most urban centres, the number of horses in France is only 9 per cent. less than in 1913. War-time losses were gradually being made good up to 1929, when the number attained 92.7 per cent. of the pre-war total.

Since 1927, cattle have exceeded their number in pre-war days, and towards 1928 the supply became more than sufficient to meet the home demand, notwithstanding an increasing consumption of meat in the long period of economic prosperity from 1922. An export trade in live cattle for slaughter, which showed signs of developing, notably with Italy, whither 13,895 tons were consigned in 1928, proved short-lived. From 1930 onwards, imports have been largely in excess of exports, especially in 1931, when 71,669 head of bullocks (three times as many as in 1930) were imported, mainly from Italy and Roumania, as against 2,252 exported; and 28,411 cows imported as against 2,740 exported.

Sheep still signally fail to regain their 1913 figure of over 16 millions: the maximum reached, namely 10,775,000, in 1926, is one-third less, and every succeeding year has seen a decline till in 1931 the total was only 61 per cent. of the pre-war flock. The situation is ascribed to further depopulation of the sheep raising areas, the difficulty in recruiting good shepherds, the less remunerative prices for raw wool, the diminished liking for mutton among the French public. The shortage is made good from North Africa and the colonies. From Algeria alone, in the three years 1930 to 1932, the number of sheep and rams imported into France was 1,122,295, 730,362 and 624,954 respectively (from 82 to 92 per cent. of total imports). The needs of the woollen manufacturers are supplied mainly from Australia, South America and South Africa.

Pigs are still about 10 per cent. fewer in number than the 1913 total (exclusive of Alsace-Lorraine); but the strong protests of French pig-breeders and dealers early in 1930 against the importation of live pigs from Germany and elsewhere, induced the Government to place an embargo upon the importation of live pigs from Germany. The present supply could no doubt be easily increased, but the breeders may regard it as more advantageous, from the prices point of view, not to pursue that policy. In March, 1931, the duties on pigs, on fresh or frozen or chilled pork and on lard were considerably raised, and subsequently the import quota system was brought into operation. The following table shows, for the years 1913, 1919 and 1923-32, the number of horses, cattle, sheep and pigs in France:—

Year	Horses	Cattle	Sheep	Pigs
1913	3,220,080	14,787,710	16,131,390	7,035,850
1919	2,413,190	12,373,660	8,990,990	4,080,560
1923	2,847,970	13,749,290	9,225,310	5,405,840
1924	2,859,400	14,024,960	10,171,520	5,801,830
1925	2,880,380	14,372,980	10,587,020	5,792,860
1926	2,893,960	14,482,440	10,775,260	5,776,900
1927	2,927,230	14,940,960	10,693,120	6,019,450
1928	2,936,020	15,005,080	10,445,010	6,016,940
1929	2,985,650	15,631,140	10,451,760	6,101,810
1930	2,924,230	15,467,460	10,152,280	6,329,240
1931	2,919,700	15,433,840	9,844,690	6,397,970
1932	2,900,500	15,643,430	9,762,160	6,488,290

Imports of fresh and chilled meat have varied considerably in recent years, between a maximum of 136,663 tons (1924) and a minimum of 33,103 tons (1929), but show, on the whole a tendency to diminish. The average for the five years 1923-27 was 107,000 tons, declining to below 61,500 tons for the period 1928-32. The latter figure, however, is still 19 times as great as in 1913.

v. STATE CONTROL

Live-Stock, Poultry and Meat Quotas.—The imports quota system, inaugurated in 1931, was still in operation in February, 1934, for horses for slaughter, cattle, calves, sheep and lambs, pigs, fresh and chilled mutton, beef, pork, horse, salted or raw meats, prepared meats, live and dead poultry, live and dead rabbits, made-up delicacies and meat preserves. As an illustration of the working of this system, it may be noted that for the quarter July-September, 1933, imports of live cattle and of calves were limited to 1,400 and 80 tons respectively, and these were admissible only for Saar consumption, whilst of the 2,500 tons quota of pigs, 2,000 tons were assigned to the Saar. No chilled or frozen beef, but 700 tons of such mutton, 60 tons of such horseflesh, 665 tons of salted meat, 200 of prepared meat, 400 tons of live poultry and so forth, were permitted in that period. A further element of protection was instituted by the 1933 Budget law, which allowed the fixing of duties for the import licences themselves on goods subject to a quota: thus, in June, 1933, a duty of 100 francs per 100 kilogrammes on certain meats and of 150 on certain others was fixed.

Recent Vigorous and Comprehensive State Intervention.—Since the advent on European markets of the massive scale production of new overseas territories in wheat, meat, fruits, dairy and other products, the French State has persistently pursued a

strong policy of protection and of encouragement of home agriculture, being inspired partly by consideration of national defence and partly by a Parliament, which, predominantly representative of agricultural interests as a consequence both of the importance of the agricultural element and of the prevailing electoral machinery, has been especially vigilant in this regard. In recent years State intervention has been particularly vigorous and comprehensive, and, although it has taken various forms, it has been especially addicted to Customs measures and to import quotas. Already the new Tariff law of March, 1928, had imposed many additions to duties on agricultural products, but in 1929 began the raising of duties on an extensive scale under the *loi de cadenas* ("padlock law") passed a generation earlier (in December, 1897) in the interest of agriculture but only sparingly used, which empowered the Government to increase duties on articles of first necessity by simple decree, without prior recourse to Parliament, but subject to subsequent legislative ratification. In that year duties were raised on 46 tariff items, including cereals (*e.g.*, wheat from 35 to 50 francs per 100 kilogrammes), oats, wines, animals, fresh meat: later in 1929, in 1930, and till April, 1931, on 116 more items, including chilled, frozen and salted meats, sausage meat, lard, milk, condensed milk, butter, cheese, potatoes; hops, sugar beetroot, jam, maize, manioc and pastes such as macaroni, biscuits, chocolates, fish, coffee, and so forth. In some cases the duties were raised within that period more than once: *e.g.*, wheat from 35 to 50 and to 80 francs (May, 1930), pork from 125 to 175 and to 250 francs, lard from 75 to 175 and to 250 francs. At the same time, as regards the chief item, wheat, owing to the large consumption of bread by the population, only a fixed percentage of foreign wheat could be used for bread making: first 3 per cent., then raised to 10 per cent. (June, 1930), and owing to bad harvest to 25 per cent. (April, 1931): in the same month barley duty was raised from 21 to 35 francs. Since that date many further important additions have been made to certain duties on foods (butter, etc.).

The import quota system, which was inaugurated in May, 1931, was successively applied to flax (July), to wines (August), to animals, various kinds of meat, sundry dairy produce, notably butter, cheese (September), to hops (October), molasses (October); and in 1932 and 1933 other commodities have been brought in, such as eggs, poultry, honey, certain fruits, chestnuts, almonds, and vegetables, flowers, plants and so forth. Numerous industrial products of agriculture, notably skins, hides, leather, are also subjected to quota.

Import prohibitions were also introduced: in 1930, live pigs from Germany, in 1932, potatoes, tomatoes, egg-plant, living plants, flower bulbs, from the United Kingdom, Germany, Holland, Belgium.

Other measures in favour of French agriculture included higher bounties on home silk, and on flax production, taxation reductions (*e.g.*, from 5 per cent. to 3 per cent. on property transfer), reduced freight tax on railway transport of agricultural commodities. The direct budgetary assistance to agriculture increased from 271 millions in 1927 to 603 in 1930, the increase comprising 105 millions for electrification, 47 for water supply, improvement of crops, etc. Road expenditure increased by 456 millions. In March, 1931, further allocations were 110 for rural electrification, 120 for water supply: in December, 1931, a slice of the National Equipment scheme provided another 300 millions for water supply, 300 for more electrification, 60 for hydraulic and engineering work, 20 for the organisation of the agricultural export trade, 25 for research. The State financial contribution to the electrification of the country districts in the last four or five years has reached the immense sum of about £18 to £20 million (calculated at 85 francs to £): in that period about 12,000 rural communes (or local units) have been equipped with electricity, (out of 32,000 communes now electrified, nearly 20,000 were electrified with State aid).

The State has furthermore made great new contributions to the national agricultural credit system: in July, 1928, an advance of 500 million francs was made to its central bank for providing medium term loans; in 1929 an extra 250 millions for long-term loans. Further grants by law were: March, 1931, 500 millions, July 20th, 1932, 500 millions, July 22nd, 1932, 250 millions and May, 1933, 105 millions, so that since July, 1928, the total State contribution in this form was 2,105 millions. By virtue of its contract with the State, the Bank of France furthermore provides the central agricultural bank with an interest free capital of 40 millions and pays it a yearly sum based on its profit bearing circulation (up to the end of 1932 the agricultural bank had received from the Bank of France 1,200 millions under this head).

During this period the immense volume of other State activity or assistance in matters agricultural, previously instituted, has been fully operative. As the principal owner and the manager of its own woods and forests (2½ million acres) and of those of other public authorities, it maintains a large forestry service for the 32 forest districts, has its nation wide inspection services, three national agricultural schools besides national forestry, agricultural engineering, horticultural, veterinary and other schools, 30 "provincial" residential schools of agriculture, 5 farm schools, a dozen winter or season schools, numerous technical schools for special branches like dairying, sheep keeping, rural industries, a wide range of research stations (wine, etc.), numerous State studs, and so forth. It makes grants to the county agricultural offices (*offices départementaux agricoles*),

which, established in each county in 1919, directed by an agricultural engineer, and supervised by the elected committee of agriculturists of the county concerned, have developed into the effective promoters of agricultural production in their area.

VI. LABOUR IN AGRICULTURE

The latest available census returns (March, 1926) showed a total of 7,838,000 persons occupied in agriculture properly so-called, as owners, tenants or labourers, a reduction of 816,000, or 12½ per cent., as compared with the census of 1921. The decrease in the number of males was rather less than half that of females, so that the proportion of the former had advanced from 55.5 to 58.0 per cent., while the latter had declined from 44.5 to 42.0 per cent. The predominance of small properties is indicated by the fact that of the total number (8,066,000) shown as being engaged in agricultural pursuits, including dairy farming and other pursuits allied to agricultural production, 59.7 per cent. were described as their own masters, and only 40.3 per cent. as labourers or employees, males constituting 71.3 per cent. of the latter group. The prevalence of urban or industrial unemployment since 1930 has proved a blessing in disguise for agriculture, which has felt since the war an accentuated shortage of labour. It not only tended to arrest the rural exodus, but also caused the return to the countryside of many former agricultural workers who could no longer find employment in their new occupation. Even in 1932, when total unemployment figures had almost reached the highest figures recorded, the labour exchanges grouped under the central labour department of the Ministry for Agriculture had to introduce over 56,000 foreign agricultural labourers; in 1928-33 the figures were 61,687, 68,450, 92,828, 76,463, 56,675 and 48,092 respectively. Apart from the introduction in bulk at the seasons of harvest, vintage, etc., the foreign workers brought in consist chiefly of cowherds, shepherds and female workers. There is some variation from year to year in the proportions of different nationalities, as is shown by the following comparisons:—

	1931	1932	1933
Spaniards	20,034	15,921	19,818
Belgians	13,329	15,619	16,804
Italians	14,785	14,657	1,454
Poles	19,163	5,876	6,388
Czechs	2,423	1,300	1,729
Yugoslavs	3,288	1,524	1,171
Miscellaneous	3,441	2,228	728

Recent legislation has appreciably ameliorated the lot of the agricultural worker, as well as defining more clearly the contractual obligations between master and man. A law of the 31st

July, 1929, followed by a decree of the 16th November, 1932, laid down regulations respecting improvements in accommodation (notably as regards sleeping quarters) to be provided for the worker. A law of the 5th February, 1932, designed to stop a growing practice of enticing workers from their existing employment, enables the former employer to secure damages from the new employer, in the case of an agricultural worker breaking his contract. The extension of the compulsory family allowances law to the agricultural industry is provided for in a law of the 11th March, 1932, but it is only to come into effect three months after the promulgation of a ministerial order (which has not yet appeared) setting forth the regulations governing the compulsory affiliation of every agricultural employer to a local Family Allowances Fund. Finally, a law of the 25th December, 1932, provides for the application to the agricultural industry of the system, already long in operation in other branches of industry, under which disputes or differences between employer and employed, relating to the terms or conditions of their employment or the remuneration for work done may be settled by a conciliation board known as a "Conseil de prud'hommes" (the local institution created under Napoleon in urban communities, and composed of representatives of masters and workers, for the settlement of such disputes).

II.—WINE GROWING, ETC.

I. PRODUCTION—FRANCE

Area Under Vines.—In point of area under vine cultivation France, whose highest achievement (2.4 million hectares) was reached in 1874, holds now second world place, being surpassed by Italy (about 2 millions in 1928), but slightly surpassing Spain (about 1.35 millions); in 1879, 1901, 1913, 1924, 1931 and 1933, the respective French figures were 2.3, 1.6, 1.34, 1.44 and 1.42 million hectares. In wine output, however, France leads, her average per hectare being about 40 hectolitres, compared with 22 in Italy and 17 in Spain. The regression in the French vine area during the last two generations has been due to the long-drawn out effects of the phylloxera epidemic (1877-1890), which not only caused much vine-land to be turned permanently to other uses, but also stimulated the extension of the Italian and Spanish vineyards, to the immense progress of vinegrowing, especially in Algeria but also in Tunis, and to the development of its cultivation elsewhere both in Europe and overseas, notably in Australia, South Africa and South America. Since 1900 the world vine area has increased from 6.3 to 6.9 million hectares: the

increase in Europe has been 246,000 hectares, and in the rest of the world about 250,000, of which 116,000 in South Africa, and the balance in Australia and South America.

Scale of Production.—The holdings in France are very small: the most recent investigation (1924) showed that 82 per cent. were under 2 hectares. Out of nearly 1½ million growers who declared their output, only 10,560 farmed from 10 to 50, only 750 from 50 to 100, and only 127 over 100 hectares. The majority in these three classes with over 10 hectares are found in the four Mediterranean counties that produce about half the national output, namely the *Aude*, *Gard*, *Hérault*, and *Pyrénées Orientales*: therein were registered of the above respective totals for France, 6,458, 536, and 105. The bulk of the remaining large holdings are found in the Garonne-Dordogne area, especially in the Bordeaux zone (*Médoc*, *St. Emilion*, *Barsac*, *Sauterne*), in the Loire valley (*Touraine*, *Anjou*), and (a few) in the champagne (or Rheims) zone. The wines termed Burgundy, and which comprise the Burgundy, Macon and Beaujolais growths, are produced mainly by small cultivators and are blended commonly by merchant firms in Beaune, Dijon, Macon, and elsewhere, a single château or large property brands being extremely rare. A goodly part of the cultivation is done on a sort of *métayer* system. The principal champagne firms of Rheims and Epernay usually possess considerable vineyards, but, as the output of the latter would not suffice for their trade, they are wont also to buy the yield of other smaller growers for the preparation of their wine. The Alsace-Lorraine white wine growers have mainly small holdings of under a couple of acres. Cognac is distilled from grapes grown in the two Charente counties, and Armagnac from those of the Gers county, respectively North and South of Bordeaux: in these regions the holdings are predominantly small.

Chief Areas.—The Midi region, which is taken to include especially the half dozen counties close to or along the Mediterranean from Perpignan to Cannes, produces normally over half the French output: four counties alone (*Hérault*, *Aude*, *Gard*, *Pyrénées Orientales*) averaged for the years 1922-31 27 out of 56 million hectolitres, and in 1932 and 1933 produced 19.4 and 23.9 million hectolitres (41.35 and 50.14 per cent. of total output). The headquarters of the trade are Béziers, Nîmes, Perpignan, Montpellier. The South-West region, which follows closely the valleys of the rivers Garonne, Dordogne and Charente, with Bordeaux as headquarters, produces between 20 and 25 per cent. (e.g., an average of 11.33 out of 52.93 million hectolitres in 1928-33), and the Eastern area (Burgundy, etc.,) about one-twelfth, with an average of 4.13 millions; the Touraine or river Loire region, principally white and sparkling wines, averaged 4.43 million. The champagne

area, which is rather inconstant and always a relatively small producer, yielded an average of 159 thousand hectolitres for 1923-27, and of 328 thousand in 1928-33. Alsace-Lorraine, also, a small producer, averaged 343 thousand in 1923-27 and 712 thousand in 1928-33.

Wine Output and Alcoholic Strength.—Average production in the ten years 1904-13 was 55.75 million hectolitres; in 1920-29, including the Alsace-Lorraine output, 59.98 million. The largest figures since the war have been 67.3 in 1924, 62.9 in 1929, and 62.4 million in 1925. The last four years 1930-33 have been poor (42.0, 47.67 and 49.7 owing to mildew, but 1931 reached 57.4 million). Wine output per hectare, which for the years 1907-14 averaged 36.7 hectolitres for all France, averaged 39.8 hectolitres for the years 1929-31: the four chief wine-growing counties on the Mediterranean (Hérault, Gard, Aude, Pyrénées Orientales) showed for these periods respective averages of 60.2 and 56.1 hectolitres. As to the alcoholic strength of French wines: it is officially reported that in 1928 out of 57,891,000 hectolitres, 45,480,000 were under 11 degrees, 7,422,000 were 11 degrees, and 4,968,000 were over 11 degrees; in 1929, out of 62,901,000 hectolitres 48,721,000, 7,648,000, and 6,533,000 hectolitres fell respectively in the same categories. Although many *Midi* red wines hold only 7 to 9 per cent. of alcohol, they have usually 1 to 2 per cent. higher content than the ordinary wines of the Bordeaux region (about 8 to 10 per cent.): the Roussillon wines often contain 18 to 20 degrees. The white wines of the Barsac and Sauternes type are stronger than either the Alsatian or Touraine white wines.

Quality.—‘Good years’ are not necessarily good in all the French vine growing regions: thus 1911, 1915, 1919, 1921, are generally regarded as very good for champagnes and Burgundies, but 1915 and 1919 were mediocre for the red and white Bordeaux wines. The red wines of the latter region were reputed good or very good in 1914, 1916, 1920, 1921, 1926, 1928, 1929 and probably 1931, whilst the Barsac and Sauternes were remarkable in 1920, 1921, 1926, 1929. Certain years have been frankly bad (1909, 1912, 1927, 1930, 1932). In general, very hot summers and absence of sudden frosts in early spring give good years. No statement of universal application is, however, possible: in every region, in a normally very good or good year, many properties or sections therein may, from divers causes, yield poor wine.

II. PRODUCTION—ALGERIA

Algerian production has so developed within the last generation, and especially in recent years, as to cause the utmost concern to the home producers; and the somewhat protracted Franco-Algerian wine controversy culminated in a political event of

no inconsiderable magnitude in 1933, when certain legislative proposals were made. Another North African wine producer, namely Tunis, also occasions much concern, but to a less extent, and her ordinary political relations to France do not rest on quite the same basis as those of Algeria. The area under vines in Algeria, which was 146,000 hectares in 1907, gradually rose in the years after the war to the figure of 222,000 hectares in 1928; but in the five succeeding years it grew to 373,000 hectares; and the output, which averaged 7.47 million hectolitres for 1907-21, averaged 11.13 million from 1922-31. In 1930-32 the yields were 13.6, 15.9, 18.3 and 16.8 million hectolitres (1932 being 2½ times the average of 1907-21). The average yield per hectare for 1907-31 was 49.8 hectolitres, compared with 36.6 for France (and 55.8 for the four chief Mediterranean counties): in 1930-32 the Algerian yields were 50.2, 50.8 and 52 hectolitres. The far larger scale of Algerian vine cultivation is evidenced by the fact that the average per producer is 1,300 hectolitres, compared with about 40 for the French. A fairly recent investigation showed that, whilst Algerian growers numbered about 10,000 and those in France not far from 1½ millions, the number of Algerian growers with from 10 to 50, 50 to 100, and over 100 hectares was 6,458, 690, and 378 respectively, the corresponding numbers in France were 10,560, 750, and 127. The 378 Algerian units harvested in 1929 5.2 million hectolitres, or 38 per cent. of the harvest, the 127 units in France about 3 per cent. of the French harvest. Some Algerian vineyards cover 500, 1,000, and even 3,000 hectares. This large scale production, which has been undertaken by considerable capitalists, is reported to be organised on industrial lines, modern methods of mechanical equipment, of the use of fertilisers, of harvesting, of marketing, having been introduced.

The great majority of the dwellers in North Africa being Mahomedan are not wine drinkers, so that the bulk of the output has to be exported, and as Algeria forms part of the home Customs territory, its growers naturally seek the readiest outlet in France. In 1930-33 the actual exports to France from Algeria reached 10.28, 12.02, 12.18, and 14.76 million hectolitres, or about one-fifth of the total output of France. French producers, already dismayed at the protracted and growing difficulties and positive obstacles to the sale of their wine both at home and abroad, have long bitterly complained of the growing competition and of the privileged conditions of Algerian growers with their lower cost of production (*e.g.* lower wages, exoneration from heavy war and other taxation through the Algerian fiscal autonomy since 1907), and have insistently demanded the fixing of quotas for the imports of Algerian wine into France.

III. CONSUMPTION

The total wine consumption in recent years has been estimated at an average of 70 to 72 million hectolitres a year, of which about

50 million came on the market, 16 to 18 million were consumed by the producers and their employees, 3 to 4 were held in stock, and one million was used for distillation. Prices long remained high. In 1926 they had soared to extreme heights, certain Bordeaux growths having been sold for example at from 20,000 to 30,000 francs the cask at the vineyard, and one famous Sauternes at 48,000 francs, but between 1926 and 1930, especially as a result of the abundant harvests of 1928 and 1929 in France and Algeria, average prices fell from 211 to 98 francs per hectolitre. In 1930 average prices rose again by 50 per cent., but in 1932 and 1933 the market has been poor. The fall in actual consumption is considered to be considerable in recent years: in 1930 it was officially estimated at 136 litres a head, as compared with 184 in 1929, and no improvement appears to have occurred in 1931-33. It is ascribed partly to the general economic crisis, partly to a protest against unduly high prices, partly to the greater adoption of other beverages.

iv. LEGISLATION

The serious over-production and under-consumption of wine, at home, the obstacles to exports in the way of internal restrictions or high duties, the increasing imports of wines from certain countries, led Parliament to pass an Act in July, 1931, aiming at checking the extension of the area under cultivation and at the organisation of wine production. It enacted that no individual or undertaking owning or operating in France or in Algeria, 10 hectares of vineyard, or harvesting 500 hectolitres, should plant any more land with vines for a period of 10 years. (This provision was abrogated by a law of July, 1932, and subsequently included in a separate law: see below.) In order to deter over-production that is accompanied by a fall in quality, a tax was imposed, increasing with the yield per hectare and with the total yield of the property. And a system known as 'blocage' was enacted, whereby the Government is empowered, should the forecast of the wine harvest indicate, as compared with the average consumption of the previous three years, a degree of over-production fraught with danger for the home market, to fix by decree the progressive percentage of wine that may be despatched by wine growers declaring an output of over 500 hectolitres. This provision was put into operation by a decree of July, 1932: until further notice, wine growers with over 10 hectares or harvesting 500 hectolitres, might not despatch a quantity of wine exceeding two-thirds of the quantity harvested by them in 1932. The decree also enjoined that, as from the 1st October, 1932, wholesale importers of foreign wines must withhold from circulation, and be able to produce for inspection on demand, one-third of the quantities imported. The limitation of area cultivation under the 1931 law, but abrogated

in 1932, was re-enacted in a new Act of July, 1933, which enjoined the provisional suspension, for five years as from 1st August, 1933, of the plantation of new vineyards or of additions to existing vineyards. Vines, therefore, may only be planted on an area equal to that already so utilised.

v. FOREIGN TRADE

Great Excess of Imports.—Prior to the infestation of the French vineyards in 1877 with the phylloxera, whose ravages persisted till the early nineties and necessitated the replanting of a large proportion of the land with American stock, wine exports were eightfold the imports: for the years 1855 to 1876 they averaged 2,600 against 302 thousand hectolitres. That position has been entirely reversed: for the years 1892-1913 exports averaged far less than one-third (1,942 against 6,829 thousand), and for the ten years 1922-31 only about one-eighth (1,411 against 10,931 thousand hectolitres). In the years 1930-33, the actual figures show a still far greater disproportion: exports were 972, 709, 614 and 636, imports 13,056, 15,624, 13,706 and 17,186 thousand hectolitres, so that exports averaged for these years only one-sixteenth of the imports.

The bulk comes from Algeria (in 1930-33, approximately 10 to 15 million), Spain and Tunis, and to less extent from Italy, Greece, Portugal. Spanish ordinary wines are imported largely for blending purposes, partly owing to their rather higher alcoholic strength, but Algerian or Tunisian are also drunk in an unblended state. Many Spanish and most Portuguese and Greek wines are liqueur or dessert wines (sherry, malaga, port, samos, and so forth). Imports of wine in bottles are insignificant in quantity, and those of the liqueur and dessert classes are being imported in greater quantities in cask. Imports of inferior grade wine had been growing to such a serious extent that the home wine interests were greatly disturbed, and in December, 1929, a law was passed prohibiting the importation of low grade wines for blending purposes. Strong protests from the countries affected (e.g., 53 per cent. of Greek exports to France, 25 per cent. of Portuguese, and 19 per cent. of Spanish, consisted of wines) led to the non-application of this law.

The following Table gives the imports in cask and in bottle for 1913, the average for the years 1921-25, and those for 1926-32.

[TABLE]

FRENCH IMPORTS OF WINES, 1913 AND 1921-33.

(Thousand hectolitres : a hectolitre=22 gallons).

From	1913	Average 1921 to 1925*	1926	1927	1928	1929	1930	1931	1932	1933
<i>In cask</i>										
Algeria	4,646	5,373	8,769	6,998	6,883	9,219	10,008	11,858	11,938	14,500
Spain	2,082	1,233	651	2,719	3,603	1,708	1,477	2,037	541	1,245
Greece	221	163	388	329	146	310	104	76	114	395
Tunisia	114	325	622	296	463	383	756	392	609	590
Italy	179	231	19	77	18	23	138	845	14	36
Other countries	58	25	7	19	650	113	39	75	31	68
Total in cask ...	7,300	7,350	10,456	10,438	11,763	11,756	12,522	15,283	13,247	16,834
Total in bottle ...	9.3	10.7	10.8	7.4	20.2	8.3	8.9	9.7	2.3	3.4

* Excluding the exceptionally large imports from Portugal in 1922 and 1923, which would have unduly affected the average.

Imports of brandy, gin and whiskey are shown in the following table. Brandy (made from wine) comes almost exclusively from Algeria (averaged 30,240 hectolitres for 1930-33 against 2,054 from elsewhere): gin and whiskey almost solely from the United Kingdom:—

IMPORTS OF BRANDIES AND SPIRITS, 1913 AND 1922-33.
(Hectolitres of pure alcohol).

Year	Brandy	Gin*	Whiskey*
1913	1,418		4,733
1922	3,627		3,976
1923	7,825		4,448
1924	26,076		8,241
1925	28,411	711	1,127
1926	22,483	854	1,330
1927	7,569	618	837
1928	10,587	784	1,188
1929	39,078	1,019	1,404
1930	49,772	878	1,343
1931	28,247	861	1,311
1932	33,734	476	744
1933	17,635	554	884

* Prior to 1925 the returns did not separately distinguish gin and whiskey, but included them with "other potable spirits not classified separately." Of the figures given above for those years, probably about half represents the combined figure for gin and whiskey.

Exports.—With some fluctuations, French export trade in wine since the war has fallen to a marked extent as the result of prohibition in the United States, of high customs duties in many countries and, recently, of the general crisis. In quantity, the exports in 1931-1933 were only half (or less) of those of 1913. The movement may be illustrated by particular classes of wine: thus, exports of ordinary wine in cask from the Gironde have sunk from 545,000 hectolitres in 1913 to 279,600, 217,800, and 182,800 in 1931-1933, and those of sparkling wine in bottle, including champagne, from 204,000 to 89,400, 52,900, and 74,800 hectolitres. The serious nature of the change is shown by the fact that the value of French wine exports has fallen from 203 million gold francs in 1913 to 665 million paper francs (=133 million gold) in 1931, 425 million paper francs (=85 million gold) in 1932, and to 474 million paper francs (=95 million gold) in 1933. In an official report it is stated that in 1903 exports of wine ranked third among French exports after those of silk fabrics and wool, in 1913 ninth, but in 1931 only fifteenth.

[TABLE]

PRINCIPAL FRENCH EXPORTS OF WINES, 1913 AND 1921-33.

(Thousand hectolitres).

	1913	Average 1921 to 1925	1926	1927	1928	1929	1930	1931	1932	1933
In cash	1,229.5	1,290.8	1,397.0	922.7	988.7	986.7	763.9	568.6	525.7	523.8
of which:										
From Gironde	545.7	374.4	500.6	431.3	433.2	400.0	377.7	279.6	217.8	182.8
In To United Kingdom	85.9	73.2	89.8	86.0	88.7	72.3	65.0	64.0	43.7	42.8
bottle	87.8	87.6	104.5	85.7	85.7	86.9	68.0	51.1	35.6	37.8
of which:										
From Gironde	40.8	41.3	56.8	47.4	50.1	50.9	37.1	31.3	21.3	21.8
To United Kingdom	8.9	9.2	14.5	10.6	9.6	8.1	7.7	5.6	3.1	3.4
Sparkling wines	204.1	142.9	173.1	141.0	146.3	151.0	119.7	89.4	52.9	74.8
of which:										
To United Kingdom	59.3	42.7	56.2	48.7	44.9	43.2	34.1	29.1	11.0	21.7
Dessert, etc., wines	137.7	108.7	159.7	130.4	154.5	151.4	136.1	109.0	86.1	81.0
Brandies in cask	33.9	29.4	23.1	25.6	26.0	29.6	36.7	27.4	20.4	15.2
of which:										
To United Kingdom	11.4	3.0	1.8	1.3	1.6	2.6	2.2	1.6	1.0	2.1
Brandies in bottle	47.2	33.7	47.4	41.8	47.4	46.1	37.0	26.3	20.3	19.2
of which:										
To United Kingdom	24.4	13.0	18.3	16.6	16.9	16.3	14.6	10.5	8.5	9.0
Totals	1,740.2	1,693.2	1,904.8	1,347.2	1,448.6	1,407.8	1,161.4	871.8	741.0	751.8
Value (million francs)	227	703	1,297	1,388	1,523	1,597	1,276	947	611	647

NOTE.—The figures shown for " Brandies " are in thousands of hectolitres of pure alcohol.

Principal Customers.—Up to 1929, Germany and Belgium were the largest purchasers of French wines, the former taking about 17 per cent. of the total exports and the latter 15 per cent., while Switzerland came third, with 10 per cent. The purchases of these three countries are chiefly red wines of Bordeaux and Burgundy. Great Britain followed very closely after Switzerland, and the French colonies together took about 13 per cent. Very appreciable changes occurred during the period 1930-32, however. Germany's purchases have been rapidly dwindling, while those of Switzerland, almost stationary in actual quantity, have formed a growing proportion of total exports, so that in 1932 the positions were (percentage of total wines and spirits exports in parenthesis): first, Switzerland (17.1 per cent.); second, Belgium-Luxemburg (12.9 per cent.); third, Great Britain (10.7 per cent.); fourth, Germany (2.6 per cent.). The colonies tend to take a larger share, their percentages in the three years 1930-32 being 22.2, 25.6 and 31.0 respectively. The Gironde furnishes regularly about 35 to 40 per cent. of the total wine exports. As a buyer of champagne and other sparkling wines Great Britain easily heads the list. Her purchases of champagnes for the eight years 1922-29 averaged 47.8 thousand hectolitres, out of total exports of 152.9 thousand, and although in 1930-32 they dropped to 34.1, 29.1 and 11.0 thousand hectolitres, they still constituted 28.5, 32.6 and 20.7 per cent. of total champagne exports. In 1933 the United Kingdom largely increased the recent scale of her champagne purchases. Belgium, second on the list as a champagne buyer, has heavily reduced her purchases in the last six years, and in 1933 they were 8,800 hectolitres, as compared with an average of 41,500 prior to 1927. The United Kingdom was also formerly far and away the largest purchaser of French brandies and spirits, but in the last few years, apart from 1933, Sweden's purchases have so far developed that they now nearly equal those of the United Kingdom. British purchases of brandies and spirits, mainly in bottle, amounted in 1929 and 1930 to 2,494 and 2,236 hectolitres in cask and to 16,306 and 14,641 hectolitres in bottle, the former being nearly twice as much as usual, while the latter showed practically no change as compared with the previous two years. In 1931 and 1932 the figures fell to 1,604 and 1,005 hectolitres for brandies in cask, these being about normal, but advanced in 1933 to 2,073 hectolitres; and to 10,543, 8,461, and 8,965 hectolitres in bottle, figures very considerably below the average. Sweden's purchases of brandies, nearly equal in 1930-32 to those of the United Kingdom but appreciably less in 1933, were mainly in cask instead of in bottle; the former amounting to 14,437, 12,202, 7,856 and 5,324 hectolitres, and the latter to 682, 932 and 337 hectolitres (not separately shown in 1933). Belgium, the third in order of importance of purchases, takes from a half to two-thirds of the quantities taken by Sweden.

Until the war, the United States, the U.S.S.R., and certain South American countries (e.g., Argentina and Brazil) were good

customers for French wine. The United States, which in December, 1933, removed the barriers (set up in January, 1920) against the importation of wines and spirits, introduced a quota system under which France was at first allotted 783,000 gallons for the period 5th December, 1933—31st March, 1934. This quota has since been doubled. Argentina and Brazil have greatly reduced their purchases, as they now produce enough wine not only for their own consumption but even for export.

vi. BEER AND CIDER

The principal hop-growing regions in France are in Alsace and in Burgundy; and brewing is chiefly centred in the North and East (the Nord and Vosges counties, and in the Nancy and the Paris districts). Annual production, about 12 million hectolitres up to 1920, has steadily increased, and had doubled itself by 1930 and 1931, as is seen in the following table of the production subjected to the beer excise tax, drawn up by the leading agricultural association :—

Calendar Year	Beer production, calculated in hectolitres at 3°
1920	11,548,000
1921	14,255,000
1922	16,802,000
1923	20,214,000
1924	20,396,000
1925	19,688,000
1926	19,121,000
1927	19,237,000
1928	21,749,000
1929	23,418,000
1930	24,418,000
1931	24,748,000

Beer Exports.—In 1932 and 1933, exports fell to 14,266 and 14,240 tons respectively, the lowest point recorded since the war, and only 630 tons higher than the figures for 1913. In the seven years 1925-31 they fluctuated between a maximum of 25,750 tons (1926) and a minimum of 16,956 tons (1931). Belgium takes yearly about 5,000 tons, Algeria from 2,500 to 4,500; Germany about 1,500 tons.

Imports.—Before the war Germany supplied 70 per cent. of the imports, which have greatly decreased: from an average of 4,960 tons for 1927-31, they fell to 1,868 and 1,316 tons in 1932-33. Imports from the United Kingdom amounted to 1,353, 844 and 671 tons, or about one-fifth of total, in 1931-33. Imports from Czechoslovakia, which increased rapidly in 1927-1930 (from 329 to 1,123 tons) fell to 1,107, 667 and 591 tons in 1931 to 1933 respectively. German beer, which had ceased to be separately recorded in the monthly returns of imports since the war, made its reappearance

in 1930 and has since constituted slightly more than half the total imports (6,322, 6,234, 3,582, and 2,760 tons in 1930-1933).

Higher Hop Duties and Quota.—Hop cultivation has greatly increased, although beer consumption was stated about the end of 1929 to have declined by 20 per cent. since the war (in 1913 it was 32.4 litres per head of population). Hop-growers having failed to obtain adequate prices for their output, secured in 1930 the raising of the minimum Customs duty from 125 francs per 100 kilogrammes to 400 francs (800 francs under the general tariff), but provision was made for a limited quantity to be allowed to enter the country, if accompanied by certificates of origin in a prescribed form, at a reduced rate of 200 francs. A quota had also been fixed for the year, October, 1931-32, at 900 tons. Proposals in the July, 1929, Bill to increase the Customs duty on beer from Fcs. 64 to Fcs. 96 per 100 kilogrammes under the minimum tariff and from Fcs. 232 to Fcs. 240 under the general tariff, failed to pass Parliament.

Cider.—Brittany and Normandy, whose normal beverage is cider, are also the principal producers: it is made especially in the great apple-growing counties along the English Channel. Total cider output averaged 18.33 million hectolitres for the years 1919-28, the highest yield (28.5 millions) having been in 1924. Great disparity occurred in the years 1927-32, when the figures were 26.6, 13.9, 23.3, 8.7, 18.0, and 17.0 millions. Exports are small: they averaged only 32,000 hectolitres in 1919-28, and were 27,600, 36,500, 19,000, 102,600, and 33,000 hectolitres in 1929-32. Imports are still smaller: for 1921-26 they averaged 1,500 hectolitres, in the three years 1927-29, 23,300, but in 1930-33 only 4,140 hectolitres.

CHAPTER III.—COAL, MINERALS, OIL, ELECTRICITY

I.—COAL AND COKE

A. PRODUCTION OF COAL

Coal and lignite production in 1932 amounted to 47,258,000 tons, or 3,805,000 tons (7.5 per cent.) less than in 1931 and about 7½ million tons (14 per cent.) less than in 1929 and 1930.* The relative importance of the different coalfields may perhaps be better considered by reference to the figures for 1929-30, the years of highest and almost identical output. In 1929 the Nord and the Pas-de-Calais produced 34,918,000 tons, or 63.5 per cent. of the total: the Lorraine mines 6,093,000 tons (11 per cent.); the Loire (St. Etienne) mines 3,779,000 tons (6.9 per cent.), and the other scattered areas in the Bourgogne, Lyons, Nîmes and Aveyron districts produced the remaining tons. Within the pre-war boundaries (i.e., without Alsace-Lorraine) the output was 48,884,110 tons, practically two million tons more than in 1928 and eight million tons, or 19.7 per cent., in excess of the 1913 production: that of the Nord and the Pas-de-Calais was 27.5 per cent. greater than in the last pre-war year. Of the total output in 1929, lignite figured for 1,197,000 tons, of which nine-tenths was produced in the neighbourhood of Marseilles. Anthracite represented 5,249,000 tons of which two-thirds came from the mines in the Nord, and most of the rest from the Gard county in the south.

The national consumption of all fuel, reckoned in terms of coal, which in 1927 was estimated to be 78.5 million tons, increased in 1928 to 79½ million tons and in 1929 to over 89 million tons, this sudden jump being attributable partly to the enhanced industrial capacity. Lens has a daily capacity of 1,200 tons of "briquettes" 1928-29. Accordingly, notwithstanding an output greater by two million tons than in 1927, the country's coal production in 1929 represented only 61 per cent. of the total home consumption, as against over 67 per cent. two years earlier. There ensued a decline to 86.5 million tons in 1930 and to rather less than 80 million tons in 1931; while in 1932 and 1933 consumption dropped to 71.2 and 72.6 million tons respectively.

Proved coal reserves amount to some 4,203,325,000 tons, and if "probable" and "possible" coalbeds be taken into consideration, this figure may be multiplied by three. Reserves of lignite are estimated to be: certain, 301,000,000 tons; probable,

* In this Chapter the Saar territory is not referred to unless specifically mentioned.

410,200,000 tons; possible, 920,800,000 tons. These figures take into account only deposits lying at a depth of less than 1,200 metres, and do not include the resources of the Lorraine fields, estimated to represent 800 million tons.

Fall in Coal and Lignite Output 1928-33.—The marked decline since 1930 in the demand for industrial coals has arrested the sustained advance in output that for the preceding ten years had been a feature of the French coal industry. Output, which rose from 52,429,000 tons in 1928 to 54,977,000 and 55,027,000 tons in 1929 and 1930, declined by four million tons in 1931 and by nearly another four million tons in 1932, when it was 47,258,000 tons. Thus, in two years, output dropped from 10.4 million tons in excess of the pre-war figures (44.6 million tons, of which 40.8 within the pre-war frontiers and 3.8 in Alsace Lorraine) to only 2.6 million tons above that level. In 1933, production amounted to 47.94 million tons, this being an increase of 683 thousand tons upon the production in 1932.

Geographical Distribution of Coalfields.—The proportion represented in the total French production by the output of two counties touching the English Channel (the Nord and the Pas-de-Calais) has remained within the narrow range of from 63.33 to 63.65 per cent.: the quantity produced in these two main fields in the years 1913 and in 1928-33 was respectively 27.4, 33.3, 34.9, 35.0, 32.9, 29.9, and 30.1 million tons. Patent fuel production has continued steadily to advance, mine-owners having found in this direction a solution of the ever-growing problem of disposing of their small coal. From 1.8 million tons in 1913, patent fuel production in these two counties grew to 2.8 million tons in 1928 and to 3.4 million tons in 1932. In 1933, patent fuel output amounted to 3.4 million tons, and was lower by 20,000 tons than in 1932. Active researches have also been directed towards the perfecting of a smokeless fuel that would form a suitable intermediary product between coal and coke; and the result has been the putting on the market of semi-coke and of a number of kindred fuels sold under various names, such as carbolux, anthralux, anthracine, bruaycine, some of which command prices higher than that of ordinary coal. The Bruay company, for instance, which has nearly 300,000 tons of smalls to dispose of each year, spent 63 million francs in 1931 and 1932 on the installation of plant for the production of carbolux (capacity 200 tons daily), and is about to double the size of its initial installation. The Mines de Vicoigne in 1930 and 1931 produced 62,132 and 94,024 tons, respectively, of anthracine.

Output in the Lorraine basin, whose three mines, Petite Rosselle, owned by the great de Wendel metallurgical firm, Sarre-et-Moselle, the joint property of numerous collieries of the North of France, and La Houve, leased to the Sarre-et-Moselle company as from May 1, 1931, produced 3.8 million tons in 1913, has since grown by two-thirds to 6.1 million tons in 1929 and 1930, falling back to 5.7 and 5.3 million tons in 1931 and 1932. Both Sarre-et-Moselle and La Houve have more than doubled their pre-war output, while production at Petite Rosselle has recently remained stationary. The comparatively small La Houve mine (its maximum production was 912,000 tons in 1930), which in effect utilises on the spot a great proportion of its output for the production of electricity, and the Sarre-et-Moselle together produced 3.2 million tons in 1932. Of twelve other concessions in Lorraine on which prospecting work has been done, three have given results sufficiently promising to justify further development, and accordingly, operations have been commenced on the Haute-Vigneulles, Faulquemont and St. Avold concessions. A group that includes representatives of the *Marine et Homécourt*, *Rombach*, *Micheville*, *Redange-Dilling*, *Pont-à-Mousson*, *Longwy* and other steel concerns is actively pushing ahead preparations for working these Lorraine coal deposits; and it was recently reported that by 1935 they should be yielding about two million tons of coal yearly. If the expectations expressed by the *Sarre-et-Moselle* colliery in 1932, that their output capacity would be increased by about two million tons as a result of the completion of their new Cuvelette pit of fat coal, are realised, the sum total of these additions would represent an advance of 70 to 80 per cent. in the output capacity of the Lorraine coalfields, which is at present from five to six million tons annually. The smaller coalfields, which are disseminated in the Centre and South, and are generally grouped in three districts, the Loire, the Bourgogne and Lyons, and the Gard-Tarn-Aveyron, show little change in production figures. The Loire, with St. Etienne as centre and with four chief collieries, namely, *Roche-la-Molière et Firminy*, *Mines de la Loire*, *Houillères de Montrambert et de la Béraudière*, and *Houillères de St. Etienne*, produces a little less than four million tons yearly; the Bourgogne and Lyons area three, of which the single Blanzky mine produces two-thirds, and the Gard-Tarn-Aveyron fields two millions from five mines, of which the Carmaux (near Albi) colliery accounts for over one-third.

Lignite production increased by 10.5 per cent. from 1927 to 1929 (1,083,000 to 1,197,200 tons), but declined in 1932 to 991,400 tons. Five-sixths of the total come from the Fuveau mine near Marseilles. True anthracite is produced in France only at La Mure (360,000 to 400,000 tons yearly) and a few other small mines in the Bourgogne and Grenoble districts; but coals classed as anthracitic (less than 10 per cent. of volatile matter) constitute

about 10 per cent. of the country's total output, or 5,531,000 tons in 1930. Three-fourths of this quantity come from the Nord county (where the chief producers are Anzin and Aniche, though Escarpelle, Vicoigne and Thivène also produce small quantities) and nearly all the rest from the Gard.

Number and Size of Units.—The number of coal mines at the 1926 Census was 149, employing 319,787 persons, of whom 311,312 were in 64 units with over 500 persons. Forty-nine of these had over 1,000 employed. The French industry is, however, essentially on a large scale; seventeen mines produced in 1932 about 41 million out of a total of 47 million tons. Large-scale units are found particularly in the northern coalfields, where eight companies each produced upwards of two million tons in the year of maximum extraction (1930) and were together responsible for 27 million tons, or half the total output of the country; the mines in question being Courrières (4.2 million tons), Anzin (4.1), Lens (3.6), Aniche (3.4), Bruay (3.2), Marles (3.1), Vicoigne-Noeux-Drocourt (3.0) and Béthune (2.3). Outside this area the largest producers are Sarre-et-Moselle (3 million tons) and Petite-Rosselle (2.2), both in Lorraine, and the Blanzly mine (2.3) in Saône-et-Loire. The following table shows for the chief French mines, their area, number of workers, and coal and patent fuel output in 1913 and 1932 :—

[TABLE]

Mine	Mining concession (hectares)	No. of workers		Coal (million tons)		Patent fuel (thousand tons)	
		1913	1932	1913	1932	1913	1932
Aniche ...	14,700	10,179	15,025	2.2	3.3	654	1,111
Anzin ...	28,086	16,393	23,826	3.4	3.8	484	1,040
Béthune ...	6,352	11,317	11,672	2.4	1.9	—	—
Blanzy ...	12,690	7,078	—	1.8	2.0	—	239*
Bruay ...	4,901	11,271	16,873	2.7	2.8	—	0.3
Carmaux ...	8,800	—	—	—	0.6	—	—
Courrières ...	5,459	14,859	17,315	3.1	3.3	—	—
Decazeville and Campagnac ...	3,118	—	—	—	0.4	—	—
Dourges ...	3,787	6,152	—	1.4	1.6	—	—
Escarpelle ...	5,883	4,841	5,474	0.9	1.0	61	172
Grand Combe ...	17,148	—	—	—	0.9	—	279*
La Houve ...	1,732	—	†	0.4	†	—	†
Loire ...	2,231	4,525	—	0.8	0.7	9	0.8
Lens ...	8,924	16,319	17,739	3.9	3.0	260	225
Liévin ...	4,145	9,695	—	2.0	1.5	—	—
Marles ...	5,036	7,629	14,758	2.0	2.4	—	—
Montrambert ...	1,876	3,370	—	0.7	0.6	—	—
Mure (La) ...	3,313	—	—	—	.4*	—	50*
Ostricourt ...	2,300	3,407	—	0.7	1.3	147	284
Petite Rosselle ...	5,147	—	—	2.2	2.3*	—	—
Roche-la-Molière ...	4,641	4,674	—	0.9	0.9*	32	49*
St. Etienne ...	1,573	3,456	—	0.7	0.4	45	35
Sarre-et-Moselle ...	12,441	—	—	1.2	3.2	—	21*
Vicoigne-Noeux-Drocourt ...	18,263	12,679	16,328	2.6	2.6	127	352

* 1931.

† Included in figures for Sarre-et-Moselle.

Coal Getting by Machinery.—Still further progress has to be recorded as regards mechanical coal-getting. In the Pas-de-Calais 22.75 million tons, of 80.7 per cent. of total output in 1931, were broken down with the pneumatic pick-hammer, the proportion having steadily increased from 65 per cent. in 1927. In 1913 it was only 4.7 per cent. In the Nord, no less than 91.67 per cent. of gross output in 1931 was so won (87.6 per cent. in 1930). The number of pneumatic pick-hammers in the Pas-de-Calais coalfields has increased from 1,392 in 1913 to 19,317 in 1928, 22,455 in 1930 and 21,955 in 1931; and in the Nord from 195 in 1913 and 552 in 1922 to 9,082 in 1930 and 9,718 in 1931. Percussion drills in the Pas-de-Calais numbered 5,896 in 1931 (against 6,130 and 5,985 in 1930 and 1929); and in the Nord 3,310, 3,190 and 2,964 in the same years. To convey the compressed air to the face, 1,193 kilometres of pipes have been laid in the mines of the Nord. Very few hewing machines are now employed. In the Pas-de-Calais the quantity of coal extracted by this method was 51,000, 14,375 and 19,250 tons in 1929, 1930

and 1931 respectively. In the Nord, the use of such machines has ceased at Douchy, Escarpelle, Crespin, Azincourt and Thivencelles, while at Aniche their output represented in 1931 only 0.7 per cent. of total extraction, at Vicoigne 0.5 per cent., and at Anzin 0.3 per cent. Hydraulic filling is practised at few mines (Escarpelle, Courrières, Lens, Liévin, Marles, and to a small extent at Anzin). Elsewhere in France the use of mechanical devices in coal winning continues to make progress, though at a slower rate than in the principal mining area of the north.

Great Advance in Coal Washing.—By reason of the greater proportion of rock extracted, coal washing has assumed greater importance since the general adoption of mechanical coal-getting: probably three-fourths of the deliveries now consist of washed coal, whereas in 1913 the proportion was not more than one-third. Among the six largest producers, Anzin in 1932 delivered 72.9 per cent., Vicoigne-Noeux-Drocourt 80.9 per cent., though in the *Société des Produits Chimiques de la Grande Paroisse*, the case of Bruay (whose coal comes from the mine exceptionally clean) only 25 per cent. was considered to need passing through the lavoirs. Blanzy has lavoirs capable of handling 9,000 tons a day; Lens, Marles, Ostricourt and Bruay each 4,000 tons or more; Courrières, Grand'Combe and La Houve 3,000 tons each, and sundry others 2,000 tons. The plant at Lens is considered the most up-to-date in France, having been completely overhauled and modernised in the last few years; at Bruay a combined sorting and washing unit, handling 360 tons an hour, was added in 1930; at Ostricourt and Liévin additional units of 250 and 165 tons an hour were added in 1929; and the Courrières company has quite recently installed a special lavoir (for use in connection with its cokeries) designed for washing 200 tons hourly of dust smaller than 4 mm. and 100 tons of 4.5 mm. diameter.

Output per Worker and Cost per Ton.—An advance of over 38 per cent. in the average daily output per worker (underground and surface combined) has been achieved since 1924, when the reconstruction of the war-damaged mines was practically completed. From 695 kilogrammes in 1913, 566 in 1924 and 606 in 1927, production rose to an average of 694, 720, and 783 kilogrammes in 1930, 1931 and 1932 respectively, the figure for the last quarter of 1932 being 813 kilogrammes, or 17 per cent. more than in 1913. These figures, however, are still far below those current in other important coal-producing countries (1,117 kilogrammes in Great Britain, 1,627 in the Ruhr, 1,587 in Polish Silesia, 1,444 in the Netherlands). Concurrently with this advance, the labour cost per ton was reduced successively from Fcs. 53.34 in 1930 to Fcs. 49.57 and Fcs. 41.97 in 1931 and 1932, now showing a coefficient of 6.16 as compared with the Fcs. 7.77 of 1913.

Industrial Activity of Mining Companies. — Widely awake to the advantages accruing from a more scientific utilisation of coal, the larger mining companies have taken up on an increasing scale since the war the transformation of their coal and coke on the spot into finished products (electricity, gas, chemicals), as well as the extraction of all manner of by-products. Five of the largest collieries convert from one-third to one-fifth of their total coal output into coke, with recovery of by-products: several supply, either directly or through affiliated companies, electricity and gas for a wide area around their mines. As to the recovery of by-products and the manufacture of chemicals, some (*e.g.*, Béthune, Bruay, Douchy) themselves conduct the whole chain of operations, while others (*e.g.*, Anzin, Marles, Courrières, Aniche) have formed subsidiary companies for this purpose, in collaboration with some of the large chemical undertakings such as *Kuhlmann*, *St. Gobain* and the *Société des Produits Chimiques de la Grande Paroisse*.

ii. PRODUCTION OF COKE, SEMI-COKE AND PATENT FUELS

Coke.—Coke production by the collieries has been necessarily restricted since 1930 by the reduced activity in the metallurgical industry; and although some mining companies have continued to increase the number and capacity of their coke-oven batteries, and to introduce devices for improving the yield of by-products, their plant has been working far below capacity for over two years. The cokeries attached to the metallurgical works have also reduced their output. In both cases, production in 1931 was about 13 per cent. lower, and in 1932 about 37 per cent. lower, than in 1930. The sustained efforts made by mines and metallurgical companies to increase their coke output, so as to satisfy a home demand that was compelled to obtain many million tons from abroad year by year, had resulted in an increase, from 1925 to 1930, of $3\frac{1}{2}$ million tons, or 54 per cent. (from 6,016 to 9,271 thousand tons); but by 1932 production fell back to $2\frac{1}{2}$ per cent. below the 1925 level. The figures of their total output for 1927-32 were: 7,118, 7,957, 9,080, 9,271, 8,086 and 5,858 thousand tons. Gas coke has shown little variation: since 1925 its production, however, slightly decreased every year save 1929, the fall being 15 per cent. over the period of seven years. Its output, which was 2,471 thousand tons in 1925, was 2,345, 2,279, 2,364, 2,265, 2,234 and 2,100 thousand tons respectively in 1927-32.

In 1927 and 1928 the mines' contribution to total coke production was 4,046 and 4,400 respectively. In 1929 a total of 4,471 coke ovens in coal mines and metallurgical works produced 9,080,000 tons of metallurgical coke, of which 4,803,000 tons were produced by the cokeries attached to the mines (3,544,000 by those of the Nord and the Pas-de-Calais) and 4,277,000 by the metallurgical works. In 1930, 1931 and 1932 the mines produced 5,090,

4,525 and 3,326 thousand tons of metallurgical coke, respectively; the mines of the Nord and the Pas-de-Calais contributing 85 per cent. thereof; and in 1933 production amounted to 3,846 thousand tons. One mine (Lens) is able to produce 900,000 tons of coke yearly, three (Vicoigne-Noeux-Drocourt, Aniche, and Béthune) from 500,000 to 700,000 tons apiece, and at least four others upwards of 200,00 tons. Coke-oven construction was continued actively in 1928 and 1929 at the rate of about 300 new ovens yearly, but slackened off in 1930 and 1931 concurrently with the growing decline in the smelters' demand for coke.

In the Pas-de-Calais coke is produced at eight mines (Dourges, Courrières, Noeux, Drocourt, Lens, Liévin, Béthune and Marles). The number of coke ovens grew from 1,065 in 1927 to 1,450 in 1931, all of them being at present heated by coke-oven gas. The new batteries at Courrières and Liévin are capable of using poor gas as an alternative fuel, but it is announced that the companies have no immediate intention of departing from the use of coke-oven gas. Although the number of ovens is less by 280 than in 1913, their productive capacity is about twice as great (1,670 ovens produced 1,629,000 tons of coke in 1913, while 1,387 produced 2,942,795 tons in 1930). Additions to productive capacity in 1929 consisted of 48 ovens at Dourges with a daily capacity of 480 tons (making 280 ovens in all, with a capacity of 1,815 tons daily) and a first battery of 47 ovens at Liévin (yearly capacity about 150,000 tons); in 1930, at Marles 43 ovens with a daily capacity of 350 tons (total 83 ovens, daily capacity 585 tons), a fourth battery of 25 ovens at Drocourt (capacity 400 tons daily) and the replacement of 55 old ovens at Noeux by a corresponding number of new ones (390 tons daily) capable of furnishing metallurgical or foundry coke at will, bringing up the total for Vicoigne-Noeux-Drocourt to 215 ovens with a daily capacity of 2,300 tons. In 1931 Courrières added a battery of 48 ovens, making a total of 130. In the Nord county, six mines (Aniche, Anzin, Azincourt, Crespin, Douchy and Escarpelle), with 733 coke ovens in all, produced 928,000 tons of coke in 1932, this being 24 per cent. less than in 1931 and about 40 per cent. below their full capacity. In January, 1930, the Escarpelle company joined the ranks of the coke producers, installing an initial battery of 35 ovens capable of producing 120,000 tons of coke yearly, with recovery of by-products; and in the same year the *Denain et Anzin* company increased from 40 to 60 the number of ovens at their Azincourt mine; the number of coke ovens at the mines of the Nord thus advancing from 638 in 1929 to 693 in 1930. No additions were made in 1931, but in 1932 another battery of 40 ovens at Courrières swelled the total to 733, with a production capacity of about 1,350,000 tons yearly, and all equipped with apparatus for the recovery of by-products.

In the Loire and Lorraine areas also, several mines produce substantial quantities of coke: the Loire mine 96,000 tons yearly, St.

Etienne 93,000 tons, Roche-la-Molière 51,000 tons, Montrambert 54,000 tons, Sarre-et-Moselle 170,000; but their activity has been so reduced by the lack of demand that a large part of their productive capacity is at present (February, 1934) lying idle. Fifty-two out of 109 coke-ovens at the Sarre-et-Moselle mine, 40 out of 60 at Roche-la-Molière and 25 out of 55 at Montrambert were extinguished throughout 1931. Production capacity throughout the country having temporarily outrun capacity of absorption, none of the mining companies are at present installing any new ovens.

Semi-Coke Manufacture by Low-Temperature Carbonisation.—Some of the mining companies whose coal, as it comes from the mine, includes a relatively high proportion of unsaleable grades, have found a practical and remunerative solution of the problem of disposing of their fines or smalls, in the adoption of a process for low-temperature carbonisation. The Bruay company, which has about 300,000 tons of fines to dispose of annually, has spent nearly 63 millions upon a battery of Koppers ovens, installed at Labuissière in July, 1931. The production capacity is 200 tons daily and the product a variety of semi-coke known as "Carbolux." In the year 1931-32, out of 277,000 tons of fines extracted from the mine, after screening 150,000 tons, or 57 per cent., were passed to the semi-coke plant. In the course of the process petrol and tar are recovered, and in their turn treated for the production of phenols, heavy oils and pitch. The yield in 1931-32 included 115,344 litres of petrol of saleable quality. In October, 1931, it was decided to double the production capacity, and orders have now been placed for four new revolving semi-coke ovens (making 10 in all) and a second battery of 25 Carbolux ovens. At Courrières a battery of 20 ovens (Illingworth process) with a daily production capacity of 150 tons, was installed in December, 1931, and a second battery of equal capacity was installed in January, 1933. In this case the product is an anthracite substitute known as "Anthralux," which has found favour with domestic consumers for their slow-combustion stoves of the "Salamandre" type and central heating installations. It is said to command about twice the price of oven coke sized to the same classification. Of 17,077 tons produced in 1932, 13,643 tons were sold during that year. The heavy tars are recovered on the spot, the gas and lighter oils being passed on to the company's benzol plant where, after extraction of other oils, the gas is mixed with coke-oven gas for town distribution. In this plant producer-gas is employed as fuel, in order to leave available for distribution as large a quantity of coke-oven gases as possible. At Maubeuge, the *Société Gas et Carbonisation* is having erected an Illingworth plant for the production of semi-coke, with recovery of gas, tar, benzol and so forth. This installation, which should begin working towards the end of 1933 will have an initial capacity of 250 tons daily, but it is planned with a view to an ultimate output of four

times that quantity. It will thus be one of the largest low-temperature distillation plants in Europe. At Liévin the installation of one "Hereng" process battery was completed in 1930, and it is understood that the construction of a second is about to begin. The Vicoigne company also has at its Noeux mine an Anthracine plant capable of producing 400 tons daily, the product in this case being designated "anthracine." Production has developed from 10,000 tons in 1926 to 150,000 tons in 1932, and the company is starting on the construction of a new distilling plant, designed to double the existing capacity. In October, 1932, it was reported in the trade Press that within a few weeks the Nord and the Pas-de-Calais alone would have attained a production capacity of 300,000 tons weekly of synthetic artificial fuels (semi-coke and similar products).

Agglomerates, or Patent Fuel.—With the lessened demand for ordinary coals and the growth of stocks at the pithead, companies tend to convert a larger proportion than formerly into patent fuel. Thus, while coal output declined from 55,057 to 47,257 thousand tons in 1930-32, the production of patent fuel advanced from 6,829 to 7,550 thousand tons, as against the figures of 5,886 and 6,670 thousand tons recorded in 1928 and 1929. By far the greater part of the output is in the form of locomotive fuel. Practically two-thirds of the whole are produced at the mines of the Nord and the Pas-de-Calais (from 63.54 to 63.26 per cent. in 1930-32), nearly the whole of this part of the output coming from five mines in the Nord (Aniche, Anzin, Escarpelle, and small contributions from Vicoigne and Thivencelles) and four in the Pas-de-Calais (Ostricourt, Lens, Noeux and Carvin). Aniche, the largest individual producer (1,111,500 tons in 1932) has six presses for "briquettes" (rectangular blocks) with a combined capacity of 2,000 tons daily, and six for "boulets" (ovoids for domestic grates) with a combined capacity of 120 tons an hour. Anzin (1,039,800 tons in 1932) has seven presses for "briquettes" and 11 for "boulets," capable of producing 700,000 and 660,000 tons yearly, respectively. At Ostricourt towards the end of 1931 two new briquetting presses each with a capacity of 15 tons hourly were added to the existing five "boulet" presses with 100 tons capacity. Lens has a daily capacity of 1,200 tons of "briquettes" and 600 tons of "boulets," and Vicoigne 300 tons of "briquettes" and 600 tons of "boulets." The Bruay mine has also experimented with a new type of smokeless "boulet" or ovoid marketed under the name of "Bruaycine." A small plant was installed in the middle of 1931 but, after having produced only 500 tons, it was stopped at the end of February, 1932, in order that changes might be made in the refractory material used in the furnace.

Outside the northern area the greater part of the mines pro-

duction comes from the Gard county (about 800,000 tons yearly, chiefly from the Grand'Combe, Rochebelle and Bessèges mines) and from the Blanzly mine in the Centre (Saône-et-Loire). Just over one-fourth of the total national output is produced with the aid of imported coal (1.6 out of 6.1 million tons in 1929) in briquetting works situated in the vicinity of ports such as Havre, Bordeaux, Nantes, and others on the northern and western coasts.

The manufacture of redistilled agglomerates from lean coal or from schists is also increasing, 102,743 tons having been produced in 1931, as against 62,132 tons in 1930. The Noeux mine has four presses with a capacity of 40 tons an hour, and the *Société des Combustibles purifiés* has set up recently a new installation at Somain.

III. BY-PRODUCTS

The equipment set up during the reconstruction in 1919-24 has been much supplemented from time to time by the collieries, so as to remain in keeping with the more recent technical developments, and to increase their productive capacity.

Coal Tar.—The combined output of coal tar in France and the Saar during 1932 was 590,429 tons, as against 683,014 in 1931, and 735,000 in 1930: of these quantities, 252,000 tons were produced by the coke-ovens (342,000 tons in 1930), 225,000 tons by gas-works (239,000 in 1930) and 16,100 tons by glass factories and producer-gas plant (14,000 in 1930). The mines of the Nord and the Pas-de-Calais contributed 127,200 tons towards the 1932 output, or just over one-half of the entire production by coke-ovens. Of 563,200 tons treated by distillation in 1932 (against 581,300 and 559,900 tons in 1931 and 1930), 263,400 tons were completely distilled and 294,800 tons prepared for use as road-repairing material; one-third of the total quantity being treated by the mines of the Nord and the Pas-de-Calais. Imports into France in 1932 and 1933 were 221,118 and 213,674 tons (of which, 101,742 and 84,894 from the United Kingdom), as compared with 130,567 in 1931 (United Kingdom, 80,612) and 95,177 in 1930 (United Kingdom, 43,398). Exports declined from 29,125 tons in 1931 to 11,302 in 1932 and 12,613 in 1933.

Benzol.—The production of benzol amounted to 68,100 tons, of which 25,772 tons in the Nord and the Pas-de-Calais; this being a considerably lower output than in 1931 or 1930 (78,000 and 81,400 tons, respectively). Fuller details respecting the shares of the different benzoic products in the total benzol production will be found in the chapter on the chemical industry.

Sulphate of Ammonia.—Production in the 1931-32 season amounted to 369,600 tons, of which 253,800 tons by synthetic

processes (158,600 tons in the Nord and the Pas-de-Calais) and 115,800 tons from recovery plant (44,700 tons in the Nord and the Pas-de-Calais).

Other Chemical Output.—A wide range of chemical products is also produced by distillation plant either at the mines themselves or at the works of the subsidiary companies to which allusion has been made. The Aniche company's four retorts can deal with 25,000 tons of tar yearly, with recovery of heavy oils, creosote, naphthalene and pitch. The Béthune mine has a tar distillation plant capable of treating 25,000 tons yearly, and five units for the manufacture of synthetic ammonia by the Claude process, with a production capacity of 87 tons daily. Output in the two years 1930-31 and 1931-32, respectively, was: 10,279 and 8,587 tons of synthetic ammonia, 38,380 and 31,583 tons of synthetic ammonium sulphate, 12,985 and 10,950 hectolitres of ethyl alcohol, 14,034 and 10,839 hectolitres of methyl alcohol, 30 and 59 tons of sulphuric ether, and 791 and 743 tons of formol. At the *Sarre-et-Moselle* mine the new cokery, whose installation was completed in the middle of 1932, has enabled the yield of rectified and purified benzol to be raised from 10.3 to 12 kilogrammes per ton of coal, the coefficient of recovery attaining the high figure of 98.5 per cent. A plant for the production of hydrogen by fractional distillation was put into service in October, 1931, and the ammonia factory thus completed has a daily capacity of 14.8 tons, though at present it is working well below capacity, in consequence of the instructions regarding limitation of output issued by the *Comptoir de l'Azote*. For the same reason, the St. Etienne mine did not produce any sulphate of ammonia in 1932. The *Société de la Grande Paroisse* at Waziers in the Nord county, which, as mentioned elsewhere, treats the tar and coke-oven gases from the Aniche and other mines, in 1931 handled 19,763,000 cubic metres of gas, producing 11,023 tons of ammonia and a quantity of hydrogen, nitrogen, carbonic acid (used in the manufacture of potazote for fertilizer use) and carbon monoxide used as a fuel under the boilers. The *Société des Produits Chimiques Marles-Kuhlmann*, the subsidiary formed conjointly by Marles and the Kuhlmann chemical concern, in 1931-32 produced from the Marles coke-oven gases 9,891 tons of ammonia, 20,335 tons of sulphate and 16 tons of benzol. During that year was also inaugurated the manufacture of sulphuric acid, 16,415 tons of which were produced. The *Société Anzin-Kuhlmann*, in 1932 produced, from the Anzin coke-oven gases, 4,014 tons of synthetic ammonia, of which 1,948 tons were transformed into ammonium sulphate; a big advance upon the figures for 1931, when 1,773 tons of ammonia were yielded by the treatment of five million cubic metres of gas. The installation of plant for putting into practice a new catalytic process is now proceeding. The *Société Courrières-Kuhlmann*, whose works were completed in 1929, pro-

duced in 1930 and 1931 respectively 1,487 and 1,740 tons of alcohols, besides ammonia and ammonium sulphate.

Output in the Pas-de-Calais County.—The by-products recovery plant attached to the mines' cokeries in the Pas-de-Calais alone recovered in 1931 (1930 figures in parenthesis): 102,605 tons of tar (109,065); 25,452 tons of benzol (26,619); 33,203 tons of sulphates (36,603); 967 million cubic metres of gas (1,098 million). Of the gas, 76.4 million cubic metres (against 74.1 in 1930) were delivered to public distribution systems and the remainder consumed by the companies' own installations. The two companies *Huiles, Goudrons et Dérivés* and *Société des Usines de Libercourt* between them treated practically all the tar (100,526 tons) for the recovery of refinery products. Synthetic ammonia plant, with a capacity of 217½ tons daily, produced 28,992 tons in 1931: and products of the alcohol group included 1,151 tons of methanol (1,736 in 1930), 1,798 tons of ethanol (1,853), and 795 tons of formol (607).

Processes Employed by Various Collieries.—Of the mines in the foregoing table, Aniche, Béthune, Marles, and Liévin use the Claude process, Anzin, Dourges, and Noeux the Casale, while Lens and its associated company "Finalens" make use of both processes. The Société "Finalens" (*Société Industrielle et Financière de Lens*) is a subsidiary of the Lens mining company, formed in March, 1929, with a capital of 100 millions, to take over the chemical operations of the company. One part of its plant treats coke oven gases at the rate of 6,000 cubic metres hourly, for the production of hydrogen; a liquid air plant treats 1,600 cubic metres of air for the production of nitrogen; the two gases are then brought together to produce 70 tons daily of ammonia by the Mont-Cenis process. That part of the output which is in gaseous form is utilised on the spot for the manufacture of ammonium sulphate (200 tons daily), the anhydrous portion being sold to outside concerns. The sulphuric acid plant consists of three units, each with a daily production capacity of 65 tons, and the recently completed plant for the manufacture of nitric acid and nitrate of ammonia is capable of a daily output of 100 tons of the former and 60 tons of the latter. The colliery company itself installed in the middle of 1932 an electro-chemical plant, including two lime kilns with a possible output of 120 tons daily, two Miguet electric furnaces for the production of calcium carbide (90 tons daily), a cyanamide plant with a monthly capacity of 1,200 tons, two Messer compression and liquefaction units for the production of 1,000 cubic metres of nitrogen and the corresponding volume of oxygen per hour, and a metal drum factory (for the packing of carbide and cyanamide) able to turn out 1,300 complete metal drums per day of 8 hours from the rough sheet metal. In 1932

the plant produced 15,393 tons of carbide and 9,481 tons of cyanamide, as compared with 10,507 and 6,830 tons in 1931 and 4,735 and 716 tons in 1930. The Oils, Tars and By-Products Company (*Société Huiles, Goudrons et Dérivés*), initial capital 10 millions, since increased to 54 millions, was formed in 1923 by the Lens and Vicoigne mining companies, the *Société Ammonia* and the *Alais-Froges-Carmargue* electro-chemical concern, for the purpose of treating the tar produced by the coke ovens of the two collieries just named. It has two factories at Vendin-le-Vieil (Pas-de-Calais) and Jouy-aux-Arches (Moselle), together capable of treating 175,000 tons of tar yearly, with production of pitch, creosote, special oils, naphthalene, and carbolic acid. In 1930 the company's plant dealt with 96,667 tons of tar, or nearly two-thirds of the whole quantity distilled in the Nord and the Pas-de-Calais. The company, which has a yearly turnover of about 100 million francs, is indirectly interested in other branches of chemical manufacturing, through its holdings in the *Hydrocarbures de Saint-Denis*, the *Société Lyonnaise de Produits Benzoiniques*, the *Raffinerie de Pétrole du Nord* and other companies. The *Société Ammonia*, which produces synthetic ammonia by the Casale process, and the *Société Carburants et Produits de Synthèse*, which carries out research work in connection with the hydrogenation of coals and oils, are among other companies sponsored by the great mining interests, with a view to the more profitable handling of coke oven by-products.

Gas Supply.—The intensive development of the manufacture of coke and its by-products inevitably led the mines to organise the utilisation and distribution of the coal-gas, coke-oven and other gases not consumed within their works. Some Northern collieries such as Béthune and Anzin, supply a large area, and several in the Loire basin have greatly developed this branch of their activity. The largest individual producer appears to be the St. Etienne company in the Loire basin, which in 1932 increased its output of poor gas to 78.2 million cubic metres, as against 62.3 million in the previous year. The output of the Béthune mine declined from 60.1 million cubic metres in 1931 to 44.8 million in 1932; Anzin sold 40.5 million cubic metres in 1932 (37.0 in 1931), Courrières 34.1 (against 29.6), and Marles in the year 1931-32 disposed of 29.4 million cubic metres. Several other mining companies do not publish the figures of their gas output. As in the case of electric current, some of the mining companies deliver all or the greater part of the gas that they produce (apart from that portion which is consumed as fuel in their coke-ovens) to associated concerns; thus, Aniche delivers all its gas to the *Société Chimique de la Grande Paroisse*, and Courrières supplies nearly two-thirds of its output to the *Société Marles-Kuhlmann* and about one-third to the *Société régionale de distribution de gaz*, which serves the Lille and Douai regions. The Dourges mine also delivers its coke-oven gases to the same company; and those of the

Vicoigne-Noeux-Drocourt company are sold in part to the *Société régionale* and in part to the *Société Artésienne de Force et Lumière*.

Distillation By-Products.—The necessity for replacing on the largest scale the war-destroyed or war-damaged equipment permitted the installation of the most modern types of coke-oven batteries provided with apparatus for the recovery of gas, tar, pitch, creosote, toluol, benzol, sulphate of ammonia, and other by-products of distillation. As an indication of the magnitude of the operations of the collieries in this sphere, the following table has been prepared respecting the Nord and the Pas-de-Calais area, which in 1930, the year of maximum output of coal and coke, produced 85.3 per cent. of the total coke output of French collieries :—

TABLE SHOWING SOME OF THE BY-PRODUCTS OF COKE-OVENS IN THE COUNTIES OF THE NORD AND THE PAS-DE-CALAIS.

Name of Mine	No. of coke ovens	Output of coke		Tar		Benzol		Sulphate of Ammonia		Naphthalene	
		1913	1932	1913	1932	1913	1932	1913	1932	1913	1932
Aniche	230	293,000	290,004	6,553	8,330	1,435	2,177	3,184	3,352	—	—
Anzin	198	201,186	166,036	3,191	5,521	557	1,131	1,431	2,180	—	—
Azincourt	60	35,000	85,481	—	2,954*	—	778†	—	—	—	—
Béthune	362	392,691	320,265	11,829	11,610	1,705	2,808	4,448	4,284	—	—
Courrières	132	Nil	175,494	—	8,000	—	1,282	—	3,333	—	—
Crespin	80	24,840	170,671	648	5,620†	—	1,562†	152	—	—	—
Dourges	280	272,641	240,325	6,234	11,379†	674	1,750†	2,353	—	34	—
Douchy	130	174,761	146,174	—	4,741†	—	1,612†	—	—	—	—
Escarpelle... ..	35	112,000	69,844	2,697	1,858†	799	616†	1,282	—	—	—
Lens	331	661,201	539,665	—	37,261†	—	3,809†	—	—	—	—
Liévin	47	—	81,134	—	5,278†	—	370†	—	—	—	—
Marles	83	28,702	151,105	—	7,720†	—	16	—	20,335	—	—
Vicoigne-Noeux-Drocourt	215	185,329	184,719	—	18,497	—	2,337	—	3,263	—	842

* 1930
† 1931.

NOTE.—Absence of figures does not imply non-production of by-products : all batteries are equipped for their recovery.

Electricity Production.—The wholesale post-war reconstruction of quite half the Northern coal mines enabled a large number of collieries to develop on a systematic and large scale the production of electricity, both for their own use and for general distribution. The numerous small and relatively uneconomic power stations of pre-war days, many of which were destroyed during the war, have been replaced by a few high-powered stations. Five of them now have an installed capacity of from 70,000 to 100,000 k.w., namely: the new station of the Béthune mine, first brought into operation at the beginning of 1932 with an installed power of 58,000 k.w., increased during the year to 100,000 k.w.; the Beuvry station of the Vicoigne mine, 87,500 k.w.; Lens 75,000 k.w.; Courrières 75,000 k.w.; and Aniche 70,000 k.w.; four range from 59,000 to 65,500 k.w., viz. the old station of the Béthune mine (65,500 k.w.), Bruay (65,000 k.w., shortly to be increased to 75,000 k.w.), Anzin (60,000 k.w.), Marles (59,000 k.w.); and at least four stations are of 30,000 to 49,000 k.w. (Dourges, Liévin, the Hénin-Liétard station on the Drocourt concession and a new 30,000 k.w. station at Lens, which began to operate in December, 1932). The 49,000 k.w. station at Dourges is about to be replaced by a new one capable of generating 60,000 to 70,000 k.w., and plant to ensure additional capacity is being installed at several other power stations. As illustrating the extent of the mines' contribution to the general store of power, the electrical power output of some of the mining companies in 1932 may be mentioned: Lens 227 million kilowatt-hours, Vicoigne 193, Béthune 157, Aniche 146, Anzin 135, Courrières 132, Marles 108, Bruay 106, and so on. In some cases all, or practically all, of the power thus generated was consumed by the mines and their associated companies, while in others the bulk of the current was delivered over a general distribution system. Interconnection between power stations over a wide area reduces the risk of stoppage through breakdowns, and enables compensations to be effected.

Many mines situated elsewhere than in the northern mining area have likewise developed their own electrical plant, though large power stations are few in number. The Blanzoy company in Saône-et-Loire in May, 1931, increased the power of its Lucy station from 50,000 to 60,000 k.w. (its smaller station known as Les Alouettes has been closed down, having become redundant when the great Chalons thermic station began working); Grand'Combe in the south-east has a power station of 46,700 k.w.; that of Petite-Rosselle at Furbach, in Lorraine, has a capacity of 42,500 k.w.; and that of the Mines de la Loire, at St. Etienne, in the centre, is rated at 32,000 k.w.

By utilising their lower grades of coal as fuel for their power stations, in the form of scrap or as pulverised coal, the mining companies are able to resolve in considerable measure the problem of disposing of the unsaleable portions of their output (e.g., scrap

at Lens, Vicoigne, Blanzy, Petite-Rosselle; pulverised coal at Béthune, Vicoigne, Bruay, Grand'Combe). Coke-oven gases are also being used to a growing extent, notably at Lens, at Marles and at the Hénin-Liétard power station of the Vicoigne concern.

Two companies have been formed by the mines for the general distribution of their surplus current in the Nord, the Pas-de-Calais and adjacent counties. The *Compagnie Electrique du Nord* (capital 40 millions), formed jointly by the Lens, Noeux, Dourges, Courrières and Aniche mining companies, has four power stations and serves about 1,000 communes in four counties. The generating capacity of its main power station near La Fère (Aisne) has been increased from 38,000 k.w. in March, 1929, to 70,000 k.w. in December, 1932, and in the same period the length of its distribution system has grown from 2,621 to 3,328 kilometres. The second company, the *Société Electrique du Nord-Ouest*, has a system of about 450 k.m. In other cases, individual mines have formed subsidiary companies to operate separately the task of electricity distribution: as for instance the Bruay mines, whose subsidiary, the *Société Béthunoise d'Eclairage et d'Energie* (capital 30 millions) increased the length of its system from 3,905 km. at the end of 1928 to 6,059 k.m. at the end of 1932, besides having 42 km. of high-pressure gas mains in service and 30 k.m. under construction at the latter date. It supplies 676 communes, and in 1932 furnished 125½ million kw.-h. of electric current. The generating capacity of the mines-owned power stations in the northern area has grown from 90,000 k.w. in 1913 and 500,000 in 1928, to over 700,000 k.w. in 1932. By the enlargement of power stations and the modernisation of their equipment, the mining companies have been able to effect substantial savings to utilise profitably the otherwise unsaleable portions of their output, to generate their own power and to derive additional revenue from the sale of surplus current.

iv. IMPORTS AND IMPORT RESTRICTIONS

France as a Market for United Kingdom Coal.— France has for long been the largest overseas market for United Kingdom coal. The inadequacy of French coal resources, which in normal years are able to supply only about five-eighths of the national demand, the proximity of United Kingdom mines and the wide range in qualities of their coals, account largely for this trade. Apart from their sales in the Paris and Rouen regions, British coals enjoy especial predominance in those parts of France that lie behind the seaports from Havre and St. Malo westwards and round the coast southwards to Bayonne, and even on the Mediterranean seaboard, as the main French coal areas are remote, being at the North Eastern extremity, with minor fields

either in Lorraine, or scattered in the Centre, or in southern parts rather distant from large consuming centres. Of the total coal exports from the United Kingdom to all countries, the exports to France averaged 22 per cent. in 1922-25, 20.0 in 1928-29, and in the five years 1929-33 constituted 21.6, 24.4, 24.8, 23.2 and 22.3 per cent. respectively. The highest tonnage (statute tons) recorded in recent years was in 1930 (13,581,000 out of total United Kingdom exports of 54,874,000 tons); the quantities dropped to 10.55, 8.9 and 8.70 million tons in 1931-33. The figure has fallen, for the last three years, far below the pre-war level of 12.8 million tons. Coal heads the list of United Kingdom exports to France, representing usually about one-third of their total value.

Many difficulties have faced United Kingdom exporters of coal to France in the last few years. Increased competition has arisen notably from Belgium, Holland, Poland, and more recently supplies have even come from the Soviet Union and from Indo-china whilst up to 1932 the German competition was accentuated by the privileged position resulting from the reparations in kind agreements. With the shrinkage of the markets of various Continental producers, prices competition has been exceptionally severe, as certain importing countries appear to have had a rather elastic prices policy, and even to have sold at nearly cost-price. Advantages of various kinds on coal transport for export, and concentrated control of the prices position in home markets, also enabled some countries to discount important elements in cost. From the table given in Appendix 6 it will be seen that in 1913 the United Kingdom furnished 60.2 per cent. of the total imports of coal into France. In 1928 the tonnage was 24½ per cent. below the 1913 level, and the percentage of total imports had fallen below 48.6, as a result of the marked increases, both absolute and proportional, in imports from Germany, Holland and Poland, whose individual shares in the total traffic had grown from 18.6, 1.5 and zero in pre-war years to 25.8, 4.8 and 2.2 per cent. in 1928. For the three years 1928-30 the United Kingdom furnished an average of 11,768,000 tons yearly, or 53.53 per cent. of total coal imports, while Germany supplied 22.37 per cent., Belgium 15.68 per cent., Holland 5.12 per cent. and Poland 2.73 per cent.

The market itself has become smaller owing to the reduced industrial activity; coal consumption in France declined by 18.4 million tons, or 21 per cent., from 1929 to 1932. As a consequence of this lower consumption and the resultant growth of unemployment in the French mining industry, there came in July, 1931, the institution of the quota system which could not fail to introduce a further strong element of disturbance to the even tenour of business, and to damp in advance prospects of or efforts towards expansion. Its effect upon imports from the United Kingdom has been to reduce the tonnage in 1931 to 91.6 per cent. of the average for 1928-30, and in 1932 to 77.8 per cent. of that average. As the

result of the latest decision of the quota board, the proportion has been still further reduced in 1933 to 71½ per cent., after making due allowance for imports permitted over and above the nominal quota of 65 per cent. Less than two months after the United Kingdom had gone off the gold standard in September, 1931, the exchange compensation levy of 15 per cent. *ad valorem* was imposed by France on United Kingdom imports, and remained in force for three months before its levy on coal ceased. Meanwhile other foreign suppliers, although their quotations, as tends to be the custom in the foreign coal trade of Europe, were based upon sterling price-levels, were not liable to this impost, and were able therefore to make the most of a privileged position.

General Causes of Permanently Reduced Coal Demand in France.—The post-war advance in French coal production resulting from the adoption of more modern methods in the French mines, the addition of five or six million tons from the Lorraine fields and the acquisition of the Saar output, no longer statistically considered as an import, with its yearly extraction of 14 million tons, of which 28 per cent. is consumed in France, combines to reduce the markets open to the coal exporter to France. Still more important is the steady development of hydro-electric power enabling electricity to replace coal to a growing extent particularly in those areas of the South and West in which United Kingdom coal has hitherto commanded the readiest sale. Railway electrification schemes which had lain dormant for a number of years are now being pushed actively ahead. From 1928 to 1932 over 500 miles, or 70 per cent., were added to the mileage operated electrically on the main railways, the greater part being on the Midi and Paris-Orleans systems which, operating chiefly in the West and South-West, were formerly large consumers of coal from the United Kingdom; and if present plans are carried out, the next eight or ten years should see nearly another 1,900 miles converted to electric traction. One of the earliest sections to be put in hand would be the coast line from Marseilles to the Italian frontier, at present largely dependent upon British coal. The navy has replaced coal by fuel oil, the mercantile marine is following suit, and the ever advancing utilisation, for power purposes in divers domains, of the internal combustion engine will further diminish the former realm of coal. Government departments, other public bodies and utility services, are required to confine their purchases, whenever possible, to coal of French origin, and the moral pressure (in default of legal means) upon railway or shipping companies in the same direction is potent. In the production of electricity by thermic stations and of gas, considerable economies in fuel consumption have been and are still being realised with the aid of the latest improvements in technical processes of coal transformation. The rapid development of the use of gas and of electric cooking in place of cooking with coal as fuel has also reduced the market for domestic coals.

Preferential railway rates for the transport of coal from mines in the north or in the Saar, when consigned to points on or close to the Channel and Atlantic seaboard, continue to be applied. The former arrangement, under which a reduction of 15 per cent. was accorded, was suppressed as from the 6th February, 1931; but it was replaced on the 28th April of the same year by a new series of preferential rates, which exceed by only from 30 centimes to one franc per ton those which formerly resulted from the 15 per cent. reduction. The mine-owners of the Loire and the Gard are now agitating for the extension to them of similar privileges, and in March, 1933, there was proposed in Parliament a resolution which, if carried into effect, would result in preferential railway rates being accorded to coals from those fields, when consigned to districts in which they would be competing with United Kingdom or German coal.

Imports Limited by Quota.—Mainly as a consequence of the growing industrial depression, French coal consumption declined from over 89 million in 1928 to 87 million tons in 1930, and fell further in the first half of 1931, so that by June unsold stocks commenced to accumulate at the pitheads to an unprecedented extent. From an average of 2.1 million tons in 1928-30, they had risen by June, 1931, to 4.31 million, and in some districts working days had to be reduced by 4 to 6 days a month, especially in the Loire and Saar coalfields, and many miners had to be discharged. Imports of coal, which in the years 1929 and 1930 had risen to 24 million tons against 17½ million in 1928, continued to come in at nearly the same rate (in the first six months 12.13 million against 12.79 and 11.12 million in the same six months of 1930 and 1929) and greatly increased amounts were coming from Belgium, Holland and Poland, although the home industrial demand was held to have dropped by 20 per cent. Imports from countries other than the United Kingdom were also being sold at unusually low prices, and were displacing French coal in its normal markets of the North and East. In July, 1931, the French Government accordingly introduced limitation of coal imports by the fixation of a quota based on the average of the imports of coal during the three years 1928-30. For each importing country the total imports were first fixed at 100 per cent. of that average, but this was reduced on the 1st September, 1931, to 80 per cent. The percentage was reduced in November, 1931, to 72 per cent. (December, 1931, and January, 1932), thence to 70, 65 and 60 per cent. in February, May and June, 1932, raised again to 70 per cent. from July, 1932, to the end of January, 1933, and lowered to 65 per cent. as from February, 1933. This total quota of 65 per cent. is not, however, allocated directly and freely to importing countries as their national quota: the Mines Department reserves certain percentages, which in 1932 varied from 6 to 10 and 12 per cent., as a margin to meet special requirements, such as

the needs of patent fuel manufacturers on the Atlantic seaboard : in July, 1933, the free quota was 53 per cent. Over and above the fixed total quota of 65 per cent. (November, 1933) there were authorised extra allowances, the total amount of which has varied between 150,000 and 171,500 tons at different times, and of which 100,000 tons were to ensure supplies for maritime ports, and the remainder to meet other exceptional cases : as from December 1st, 1933, the fixed total quota was reduced to 58½ per cent. (of which, 47.7 per cent. allowed to individual importers and 10.8 per cent. reserved by the Mines Department), and the extra allowances to 90,000 and 54,350 tons respectively. The total imports effectively permitted in January, 1933, were accordingly 76.6 per cent. instead of the nominal 70 per cent., from February to November 71 per cent. instead of the nominal 65 per cent., and from December, 1933, onwards, 64.7 per cent. instead of the nominal 58.5 per cent. Prior to June, 1932, imports of coking coals and of smalls intended for transformation into metallurgical coke were unrestricted, but since that date importers thereof must obtain licences, although the quantities concerned are not reckoned against the separate national quota.

Actual Imports from Certain Countries.—The methods adopted for the enforcement of the restrictions were not at first entirely successful in compressing imports within the decreed limits, some countries notably exceeding their individual allotments. For instance, imports from Holland for the whole of 1931 were 180.4 per cent. of that country's average for 1928-30, those from Poland 163 per cent. and those from Belgium 128.3 per cent.; and even in 1932 Poland still exceeded by 3.2 per cent. the 1928-30 figures. The following table shows, for the five leading suppliers, the percentage of total imports that each was entitled to furnish, on the basis of the 1928-30 average, and the percentages actually supplied in 1931-1933.

PERCENTAGE OF FRENCH COAL IMPORTS.

Supplier	Average 1928-30	Actually supplied		
		1931	1932	1933
	Per cent.	Per cent.	Per cent.	Per cent.
United Kingdom ...	53.5	46.7	51.2	49.5
Germany	22.4	20.0	22.8	22.4
Belgium-Luxemburg	15.7	19.2	15.5	16.5
Holland	5.1	8.8	5.5	6.4
Poland	2.7	4.2	3.5	4.0
	99.4	98.9	98.5	98.8

In actual tonnage, imports from the United Kingdom in 1931 were 8.4 per cent. below the datum level of 1928-30, and in 1932 and 1933 were 22.2 and 22.7 per cent. below; those from Germany

were 6.1, 17.2 and 18.3 per cent. below, while those from the next three supplying countries were in excess by the proportions indicated above.

Quota Organisation by Importing Countries.—The management of the individual national quotas is not uniformly organised. Importers of coal from the United Kingdom and from the U.S.S.R. are individually entitled to import the fixed quota of those imports that they can show to have imported in the basic period: Belgium, Poland and Germany have instituted in their respective countries approved organisations representative of the industry, whose visa must be attached to all coal consignments, and whose duty it is not to accord their visa for quantities in excess of their authorised national quota. Dutch coal is imported under licences issued by the French authorities to representatives in France of the Dutch mining companies. The non-centralised method enjoys favour in French industrial circles, as affording better guarantees that individual importing firms will be able to secure licences for quantities proportionate to those which they regularly imported before the quota system was introduced, but the French Government appears to consider centralisation in the exporting country itself as simplifying the machinery and being more effective.

Import Licence Duty.—Under the provisions of the 1933 Budget, a fee may now be charged on import licences for all goods subjected to the quota system. In the case of coal, it was set (May, 1933) at Fcs. 2 per ton, or the same amount as the customs duty, so that it is equivalent in practice to an increase of 100 per cent. in the customs duty. On January 1st, 1934, this duty was raised to Fcs. 5 for anthracite and patent fuel and to Fcs. 4 for ordinary coal.

Public Restrictions on Free Market for Coal.—After the cancellation in January, 1928, of the coal import licence system which had taken effect in June, 1927, and which had curtailed, or delayed considerably the imports of supplies for railways, gas and electricity companies and other large consumers, this form of obstacle to the free entry of coal lapsed until July, 1931, when, under the stress of declining consumption and growing unemployment in the mining industry, a new quota system was introduced, aiming at the reduction by a definite percentage of the average imports in 1928-30. The official instruction of June, 1927 to public bodies and utility services (railways, gas, electricity companies, etc.) to give priority to French coal, provided that the price is not more than 10 per cent. higher than that of foreign coal, continues still in force. If the margin of price exceeds 10 per cent., the bodies concerned must consult the Mines Department before taking a decision to purchase foreign coal. The customs duty of Fcs. 2 a ton on coal continues unchanged (the pre-war rate was

Fcs. 1.20), although for many years the collieries organisation has been urging the Government to raise it to Fcs. 6. The imposition in 1933 of a fee of Fcs. 2 per ton in respect of coal import licences under the quota regulations had then the same effect as though the customs duty had been doubled. A further change, with an incidence of the same nature as a customs duty, is the *taxe à l'importation*: its rate on coal as a raw material is 2.75 per cent. *ad valorem*. With coal at say 80 to 90 francs a ton, this adds 2.20 to 2.50 francs a ton. The carriage of coal by rail at preferential rates for distances of 250 kilometres or over, designed to help coal from the mines in the north-east of France to compete with foreign (chiefly British) in the west and south-west, has continued without interruption, save for a short period of three months early in 1931.

Coal Shipments under the French Flag.—A factor of some importance to shippers of coal from the United Kingdom to France is the recent agitation against the carrying of imported coal in non-French vessels. There is still in operation the decree of January, 1922, which requires public services, including electricity and gas companies, State railways and other public utility bodies, to have their foreign coal imported in French ships, if the French freight rates do not exceed foreign freights by more than 10 per cent. Pursuant to this decree, such purchasers of foreign coal, before concluding contracts, are obliged to apply to a specific organisation in Paris for information as to availability of suitable French tonnage and the cost of freight. France has a fleet of colliers capable of carrying about 6½ million tons a year, but a third of these have been laid up for nearly two years, as not more than 4½ million tons of imported coal are at present carried in French bottoms. Strong efforts have been made to secure a far larger use of national shipping in this trade. Already the persuasion brought to bear upon public services managed or subsidised by the State, the counties or the municipalities (*e.g.*, by ministerial recommendations or by the framing of conditions for the placing of contracts) has resulted in about 75 per cent. of the total coal supplies of these services being imported in French vessels, and (according to a recent statement in the Senate by the responsible Minister) the object aimed at is to raise this percentage to 100. Suggestions were also made that private importers should voluntarily agree to carry about 60 per cent. of their imports under the French flag (it being hinted that if they failed to do so of their own accord, legislative action might be taken to compel them to do so). It is considered that by putting these ideas into practice, the whole of the collier fleet could be brought into use, and a valuable contribution be made towards the reduction of unemployment among seamen. Any development of such a movement cannot but react unfavourably upon present arrangements by which vessels flying the British flag carry coal

from South Wales and other ports to Bordeaux, Nantes, Rouen, etc., taking as return cargo pit-props, turpentine, building material and agricultural produce.

Under an agreement with the French collier owners, the Central Syndicate of Merchant Importers of Coal undertook as from the 1st August, 1933, to reserve to the French flag *in addition to the proportion of total tonnage already so carried*, 10 per cent. of their total quotas of coal imports from all sources, and the Central Committee of Patent Fuel Manufacturers on the seaboard made a similar undertaking, as from the 1st July, respecting an additional 10 per cent. of the total of their individual quotas for making patent fuel. On the basis of the 1932 returns, rather more than 40 per cent. of the five million tons imported annually by member firms of these two organisations were already being carried in French bottoms, so that under the new agreement French colliers are assured the transport of at least 50 per cent. of imports under the quota system. On the assumption of the maintenance of the import quotas on the same scale as in the quarter July to September, 1933, the net effect of the arrangement would be to procure to French colliers, within a yearly period, an additional 490,000 tons. The arrangement affects principally vessels of over 2,000 tons, few of the French colliers being of smaller capacity.

v.—ORGANISATION AND FINANCE

Large - Scale Units.—In 1914 large-scale units already predominated in the French coal mining industry; and the necessities of the war stimulated the growing tendencies towards greater concentration and rationalisation. War reconstruction of such vast dimensions as the war destruction imposed, and the general after-war trend of business organisation in basic industries, gave birth in their turn directly and indirectly to various amalgamations and to combined actions of an unprecedented nature. Among important fusions were those of Vicoigne-Noeux with Drocourt and with Vismy and Fresnoy, and that of Marles with Ferfay-Cauchy. Mention has already been made of the notable case of combined action immediately after the war whereby nearly a score of mines and metallurgical works collectively purchased from the State the great ex-German Sarre-et-Moselle mine in Lorraine: in 1931 this collective interests undertaking leased for 25 years the Houve mine (output about 900,000 tons). In other ways collective action has been manifested. During the reconstruction period, when the State resources were unduly strained in meeting universal calls for war compensation, the bulk of the Northern collieries combined to form a company with capital of 50 millions to eke out the State efforts for the financing of the reconstruction of the war damaged mines, and they thus succeeded in raising, by two separate public

issues in 1921 and 1922, a total of 1,700 million francs: in 1931 the same collectivity issued four loans totalling 1,674 millions for financing various needs of collieries in the same area. Many collieries have combined for electricity production distribution: others have formed special organisations with other mines and perhaps with chemical firms, for the building and operation of works for special production (like the Oils, Tars and By-Products Company, the *Société Ammonia*, the *Société Chimique de la Grande Paroisse*). In the years of dearth of labour, foreign workers were recruited and introduced for the individual mines by their central organisation. For certain supplies (e.g. pit-props) a central purchasing agency has been established.

A signal instance of such voluntary collective action for business ends was the recently agreed system of limitation of sales. In 1931, joint action was taken by the mines in the Northern area to control sales on a quota system, and in April, 1932, the other areas came into the scheme. Three producing regions were determined: the North (Nord and Pas-de-Calais), the East (Eastern France, Lorraine, and the Saar), and the Centre and South (including the Loire, Gard, Tarn, and other scattered fields). The basic figure selected was the average of the sales in 1929 and 1930, and the mines in each area undertake so to regulate their sales as to ensure that the quota of reduction applicable to the basic figure, by the decision of their own central organisation, should be realised in their due proportion by the several regions.

Inter-Colliery and Other Participations.—The Sarre-et-Moselle mine in Lorraine affords a striking example of collective participation by mining and metallurgical concerns: sequestered as German property at the close of the war, it was then purchased from the State by a group that included nine large mines in the Northern area, six others situated elsewhere in France and three or four large iron and steel groups. Many other interlocking participations appear in the colliery world, or personal connections have been created: in some cases a couple or more large mines have the same head, who is also found on other boards: in many cases the same names appear as directors of several mines. Metallurgical interests are prominently identified with the coal industry. Besides the Petite-Rosselle (over 2 million tons), which it operates, the de Wendel group appears to be connected with half a dozen mines of importance, e.g. with Clarence (197,000 tons in 1931): Liévin (1,715,000 tons), Douchy (407,000 tons), Crespin (137,000 tons), Thivencelles (260,000 tons). The Schneider company owns two mines, Creusot and Decize (367,000 tons), but with its numerous affiliations it has no doubt many mining participations. The St. Chamond-Homécourt group owns three collieries and has participations in a series of mines such as Escarpelle (over 1 million tons), Anzin (4 million tons), and others. The preceding three groups, as well as the Longwy

group, it may be mentioned, also possess large interests in mines whether in Germany, Holland, Belgium or England. The Commentry-Fourchambault et Decazeville company owns 4 mines with (in 1931) an output of 531,000 tons; the Chatillon Commentry et Neuves-Maisons three (618,000 tons); the Denain et Anzin company owns Azincourt (112,000 tons). Railways have many participations in mines: the P.L.M. owns and works the Chazotte mine (158,000 tons of coal and 126,000 of patent fuel). The chief electro-chemical group runs a lignite mine. The two dominating chemical groups have been working for many years in closest touch, both financially and technically, with important mines in connection with the output or refining of coal by-products.

French Views on Coal Mining Rationalisation.—Concentration and rationalisation involving the unified direction and working of several large mining concerns appear not to recommend themselves to the French coal industry. Qualified opinion, which is averse to the megalomania that has affected certain sister industries in other countries, is apt to consider that the great colliery undertakings, of which there are eight or nine, responsible for the annual output and sale of 3 to 4 million tons, and even those producing only two million tons, are already of sufficient magnitude to reap, on the technical side of output, most of the advantages of great scale production and to hold, on the selling side, a strong position. As affirmed a few years ago by the Central Coal Committee of France, "an excessively large, undertaking eludes the direction of a chief: take as an example the Saar mines under a single director, with an annual output of 14 million tons. Beyond a scale of 4 million tons—a maximum reached by three or four French mines—a colliery enterprise rapidly becomes too extensive to be guided by a single man." They are disposed to collaborate for general purposes in such ways as have already been indicated, whilst strictly retaining the legal and factual independence and the economic compactness of their own businesses, but this attitude does not preclude financial participation in other concerns.

International Regulation of Coal Trade.—Little progress has ensued since 1928 towards the formation of an international voluntary agreement of European coal producers. French leaders, who have been long desirous of this consummation with the object of fitting normal supply to normal demand and thus of avoiding the waste of undue and disorderly production, consider with much reason that they are capable of regulating French production and selling on a national basis. Developments have led to State regulation of the international coal trade, the free play of demand and supply within the last couple of years having been stemmed or modified by governmental restrictions effected by

general quota measures, or perhaps by special quota regulations arising out of barter arrangements extraneous to the problem of the purposeful ordering of the European coal economy as a whole.

General Trade Organisation.—The coal trade possesses in the Central Collieries Committee of France (*Comité Central des Houillères de France*) a strong and well equipped central organisation, with headquarters in Paris, to which are affiliated practically all coal producing concerns. In Paris are maintained on a considerable scale the general technical, legal, statistical and economic services, and at Montluçon the experimental station, but the Committee operates in the provinces through the eight regional federations, of which the most important are those for the Nord and Pas-de-Calais at Douai, for Alsace-Lorraine at Metz, and for the Loire at St. Etienne. Other federations have offices at Lyons, Clermont-Ferrand, Alès (Gard), Rodez, Grenoble. These regional organisations discuss the regional collective wages agreements and other labour questions with the appropriate workers' organisations. In international questions the Central Committee acts for the whole trade, being provided with a strong staff of specialists.

Common Prices Policy.—In view both of the highly centralised organisation of the French industry for general purposes, and of the close administrative and personal relations of the leaders of the comparatively few collieries, it may be surmised that the all-important question of prices is duly considered. A central organisation, fixing standard prices, exists at Douai for the Nord-Pas-de-Calais mines: the two great mines in Lorraine, and the five or six in the Loire, have no difficulty in establishing their standard prices. It will be borne in mind that the chief collieries retain control of the sale of their output, and maintain their own selling offices in various parts of France. Thus, Lens has about twenty area representatives (Rouen, Lille-Roubaix, Amiens, Dijon, Lyons, Paris, Tours, etc.), Anzin and Courrières, ten to twelve apiece.

The Financing of French Coal Industry.—The financing of the French coal industry was largely undertaken in the years 1919-24 by the State, which recognised its liability for the reconstruction of the wrecked or damaged mines: the assessed claims were immense, reaching for instance in two cases from 540 to 600 millions, and in two others to over 300 millions. The North and Pas-de-Calais group formed a special company which, in 1921 and 1922, raised 1,700 millions by public subscription. The non-damaged section of the industry, whose production had been stimulated, with State support, during the war, found without great difficulty any necessary credit, whether short, medium or long-term, in view of the exceptional coal shortage pending reconstruction of

the mines, and of the consequently high prices of coal. In 1923 was constituted by leaders of the coal industry itself the *Union des Mines* (capital reduced in 1932 from 270 to 135 millions), whose objects were to conduct in France or abroad all financial, commercial or industrial transactions in movable or immovable property for its own or for other account, in particular for the mining and its allied industries. It remains most closely identified with the mining, metallurgical and their allied industries, its headquarters being at those of the Central Collieries Committee, and the majority of its directors being heads of coal concerns, whilst its discount and credit operations are mainly with coal and metallurgical concerns, and its participations in issues are largely in those of mines and metallurgical works, e.g., in 1931 and 1932 in issues of the Lens and Bruay mines, and of those belonging to the Nord and Pas-de-Calais company above-mentioned. In 1931 the last-named company, specialising in financing the Northern mines, made on their behalf four issues totalling 1,674 millions.

The great joint-stock and the "business" banks (such as the *Banque de Paris et des Pays-Bas* and the *Union Parisienne*) also engage in coal financing for medium or long terms, either directly or through special organisations like the *Association Minière* (founded in 1905, capital 27 millions), the *Société Anonyme de Crédit à l'Industrie Française* (founded in 1928, capital 100 millions), the *Union pour le Crédit à l'Industrie Nationale* (founded in 1919, capital 50 millions), the *Omnium Financier pour l'Industrie Nationale* (founded in 1929, capital 50 millions). The important company entitled the *Crédit National* (capital 100 million) created in 1919 to carry out the financial transactions connected with the State settlement of war damage claims, is also authorised to finance industry and commerce in French territory and to grant loans not exceeding 5 millions at from 3 to 10 years' maturity against first mortgages, collective guarantees or other satisfactory securities. In recent years it has regularly made considerable loans to industry: on its board are among others the heads of several great banks, of the Central Collieries Committee, of metallurgical concerns. The chief coal area is also fortunate in having localised in its territory several important regional banks, mostly with many branches, which, having had traditionally considerable liens with the coal industry, understand its special requirements, and which are still essentially "district" banks, although in some cases they may have developed a large Paris business. Such are, at Lille, the *Crédit du Nord*, capital 150 millions, with over 50 offices in the North: *Banque Générale du Nord* (formerly *Banque Verlay-Decroix*), capital 100 millions, with 50 to 60 offices: *Banque Scalbert*, capital 80 millions, with 25 offices; at Valenciennes, *Banque L. Dupont et Cie.*, capital 100 millions, with about 20 offices; and the *Banque Piérard*, until

recently with head office at Valenciennes, since transferred to Paris, with offices at Valenciennes, Lille, Douai, Maubeuge and at a dozen other places in the North. On the boards of many of these Northern banks industry is generously represented, and certain Paris "business" or joint-stock banks have also taken interests. The Lorraine region also possesses banking institutions of the "district" type, which have rather specialised in mining and metallurgy. In all the coal regions, the French Big Five have also numerous branches, and it is indisputable that they are largely utilised by the coal industry for ordinary banking facilities: their specialist banks, which they have created in recent years for medium and long-term financing, are in a position to render the services which they, by reason of the conditions on which they hold their deposits, feel unable to consider.

vi. LABOUR CONDITIONS

Labour Force.—In 1930, when French coal and lignite production reached its zenith, the number of colliery workers was 299,500, exceeding by 26 per cent. the number employed in 1913 (234,000, inclusive of 30,700 in the Lorraine coalfields). In January, 1927, occurred the highest number recorded, viz., 333,150 (the 1926 United Kingdom coal strike had caused a quickened immigration of miners), but by December, 1927, it had sunk to 318,100. The more general adoption of mechanical aids to production is reflected by the fact that although the output of coal and lignite in 1930 was greater by 2.2 million tons, or 4 per cent., than in 1927, the number of workers was lower by about 10.1 per cent., than the average monthly number for that year. At the end of 1931 and 1932 the numbers had further declined to 275,366 and 254,533 respectively, thus keeping pace with the reduction in output (labour force at end of 1932, 15.4 per cent. below 1930 level; coal output, 14.1 per cent. below 1930 level). As the total production in 1932 was only 2.6 million tons greater than in 1913, the increase in the number employed in the mines may be mainly attributed to the effects of eight-hours' day legislation for surface workers whose hours were reduced in 1919 to eight from nine. In December, 1933, the total number employed was 243,000.

Short time has been general throughout the industry for the last two years. In the Nord and the Pas-de-Calais it attained on the average four or five days a month throughout 1932-33, as against two days in 1931. In the Lorraine and Saar fields the situation remained unchanged, while in the centre and the south (principally the Loire field), where in 1931 the position was somewhat worse than in the north, there was a slight improvement during 1932.

Large Foreign Element.—In 1913 the whole of the labour force in the coal mines was French, save for a small admixture of Belgians and Poles: after the war the proportion of foreign workers tended to advance considerably up to 1930, but since early in 1931 all immigration of foreign miners has been suspended. Eighty per cent. of the alien miners are employed in underground work: seventy per cent. of them are stated by the Central Mines Committee to be skilled men. Poles have regularly formed the predominant foreign element. In the Nord area, while the total number of miners declined from 68,000 in 1925 to 53,166 and 50,216 in 1930 and 1931 respectively, that of alien workers advanced from 20,300 to 22,821 and 21,579 (from 35 to 43 per cent.), and Poles increased from 15,400 to 18,805 and 18,120 in the same years, thus forming 82.4 and 84.0 per cent. of the total foreign element as compared with 76 per cent. formerly. Belgians declined in number from 2,100 to 1,593 and 1,421, and Italians from 1,300 to 982 and 811. In the Pas-de-Calais the total numbers employed in the mines in 1925, 1930 and 1931 were 125,400, 134,236 and 122,687. Alien workers numbered 48,000, 52,382 and 48,724, or 38.3, 39.0 and 38.9 per cent.; Poles advanced from 39,000 to 44,614 and 41,343 (constituting 81.2, 85.2 and 86.6 per cent. of the total foreign element). Non-Polish workers in the Nord and the Pas-de-Calais in 1931 numbered 9,840, or 14.2 per cent. of the total foreign contingent; this number including 3,208 Belgians, 1,444 Italians, 1,329 Jugoslavs, 1,231 Czechs, 730 North Africans (Algerians, Tunisians and Moroccans), 422 Spaniards and Portuguese, and 1,476 of other nationalities. In each national group there was a decline of from 11 to 20 per cent. as compared with the previous year. Poles, Belgians and Czechoslovaks tend to confine themselves to the Northern and Lorraine mines: in the Northern coalfields Poles sometimes constitute 30 to 40 per cent. of the total labour force, and a greater percentage still of the underground workers. At Bruay, 6,190 out of 12,917 underground workers at the end of 1932 were Poles, Czechs and Jugoslavs; at Marles, 4,384 out of a total labour force of 14,758 were Poles; and similar proportions are found at Aniche, Courrières, Lens, and others among the largest mines in that area. Italians are found also in the Grenoble and southern mines, and Spaniards and North Africans in comparatively small numbers in the southern mines.

The departure of large numbers of foreign workers since the depression became acute has tended in no small degree to relieve the labour situation. Thus, while the number of French workers in the mines of the Nord and the Pas-de-Calais together declined from 1930 to 1932 by 10,479 (from 112,199 to 101,720), that of aliens declined by 12,511 (from 75,203 to 62,692).

Money Wages.—The period of successive increases in miners' wages came to an end in 1930, when the average daily wage for all classes of workers throughout the industry attained a maximum

of Fcs. 36.99 (for underground workers alone, Fcs. 40.07). Substantial reductions came into force in 1931 and 1932. In the former year a cut of 6 per cent. was effected in two stages (4 per cent. on the 1st April and 2 per cent. on the 16th May) in the main fields of the Nord and the Pas-de-Calais. Slightly bigger reductions, ranging from 7 to 8 per cent., had already been effected in the Centre and the Loire coalfields before those dates. In 1932 also a reduction, ranging this time from 12 to 14½ per cent. in the different mining regions, was effected in two stages, two-thirds of the cut coming into effect on the 1st February and one-third on the 1st April. The average level still remains higher than in 1928 and shows a coefficient of 6.09 as compared with 1913 figures, the figures for each of the years 1913, 1928-1932 and for the first nine months of 1933 being Fcs. 5.40, 31.01, 34.30, 36.99, 35.72, 32.87 and 32.53.

For underground workers, who form over two-thirds of the total (in November, 1933, there were 165,786 underground and 78,786 surface workers) the average daily wages in 1913, 1928-1932 and the first nine months of 1933 were: Fcs. 5.96, 33.53, 37.18, 40.07, 38.71, 35.72 and 35.36 respectively.

Addition to Money Wages.—Real wages are considerably higher. The above averages include the family allowances, which were first instituted as a voluntary measure during the war period and since the 11th March, 1932, were rendered obligatory by a law which came into effect for the mining and certain other main industries in October, 1933; but they do not include the large provision made by the French collieries for the housing of their workers, free coal, free medical attendance for miners and their families, usually free hospital treatment, accidents compensation, disablement and old age benefits and pensions (towards the two last the State, masters and men contribute). Other welfare schemes which the companies maintain, or to which they contribute largely, include:

- (a) the miners' sick funds or aid societies (e.g., in the Nord county, 14 societies, with a membership of about 60,000);
- (b) the miners' old age pension funds, to which employers and workers contribute equally (in the Pas-de-Calais the income of these funds in 1929-31 was 119, 147 and 133 millions; and in the Nord, where the number of insured was 68,424, the income was 62.6 millions in 1930, no later figures having been published);
- (c) compensation and treatment for accidents, which in the Pas-de-Calais cost the companies 24.2, 26.6 and 28.7 millions in 1929-31, and in the Nord 14.7, 18.4 and 20.5 millions.

Many companies maintain either hospitals (7 in the Pas-de-Calais, with 349 beds) or dispensaries (49 in the Nord, 11 in the Pas-de-Calais), and crèches are usually provided for infants of miners. Educational facilities of various types and grades are often maintained on a considerable scale in the way of schools,

primary, secondary and technical (as regards primary schools alone, 7,470 pupils attend 32 schools provided by five companies in the Nord, and 25,905 pupils attend schools, the number of which is not stated, provided by nine companies in the Pas-de-Calais), courses of instruction in needlework, dressmaking, cookery, laundry and other domestic economy subjects. For outdoor recreation there are very numerous garden allotments: football and sports grounds: for indoor relaxation, recreation halls (in the Pas-de-Calais, 254 musical and sportive societies have a membership of 35,000), and so forth. The money value of the various allowances in kind may be gauged from the following figures issued for 1931 in respect of the Pas-de-Calais alone: free coal 31.46 millions; dwellings 78.8 millions; benevolent works, including aid, subsidies, etc. 15.67 millions; total under these three heads, 125.9 millions, or 11.17 per cent. of ordinary cash wages exclusive of family allowances.

Family Allowances.—Family allowances constitute an appreciable addition to the married miner's ordinary wages. In 1931, the total sum paid under this head for the entire industry was 95 millions, of which the proportionate part attributable to the Nord and the Pas-de-Calais would be about 61 millions. As the cash wages paid in those two counties in 1931, inclusive of family allowances, amounted to 1,680 millions, their proportion of total money wages was 3 per cent. The actual percentage for those in receipt of the allowances would be higher, as the wages of unmarried men are included in the 1,680 million. Up to 1926, the rates varied according to the number of children (*e.g.*, Fcs. 1.50 to 1.75 per day for one, 2.75 to 3.25 a day for two and 2.50 for the third and every succeeding child); at the present time a fixed rate per child irrespective of number, about two francs a day, is paid.

Housing Provision.—The number of dwellings provided for their workers in 1931 by the collieries of the Pas-de-Calais was 65,677 (as against 65,140, 61,315 and 33,847 in 1930, 1927 and 1913), housing 94,168 workers, or 72.3 per cent. of the total labour force, as against 69 per cent. in 1927. The numbers of workers availing themselves of these facilities have declined somewhat in the last few years (97,014 in 1930 and 98,127 in 1929), this being due chiefly to the decline in the absolute number of the effectives. The yearly rent for a four or five-roomed cottage is 200 to 250 francs; up to September, 1931, it was about 150 to 200 francs. At a normal rental valuation of Fcs. 1,200 yearly, these 65,677 dwellings represent an outlay of 78.8 millions by the companies. In the Nord county the number of dwellings provided in 1931, 1930 and 1927 was 21,836, 21,299 and 20,326 respectively, in addition to which there were 91 new houses in course of construction at the end of 1931; 31,473 workers, or 64.3 per cent. of the personnel

being in occupation in 1931, as against 61.5 per cent. in the previous year. In 1928-1930, the rent paid averaged Fcs. 180 yearly, but it is said to have been raised to about 220 francs in 1931. In other mining areas, the larger companies also furnish accommodation for their workers, but not on such an extensive scale. Construction of new houses, which was actively pursued from 1921-1928, has almost entirely ceased within the last three years, as the existing provision had become adequate in consequence of the considerable reduction in the labour force since 1931. Thus, the Sarre-et-Moselle company announced in 1931 that they had completed their building programme, "the number of dwellings being sufficient to meet all requirements for some years to come"; and the Blanzly company (owned by the Schneider metallurgical group) stated in their report for 1932 that house construction had been suspended. The Lens company, the largest provider of dwellings, had 9,500 in 1927, and 10,174 in 1930; but at the end of 1931 and 1932 the figures had slightly shrunk (to 10,111 and 10,112); and at Courrières, which had 8,500 in 1927, and 9,120 in 1931, there was a slight drop at the end of 1932. Beside the case of Lens, outstanding increases in numbers are Aniche, from 6,700 in 1928 to 7,641 in 1931-32 (now 128.7 per cent. more than in 1913, when there were 3,340 dwellings); and Vicoigne-Noeux-Drocourt, from 8,696 to 8,932 in 1931-32. At Ostricourt, one of the medium-sized mines (1.3 million tons output) there was an increase from 811 to 2,550 between 1913 and 1928. Bruay has 9,919 dwellings, Marles 7,190, and Dourges about 4,000. The grand total, for the Nord and Pas-de-Calais alone, is somewhat in excess of 87,500. Over four-fifths of these houses have been erected since 1919, either in replacement of those destroyed during the war or to provide accommodation for an increased labour force, and are of a superior type, equipped with electricity, running water, shower-baths, and so forth. The majority have also gardens; in many cases allotments are also provided, either at nominal rents or free of charge.

Miners' Pensions. —The pension paid to miners after 30 years' service and on attaining the age of 55, was increased in June, 1929, to 5,000 francs per annum (it had previously stood at Fcs. 3,750 since December, 1927). Of 95,000 pensioners, 38,000 to 39,000 are estimated to be receiving the full amount, the others receiving a smaller sum proportionate to their length of service or degree of disablement. Widows of miners, on attaining the age of 55, become entitled to a pension of half the above amount. The pensions fund is financed by contributions from miners, employers and the State, amounting in all to 15.5 per cent. of that part of each man's earnings which does not exceed Fcs. 12,000 yearly. Foreigners are not entitled to the pension (although their wages are subject to deductions on the same scale as those of French workers) unless they are nationals of a country which accords reciprocal treatment to French workers; Italy and

Belgium are the only countries at present granting such reciprocity. The Government agreed in principle to the raising of the pension to Fcs. 5,500 and to a proportionate increase in disablement and widows' pensions; and a Bill to that effect was passed. It is proposed to meet half of the additional cost, which is estimated to be about 40 million francs yearly, by widening the basis of the levy upon the worker's earnings, and half by increasing from 2.50 to 2.75 per cent. *ad valorem* the tax levied upon coal at the time of its sale.

II.—OTHER MINERALS

I. POTASH

World Position.—Since the close of the Great War, France has become the possessor of one of the two great potash fields in Europe, namely, that near Mulhouse in Alsace, the second and greatest being at Stassfurt in Germany. The other European mines, for instance in Polish Galicia (Kalusz and Stebnik), in Spain (Suria and Cadorna in Catalonia), in Italy (Istria), in Denmark, and to the west of the Urals in the Soviet Union (Solimansk), are not at present serious rivals to the Alsatian and Stassfurt fields, although some apprehensions respecting future competition from Spain, and the U.S.S.R., appear to be felt by French producers. Output in Poland in 1931 amounted to no more than 40,000 tons of pure potash and in the U.S.S.R. to 18,000 tons: but in 1933 the three Spanish mines approached a total of half a million tons of the crude mineral, and exported 150,000 tons. In the United States, where efforts are being made to achieve independence of the European mines, there are large potash fields in Texas and New Mexico, where the mineral is moreover reported to be found nearer the surface than in France or Germany. American production, however, in terms of pure potash is put at 60,000 tons for 1931 and is said to meet only one-tenth of the requirements of the United States. In Asia, the Dead Sea may eventually become of importance for potash. Potash salts are also reported to exist in the French zone of Morocco.

Output in Alsace.—Output of crude salts in Alsace amounted in 1928-33 to 2,580, 3,134, 3,136, 2,203, 1,901 and 1,910 thousand tons of potash salts equivalent respectively to 448, 531, 546, 396, 321 and 322 thousand tons of pure potash. These figures show great advance compared with ten years ago: in 1920 and 1921 the output was 1,222,000 and 903,200, with 204,000 and 154,000 tons of pure potash. The output of 1930 was officially valued at 530 million francs. In normal years over half of the total production is exported; in 1930 the quantity exported in terms of pure potash was 213,000 tons against 212,000 sold at home. In 1931 this proportion had declined to 41 per cent. and in 1932 it was less than 17 per cent. Exports of the poorer salts (carnallite, sylvinit, etc.) were much lower in 1931 than in the two previous years and amounted to 356,888 tons as against 658,990 and 731,750 tons res-

pectively. The fall was chiefly the result of greatly reduced sales to Belgium and to a less extent to Holland. There was, on the other hand, a rise in exports of the richer salts (chloride of potassium), which in both 1930 and 1931 were nearly twice as high as in 1929, the respective figures being 122,000, 125,000 and 62,000 tons. Belgium, by far the best customer, greatly increased her purchases. Both the United Kingdom and the United States, but to a far less extent, bought more; sales of chloride of potassium to those two as well as to all other countries are of little consequence compared with those to Belgium. In 1932 there was a sharp drop in exports of both the poorer and the richer salts, mainly in consequence of a heavy fall in sales to Belgium (50 per cent. in the case of carnallite, sylvinite, etc., and over 30 per cent. in that of the richer salts), this reduction being compensated to a certain extent by a more active demand from Holland. Total figures of exports for that year amounted to 235,111 tons of the poorer salts (of which, 147,700 tons to Belgium, 58,116 tons to Holland, and 12,000 tons each to Italy and Switzerland); and 86,633 tons of the richer salts (of which, 68,312 tons to Belgium and 2,107 tons to the United Kingdom). In 1933 exports of the poorer salts advanced to 341,951 tons (of which, 242,088 to Belgium and 73,189 tons to Holland); and those of the richer salts to 72,231 tons (of which, 54,902 tons to Belgium and 2,349 to the United Kingdom).

Utilisation as Fertilizer.—The use of potassic fertilizers in France and her colonies has greatly increased since the war, though it is still far behind that of other European countries such as Holland, Germany, Belgium. In the season 1919/20, according to a parliamentary paper, French consumption in terms of pure potash was less than 47,000 tons, whereas in 1926/27 it had risen to over 165,000 tons, in 1929/30 to 231,000, falling in 1930/31 on account of the crisis to 183,700 tons and in 1931/32 to 185,800 tons. A consumption of 500,000 tons in 1935 has been anticipated. Whereas in Germany consumption of this class of fertilizer was 21.4 kilogrammes the hectare as long ago as 1913, in France it was only 8 kilogrammes in 1928. In the latter year Germany, with 20,500,000 hectares of cultivated land, consumed 872,000 tons of potash, while France, with substantially the same area under cultivation (21,000,000 hectares), consumed only 187,000 tons. One of the difficulties of promoting the use of potash as a fertilizer is the high cost of transport, in spite of special rates given by the railways. It has been calculated that over a distance of 500 kilometres the cost for rich sylvinite is 37.9 per cent. of the production price and 46.9 per cent. over a distance of 800 kilometres. The percentage is less in the case of richer salts and this is one of the reasons for the increasing favour of chloride. The French potash selling organisation, the *Société Commerciale des Potasses d'Alsace*, is carrying on an active propaganda campaign throughout France to encourage the use of the fertilizer. It has forty-two district offices, each with one or two engineers and usually an exhibition lorry or a light vehicle

with a cinema apparatus. Similar offices have been opened in Algeria and Tunisia and others are contemplated elsewhere, for instance in Indo-China. The products of the mines are shown by means of the lorries and lectures, illustrated with graphs and tables, are given to explain the merits of potash to the farmer. Difficulties which had arisen in the United States on the ground of the violation of the Sherman Act by the French and German potash producers, were settled in March, 1929. The United States Government admitted the existence of a sales office set up in Holland by the producers in order to avoid American legislation against trusts but asserted the right to keep a watch on sales prices to prevent the French and Germans obtaining too great an influence over the American potash market.

The ex-German Potash Mines.—Practically no progress has been made in recent years in the settlement of the long-outstanding question of the legal status of the organisation which is to control the ex-German potash mines in Alsace. The Bill passed by the Senate in November, 1927, recently revived in the Chamber of Deputies, has formed the subject of two parliamentary reports in December, 1932, and February, 1933, but these have yet to be considered by the Chamber. In 1914 in the 106 concessions (17 pits in operation) German capital (in fact the then Stassfurt groups, Deutsche Kaliwerke, Hohenzollern and Wintershall) represented 46.5 per cent., French 25 per cent., Alsatian 20 per cent., and the Alsace-Lorraine State 8.5 per cent. German interests became forfeit to the French State, and of 10,000 founders' shares or Kuxes which were sequestrated, 8,353 were found to be attributable to ex-enemy interests, 1,002 to the then new counties of Alsace Lorraine, and 645 to French subjects or Alsatians. By a law of 1921, the French State was empowered to purchase the sequestrated mines, which was done in 1924 for 208 millions payable in 17 annuities. The mines were worked under the sequestrated régime until the end of 1923, but as from 1924, pending legislative determination of the status of the Mines, the Ministry of Public Works assumed the supervision of their working. The intention of retaining the control of the mines through a form of public utility organisation seems fairly certain: the board of management would include representatives of State Departments, of the (semi-official) Chambers of Commerce, of the three counties of Alsace-Lorraine, of the chemical industry and trade. And the net profits would be divided between the State, the three counties and the owner of the founder-shares. The new dispensation would in some respects extend to other potash mines: thus the latter would compulsorily be members of the central potash selling organisation, which alone would sell in France and abroad; and maximum selling prices would be established yearly by the State. As to the results of the working of the State potash mines or *Mines domaniales de Potasse d'Alsace*, it was stated officially in April, 1933, that for the four years 1926-29 the State had made a gross profit of 440 millions, and

that 1,100,000 tons of pure potash had been sold by these mines at home and abroad, out of a total of 1,552,000 tons (693,000 at home and 859,000 tons abroad). In 1930 and 1931 they had sold a further quantity of 628,000, and had obtained a gross profit of 115 millions. In these and the *Kali-Sainte-Thérèse* mines an average of 10,270 people were employed in 1930, of whom 5,685 were underground and 4,585 were surface workers. Wages paid amounted to 105,071,000, or an average of 10,230 francs: but for the underground workers to 60,340,000 (average 10,613 francs). Of the total labour force, over 36 per cent. were foreigners, almost without exception Poles. Housing provision is made on a large scale by the State and the *Sainte Thérèse*: the former supplies nearly 1,600 family dwellings for manual workers, 220 for clerical workers, 50 for engineers, besides provision for 900 single workers. In 1931 the average number employed fell to 8,632 and in 1932 probably to 7,000.

Non-State Mines.—The *Kali-Sainte-Thérèse* company, having been entirely controlled before the war by Alsatian-French interests, was therefore exempted from sequestration as ex-enemy property. It is independent of the State mines, but it effects its sales through the same agency (*Société Commerciale des Potasses d'Alsace*) as the State mines. Its output has annually been about 30 per cent. of the total produced: 452,000 tons of pure potash out of the 1,552,000 tons produced in the years 1926-29: in 1930 its production of potash salts was 1 million tons (as against 681,000 and 435,000 in 1927 and 1924), that of the State Mines 2,133,000 tons (1,643,000 and 1,230,000 in 1927 and 1924). Great progress has been made by the *Sainte-Thérèse* mines, which were badly damaged during the war: in 1919 only 89,000 tons were mined. Its salts are of remarkable richness, having from 16 to 21 per cent. of pure potash. (Stassfurt mines are asserted to average 10 per cent.) In 1931 it established near Rouen a separate company (capital 20 millions) and works for the manufacture of sulphate of potash and its by-products. Like in the State mines, housing provision is made for a large percentage: 400 family dwellings for manual workers, 40 for clerical workers, 15 for engineers and 440 for single men.

A third potash undertaking, the *Mines de Potasse de Blodelsheim* (capital 60 millions) has been in process of development since 1926 in the same Alsatian district, 10 miles north-west of Mulhouse. Its area covers 4,000 acres—has a thickness of seam of 1.30 to 1.60 metres, and its tenour in pure potash is estimated at about 13 per cent. Two pits are in course of installation and working was to have started in 1931, but the company decided in 1931 not to continue at this mine, but to operate a new and far superior concession *Heltenschlag - Oberhergheim* which it had acquired. “Blodelsheim has one seam of a tenour of 14 or 15 per cent. of pure potash, at 800 metres deep: *Heltenschlag* has two rich seams—16 to 20 per cent.—and thick—4.50 to 7 metres in all—which can be worked as from 350 metres depth.” The first seam

is given by the head of the company as having a tenour of 22-25 per cent., and the second one of 16 to 18 per cent. It is estimated that the establishment of the new mine for the production of 500,000 tons a year will cost the same as would have cost the completion of the Blodelsheim installations, which, however, would have a greater depth, a less thickness and richness of seam, and higher working expenses. It was stated in December, 1932, that 2½ to 3 years must elapse before production could take place at the Heltenschlag mine.

Agreement with German Potash Syndicate.—The ten-year agreement made at the end of December, 1926, between the French group, represented by the *Société Commerciale des Potasses d'Alsace, les Mines Domaniales* and *les Mines de Kali-Sainte-Thérèse*, and the German Potash Syndicate, remains in existence. Thereunder, each party retains the exclusive selling rights for its respective territory, but in other markets German sales may reach 70 per cent. and the French 30 per cent. up to a total of 840,000 tons a year. Should such foreign sales exceed this figure, the margin is to be divided equally; and if in 1932 this figure was not reached, the margin of excess of the highest annual figure of the five years—May, 1926–May, 1931—was to be equally divided.

Potash Ports.—Strasbourg, situated only about 50 miles north-west of the mines, handles a large part of the potash exports: in the years 1929–32 it cleared 573, 654, 414 and 281 thousand tons. Antwerp receives likewise a large proportion. By virtue of the contract in 1925 between the *Société Commerciale des Potasses d'Alsace* and the Antwerp Municipality, the former was provided, in 1927, with two warehouses having a maximum capacity of 120,000 tons, but in 1928–30 the Antwerp facilities were found to be inadequate, and negotiations were opened with Rotterdam for the dealing with a certain part of the Alsatian potash exports. The draft convention with Rotterdam was not, however, proceeded with, as Antwerp in April, 1930, agreed to place at the disposal of the *Société Commerciale* the means for enlarging the then existing warehouses. Had potash exports, notably to the United States, maintained their ascending course in 1931 and 1932, it might well have been necessary also to have used the Rotterdam facilities, partly because the French tonnage on the Rhine might have been inadequate so that German or Dutch shipping, which habitually ply with Rotterdam and have largely their registry there, might have been unwilling to change to Antwerp. Dunkirk, the French port, fails to get its share of this traffic because the transport cost to that port is more than double that by the Rhine route (1930 charges: 70 francs by rail and 30 by water). A scheme has been proposed for the construction of a new canal to link the potash mines with the Rhone-Rhine Canal at an estimated cost of twelve million francs in which the *Kali-Sainte-Thérèse* would participate to the extent of one-third. Its traffic would be the carriage of coal to the mines and of potash from the mines.

ii. IRON ORE

Extent and Nature of Resources.—The recovery of the Metz-Thionville iron ore area in Lorraine doubled French power in this regard by its addition to the resources drawn from the Briey-Longwy-Nancy area, and gave France command of the greatest supplies of iron ore in Europe. The latest estimates place her total reserves at about $4\frac{1}{2}$ milliard tons, of which four milliard tons are in the Lorraine fields alone. At the recent rate of consumption in iron and steel, these reserves are not expected to last for much more than 60 to 100 years; and much activity is being displayed, firstly in endeavouring to develop the smaller deposits in Brittany, Normandy, Anjou, and secondly in searching for new deposits overseas, particularly in Algeria and Tunisia. The ores of the Moselle (Metz-Thionville) and the Meurthe-and-Moselle (Briey, Longwy and Nancy) basins are most suited to pig iron production by the Thomas process, having a fairly high phosphorus content (over 1.7 per cent.) and a medium iron content (Briey from 32 to 39 per cent., Longwy and Nancy from 33 to 38 per cent., and Metz-Thionville from 28 to 34 per cent.). Those of Normandy and Brittany are richer in iron, containing from 44 to 54 per cent., but their phosphorus content, though considerable (between 0.075 and 1.7 per cent.) is not sufficient for Thomas pig iron without the addition of some phosphorus to the blast-furnace charge. In the mines of the Pyrenees the iron content runs from 45 to 55 per cent. and the phosphorus content is low (less than 0.075 per cent.), thus rendering these ores particularly well adapted for the production of hematite iron. On the whole, France is poor in hematite iron ore resources, and has to import, chiefly from Belgium and Spain, the greater part of her needs in this direction. Manganese ore, of which the home output is insignificant (about 1,500 tons from 3 mines) is imported from India and the U.S.S.R.

Output advanced by 43 per cent. between 1925 and 1929, the respective figures for the five years being 35.7, 39.3, 45.7, 49.3 and 51.0 million tons. From 1930 to 1932, consequent upon the reduced activity of the blast furnaces, ore extraction was slowed down at the rate of a little over ten million tons yearly, to 48,821,000, 38,784,000 and 27,762,000 tons, about half the reduction being borne by the mines of Moselle and half by those of Meurthe-and-Moselle. In 1933, there was some reawakening of activity, the returns for the year recording an output of 30,423,000 tons. The mines within the pre-war frontiers yielded 29,376,000 and 28,340,000 tons in 1929 and 1930, corresponding to increases of 34 and 29 per cent. upon the pre-war figure of 21,900,000 tons; and the recovered Metz-Thionville area in Lorraine yielded in the same two years 21,355,000 and 21,231,000 tons, or about the same quantity as in 1913 (21 million tons). The output of the Normandy

mines in the years 1928 to 1930 was 1,666,000, 1,885,000 and 1,727,000 tons, that of Anjou and Brittany was 536,000, 534,000 and 481,000 tons, and that of the Pyrenees 208,000, 221,000 and 231,000 tons. The number of workers engaged in the industry, 43,000 in 1913, had by 1930 become reduced to about 40,000, of whom 30,000 were underground and 10,000 surface workers; the mines of Meurthe-and-Moselle giving employment to 19,000 and those of Moselle to 15,000 workers. In 1931 the total number of workers in the industry averaged 33,500, but it dropped continuously throughout the year; in January, 1932, it was 26,500, and in December, 1933, only 22,900. The daily output per worker rose from 3,262 kilogrammes in 1913 to 4,270 in 1930. In the latter year the daily average wages was Fcs. 38.65 for the underground worker, and Fcs. 29.20 for the surface worker.

Exports and Imports.—Rather more than one-third of the iron ore produced in France is exported, the proportion in the years 1928-33 having been from 36 to 37 per cent. During that period *exports* declined by 36 per cent., from 17.05 to 10.99 million tons, the quantity year by year being 17,054, 16,405, 15,080, 12,407, 10,061 and 10,986 thousand tons. The quantity taken by Belgium-Luxemburg, the principal customer, in 1932 constituted nine-tenths of the total exports (as against three-fourths in 1928), the decline in this case (from 12,743,608 to 9,051,987 tons) having been proportionately less than in that of other foreign customers. Germany's purchases fell during the same period from 3,194,160 to 711,660 tons, those of Holland from 930,278 to 287,384 tons, and those of the United Kingdom from 172,304 to only 8,460 tons. The purchases of Belgium-Luxemburg advanced from 9.1 to 9.4 million tons and those of Germany from 712 to 1,157 thousand tons, while in the case of Great Britain there was a proportionately large increase, from 8,460 to 72,740 tons. *Imports*, which are only about one-twentieth of exports, rose from 988,507 tons in 1928 to 1,141,428 tons in 1929, declining in the next three years to 1,011,541, 781,676 and 334,928 tons, respectively, a total decline of 66 per cent. in the five years. Purchases from Belgium, the chief supplier as well as the largest customer, dropped from 580,723 tons in 1928 to 153,063 in 1932, those from Spain declined from 184,125 to 84,922 tons, and those from Tunisia shrank from 110,917 to 5,033 tons. Purchases from Algeria and from Morocco increased more than threefold in the period 1928-31 (from 17,640 to 69,614 and from 17,887 to 61,583 tons, respectively), though in 1932 there was a big decline to 24,600 tons in the case of Algeria, and no imports at all from Morocco are indicated in the returns. Other foreign countries such as Italy, Switzerland, Norway, have greatly reduced their purchases, and in some cases have disappeared from the trade returns within the last year or two. In 1933 imports were over 50 per cent. greater than in 1932, being

560,567 as against 334,928 tons. The principal increases were in purchases from Belgium-Luxemburg, 291,665 tons as against 153,064, and in those from Spanish Morocco and the Canary Islands, 93,036 tons as against 33,632. France, which as already noted procures Manganese ore mainly from India and the U.S.S.R., has increased her employment of this ore: imports, 259,000 tons in 1913, were 801,000, 715,000, 482,000, 349,000 and 507,000 respectively in the years 1929-33.

III. BAUXITE

Holding formerly a practical monopoly in Europe as a producer of bauxite, France maintains the position, which she recovered from the United States in 1923, of the world's leading producer of bauxite, the raw material of the aluminium, rapid cement, and abrasives industries. The second place is taken by the United States and the third by Hungary, who made remarkable progress in 1928-29 and whose output was stated then to be over 300,000 tons a year. Other producers are Dutch and British Guiana, Yugo-Slavia and Italy. Deposits of bauxite have been discovered within the last few years in French Morocco (Atlas Mountains), the Gold Coast and Nyassaland; and the mineral is also being worked in Dalmatia and in the Soviet Union near Leningrad.

French reserves of bauxite are estimated to amount to 60 million tons, or sufficient, on the basis of 1928-30 output, to last 100 years. The deposits now being worked are confined to three counties on the Mediterranean seaboard, namely Var, Hérault and Bouches-du-Rhône, five-sixths of present output being derived from the Var, and nearly one-sixth from Hérault. A fourth field of possible extraction has been discovered in the Ariège county, at the foot of the Eastern Pyrenees. The deposits here, which extend over an area of some 31 miles in length by two to 2½ in breadth, are of the grey and reddish varieties, suitable chiefly for the cement industry, though the quality preferred by manufacturers of abrasives is also present (at Mercus, near Foix, hydro-electric works have been established, which produce a whole range of aluminous abrasives). The lack of suitable railway facilities compels, however, the transport of the mineral by aerial conveyors to the nearest railway point, and labour is scarce in the neighbourhood of the mines, so that this field is unlikely to receive much attention until, in the three other centres now being actively exploited, the higher grades of ore approach exhaustion.

Output advanced continuously from 1918 to 1929, except in the two years 1920 and 1921, but 1931 and 1932 witnessed a decline to practically half the 1929 figures. From the following

table of output and exports, it will be seen that the latter have fluctuated considerably, but, on the whole, have shown an upward tendency :—

FRENCH PRODUCTION AND EXPORTS OF BAUXITE.
(Thousands of Metric Tons).

Year	Output	Exports
1913 ...	310 ...	176
1918 ...	150 ...	38
1919 ...	160 ...	39
1920 ...	186 ...	130
1921 ...	66 ...	41
1922 ...	139 ...	167
1923 ...	304 ...	192
1924 ...	336 ...	202
1925 ...	406 ...	215
1926 ...	409 ...	184
1927 ...	540 ...	262
1928 ...	598 ...	250
1929 ...	643 ...	240
1930 ...	538 ...	259
1931 ...	348 ...	168
1932 ...	394 ...	212
1933 ...	478 ...	245

Great Britain and Germany each take usually about one-fourth of the total exports (but 32½ and 40 per cent. respectively in 1933), and the Netherlands and the Irish Free State about 15 to 20 per cent. each. The quantity of imports is negligible, amounting only to 250 tons in 1932, to 54 tons in 1930, and being practically nil in all other recent years. Of the bauxite retained in the country, from 50 to 60 per cent. serves for the production of aluminium, and about 30 per cent. for the manufacture of "ciment fondu," or quick-setting cement, while abrasives, refractories, alum (for the paper industry) and sundry aluminous chemicals, employ the remainder.

Some part of the reduced foreign demand for red bauxite, for aluminium manufacture, is attributable to the fact that American interests now possess large alternative sources of supply along the Adriatic. The market for grey bauxite (which represents only a relatively small tonnage), on the other hand, has continued active throughout the present depression, chiefly in supplying German emery-makers. New outlets for French production are expected to result from (a) an aluminous cement works at Setubal, near Lisbon, which has recently been reorganised with the aid of French capital, (b) Finnish requirements for cement manufacture, and (c) Japanese enquiries, which have been rather numerous in late years.

iv. PYRITES, COPPER, LEAD, ETC.

The following table shows the production in France of the principal minerals other than coal, iron ore and bauxite in the years 1927 to 1933 :—

PRODUCTION IN FRANCE OF THE PRINCIPAL MINERALS, EXCEPT COAL, IRON ORE AND BAUKITE.
(Thousands of metric tons, except where otherwise stated).

	1927	1928	1929	1930	1931	1932	1933
Pyrites	204	202	194	198	193	191	168
Potash salts—							
Gross weight...	2,323	2,580	3,134	3,136	2,203	1,901	—
Weight of K ₂ O ...	402	447	531	546	396	321	322
Mineral oils	82.6	80.6	82.3	81.9	79.3	85	90.1
Asphalt	48.5	54.7	45.8	56.5	57.7	47.8	37.6
Arsenic ore	55.8	74.7	47.3	48.7	92.4	109.3	144.3
Auriferous "	73.1	72	81.9	81.7	87	94.3	108.2
Lead "	23.5	15.8	12.1	19.2	13.3	5.4	2.5
Zinc "	15.4	9.1	8.4	15.6	10.7	1.5	—
Mixed lead and zinc ore ...	14.4	36.9	49.1	4.9	1.9	—	—
Antimony ore (tons)...	3,290	4,132	4,745	5,124	2,580	1,718	1,063
Copper " " ...	115	852	479	1,918	244	—	—
Manganese " " ...	2,710	3,108	1,088	1,403	—	—	—
Wolfram-tin " " ...	5,520	1,220	—	—	—	—	—

It will be observed that production in general tends to diminish, though small increases are recorded in the case of auriferous and arsenical ores, as well as of asphalt. The lead and zinc mining industry, in particular, appears to be heavily affected by the prevailing low prices for those metals, and at the beginning of 1933 the mineowners' association reported that, out of more than 80 concessions for those metals in France and Northern Africa which were in activity in 1929, barely ten were still operating. Most mines have been closed down for years. State bounties to the lead and zinc mines, to make good the difference between production costs and sales prices have been suggested, but their adoption at the moment appears to be unlikely. The Zinc Combine, which was due to lapse at the end of 1932, was in March, 1933, extended for six months, and was again renewed in September, 1933. The actual output of lead and zinc in French smelteries in 1933 was 20,000 and 55,000 tons respectively.

An occurrence of mercury on the Franco-Belgian frontier, in the neighbourhood of Givet and Doische, was reported towards the end of 1929, and concessions were taken up for working it. No definite news is yet available respecting the results.

III.—OIL

1. SOURCES OF SUPPLY

France is dependent upon foreign sources for about 98 per cent. of her annual oil consumption. The chief home source is the Pechelbronn oilfield in Alsace: as its highest yields were 73.8, 74.1 and 78.8 thousand tons (in 1930-32-33), and in earlier years they had ranged from 63,000 upwards, it is probable that not more than 75 to 80,000 tons a year can be anticipated as a maximum. Minor sources are the wells at Gabian near the Mediterranean coast in the County Hérault (11,000 hectolitres in 1931), and the bituminous shales in the Autun district (54,000 hectolitres). The sum total to be reckoned up from home sources is therefore in the neighbourhood of 80,000 to 85,000 tons. The imports of petroleum products in 1930-32 amounted, however, to 3.52, 4.02, and 4.48 million tons or fiftyfold the home yield.

Imports.—Two features mark the imports: their increase and their change of character from refined to crude. From 2.05 and 2.62 million tons in 1926 and 1928, they rose to 4.04 and 4.51 in 1931 and 1932, and to 5.85 million for the year 1933. The rapid change from refined to crude oil has been more recent: in 1932, crude imports (1.03 million) were double or more than those of 1931 and 1930 (519,000 and 452,000 respectively), but in 1933 they were approximately three times greater than in 1932 (2.74 against 1.03 million). This is due to the entry into

operation of several new refineries in 1933: as others were started in the second half of the year, the movement will be further accentuated. In 1932 the United States of America was still the largest supplier with 1.22 million tons or 27.2 per cent., compared with 31.6 and 40.8 in 1931 and 1930. The Soviet Union (893,000 tons) displaced Persia (752,000) in second place: fourth came Venezuela (591,800 tons) who held only tenth place in 1926, and Roumania (575,000 tons). In 1933 the United States imported into France 1.99, Venezuela .91, the Soviet Union .73, Roumania .64, and Persia .62 million tons. Imports are mainly effected through Rouen, Marseilles, Havre, Bordeaux and Dunkirk. Rouen alone has imported in the past quite one-third of the total, and is still far the greatest oil port; but the construction of important new refineries near Havre and of petroleum docks at Havre, has greatly enhanced the importance of the latter port. Dunkirk has also built a refinery. The recent establishment of two refineries near Marseilles and the prospect of a third, and the new crude oil supplies from the Near East with the completion of the pipe lines from Iraq to the Levant coast, which will naturally seek a market at Marseilles, will further strengthen that port; and Bordeaux will also receive for the two new refineries in its neighbourhood far larger supplies than in the past.

Stocks and Storage.—As a consequence of the increase in consumption and imports, the stocks of mineral oils at any given period have considerably increased. In 1928, they never fell in any month below 588,000 tons (March), and rose to a maximum of 849,000 (October): on December 31st, 1930-32 they were 1,019,531, 1,054,100, and 1,151,140 tons. Under the 1925 law, all wholesale importers are bound to constitute and hold at the disposal of the State a reserve stock equivalent to one-fourth of the quantity of various classes of oil declared by them to have been sold for consumption in the previous twelve months. At the end of 1930, there were 38 oil depots: Rouen then showed a capacity of 531,000 cubic metres, Havre, 297,000, Dunkirk, 151,000, Bordeaux, 111,000, and Marseilles, 95,000 (but 210,000 including St. Louis-du-Rhone and Port-de-Bouc on the Étang de Berre). In the last three years all these ports, and other ports such as Sète and Nantes, have considerably increased their capacity, notably Rouen, Havre, Bordeaux and Marseilles. The French Navy had depots at Lorient (11,400), Brest (10,900), Toulon (10,900), Bizerte (38,000), and small depots at Dakar and Casablanca. In most cases these depots have been considerably increased.

Prospecting in France and French Overseas Possessions.—Efforts have been continued in the Gabian area: the forty-seventh boring reached oil in January, 1930, and in 1931 ten out of 53 borings were yielding oil. Prospecting elsewhere in

France has been disappointing. The National Fuel Office has decided to carry out researches with the Protectorate Government in Morocco, where, of two oil borings in the Djebel Tselfat, one was reported in March, 1932, to be yielding 2,000 litres a day and the other 3,000 to 4,000 litres. Small quantities are obtained in Algeria (3,000, 1,660 and 1,080 tons in 1929-31: hopes are entertained of Madagascan possibilities; and a mission of enquiry visited French Equatorial Africa in 1931, traces of oil having been discovered there by an expert in 1928 and 1929.

II. STATE SUPERVISION

Prior to 1903, when, of course, oil consumption had not reached the existing immense development, there were in France oil refineries capable of meeting 80 per cent. of the French requirements by the treatment of imported crude oils. In that year, the customs protection, hitherto accorded to the home refining industry, was withdrawn; the refiners found themselves increasingly unable to compete with imported products of refining, and the home refining industry languished until, in 1928, it no longer supplied more than 10 per cent. of the national consumption, and there existed only two refineries of importance.

Resurrection of Home Refining especially in 1932-33.— Since 1931, and notably in 1933, many new refineries sprang up, bringing the 1933 capacity of the industry up to the equivalent of nearly 38 per cent. of the total consumption of petrol (against 14.6 per cent. in 1932). The percentage is expected to increase to 60 per cent. at the beginning of 1934 and to 80 per cent. at the beginning of 1935. The percentage of home-refined gas, fuel, and kerosene oils rose from 22.5 in 1932 to 72.4 in 1933.

After the war period (during which all oil importation was entrusted by the State to a consortium consisting of the then established importers), the question of oil imports was tentatively regulated by laws of 1919, 1921 and 1923, but it was not until 1925 that any serious legislation on this subject was attempted. The two essential features of the law passed on the 10th January in that year were: the institution of a definite system of import licences, and the creation of a National Liquid Fuel Office (see subsequent paragraphs).

Laws of 1925, 1926 and 1928.—The principle of a State oil monopoly was voted by Parliament in the Budget Law of April, 1926, under which, as from the 1st April, 1927, crude petroleum, its by-products and residues, might only be imported by representatives of or persons accredited by, the State, and the import permits issued under the law of January, 1925, were then to lapse. This legislation, twice deferred, was finally passed on the 30th March, 1928. The particulars that follow include the provisions of the 1928 law and such parts of the 1925 law as remain still in force.

National Liquid Fuel Office.—An important provision of the law of the 10th January, 1925, was the creation of a National Liquid Fuel Office, somewhat analogous to the British Petroleum Department, its functions including research work (especially with a view to the discovery of new oil resources on French territory or the development of processes for the manufacture of petrol substitutes), either directly or by means of subsidies, the furnishing of information to Government departments and to the general public on all matters connected with liquid fuels. All proposals for laws, decrees or orders relating to the regulation of research, transport, handling, storage or distribution of natural hydrocarbons must be submitted to the Office for its opinion.

Its Resources.—The resources of the Office are four in number: (a) a tax payable by importers of mineral oils, amounting to Fcs. 10 per ton declared for consumption (with reduction to Fcs. 1.50 per ton in the case of residues admissible at a reduced rate in accordance with a law of the 5th August, 1919); (b) the balance of funds available upon the winding up of the wartime consortium, as ordained by a law of the 30th July, 1920; (c) subsidies, donations or legacies from all sources; (d) such fees as may be charged by the Office for services rendered, under conditions to be determined ultimately by decree.

Oil Fleet.—Success has crowned the considerable efforts to build up a large fleet of tankers. The French oil fleet, which consisted of only 4 vessels in 1914, and had a tonnage in 1920 of under 30,000, had in 1932 a tonnage of about 350,000 tons (including 63,000 tons of the French Navy): at the end of 1933 it exceeded 400,000 tons. The rapid development is due both to the general cause of the expansion of the oil trade, and to the particular cause of effective legislation. The National Liquid Fuel Office, which is a semi-State department with independent legal status, charged with the general supervision and promotion of French oil interests but debarred from trading, obtains its revenues from the levy of a tonnage duty of 10 francs on all petroleum products declared for home consumption and of 1.50 francs on residues imported on reduced tariff basis, as well as from other sources. By an Act of 1925, fifty per cent. of its receipts from the duty for 10 years, subsequently extended in 1926 to 20 years, are to be utilised as subsidies for tankers built in France and carrying the French flag or for tankers registered in France within a period of twelve months from the promulgation of the said law and under fifteen years of age. There is no age limit for French built tankers. The registration duty, moreover, was reduced from 5.50 to 3 per cent. by the 1926 Budget law in the case of transfers of vessels for the purpose of obtaining or maintaining French registry and coming within the provisions of the 1925 law. As regards sea-going vessels, excluding tankers, but

not port-craft such as bunkering barges, the registration and import duties were abolished in 1929 under the Maritime Credit Scheme. This amendment cancels all duties and provided for the sole payment of a registration fee of Fcs.22.50. In 1931, it was reported that 186,000 tons then in service, including 10 tankers owned by the *Compagnie Auxiliaire de Navigation*, and 4 by the *Association Pétrolière* were benefiting by bounties under the 1925 Act: in that year, the bounties paid amounted to 13.6 millions. The advantages under the Maritime Credit Scheme do not apply, therefore, to oil tankers.

The fleet of barges and lighters designed for the conveyance of oil fuel on home waterways has also developed: in 1931 the 186 horse-drawn barges had a tonnage of 81,200, and the 76 motor barges 23,300 tons (the latter numbered only 21 with 9,100 tons in 1927).

III. REGULATION OF IMPORTS

In view of the proposals for the State monopoly of oil importation and refining, it is of interest to give further particulars of the existing import regulations. The law of the 30th March, 1928, provided that within six months of its promulgation no oil products might be imported into France except under licence. Administrative regulations issued on the 23rd March, 1929, prescribed that any private individual or firm desirous of importing on a wholesale scale (i.e., 15 tons or over monthly) crude mineral oils, their derivatives and residues, must lodge a declaration with the National Liquid Fuel Office, who would deliver a general import licence on condition that the applicant signed an undertaking, under the terms of the law of the 10th January, 1925, to constitute and hold at the disposal of the State a reserve stock equivalent to one-fourth of the various classes of oil products declared by him as having been taken out of bond during the previous twelve months. This general licence does not entitle the holder to import a quantity amounting to 300 tons or more a month: for that purpose is required a special licence that is valid for not more than 20 years in the case of crude oil and not more than three years in that of derived products. Fuller particulars respecting these licences and the conditions attaching to them will be found in the subsequent paragraphs of this chapter on the French oil refining industry (see pp. 159-60).

The volume of imports effected under cover of general licences (less than 300 tons monthly) represents only a small fraction of the total imports of oil products. In the period of nearly eight years from the promulgation of the law of the 10th January, 1925, to the beginning of December, 1932, out of 745 such licences granted, 84 had since been withdrawn, and of the remaining 661, only 260 (of which, 78 for petrol alone) had been utilised by their

holders during the year 1st December, 1929-30. Imports under these 260 licences amounted in that year to 53,636 tons of petrol (2.86 per cent. of total consumption), 7,010 tons of refined oils and white spirit (2.9 per cent. of consumption) and 11,974 tons of heavy lubricating oils (4.03 per cent. of consumption). Special licences for a period of three years from the 1st April, 1929, were granted by presidential decrees of the 23rd March, 1929, to a number of firms, to a total amount of 2,874,700 tons of oil products other than crude oil, viz. (a) Petrol 1,917,500 tons: (b) lubricating oils 421,300 tons: (c) refined oils (i.e., lighting oil and white spirit) 331,400 tons: (d) gas oils 204,500 tons. In the case of all four classes together, the quantity for which licences were given was higher by 860,747 tons than consumption in 1928 and in the case of petrol alone by about 500,000 tons. The quantities were slightly revised by additional licences given in August, 1930, and an all-round increase of 10 per cent. authorised by a ministerial decree of the 30th December, 1930. Renewed licences for the three years 1st April, 1932-35, granted by decrees of the 25th September, 1931, authorised the total importation of about 3.7 million tons yearly, comprising: (a) petrol, 2,408,060 tons in 1932-33, 2,534,800 tons in 1933-34 and 2,661,540 tons in 1934-35; (b) refined oils, 267,350 tons yearly; (c) lubricating oils, 513,500 tons yearly; (d) gas oils, 453,900 tons yearly. Of the 46 companies to which these licences were granted, 28 form units in ten leading groups of oil interests, and share between them 91½ per cent. of the total quantity, while 18 unrelated firms hold licences for the remaining 8½ per cent.

Special licences valid for 20 years, in the form of decrees dated the 1st April, 1931, grant permission to the eleven concerns that either operate, or have taken steps to construct, refineries in France, to import for distillation in those refineries such quantities of crude oil as will yield a yearly output of 1,923,000 tons of petrol, 246,500 tons of refined oils, 384,000 tons of lubricating oils and 278,550 tons of gas oils.

The following table shows the allocation of the import licences of both categories and the proportions in which the total quantity is distributed among the leading interests:—

[TABLE]

IMPORTS OF PETROLEUM AND ITS DERIVATIVES LICENSED UNDER DECREES OF THE 1ST APRIL AND 25TH SEPTEMBER, 1931.
C=equivalent, in terms of finished products, of crude oil to be imported annually under 20-yearly licence of 1st April, for distillation in company's refineries in France.

R=finished products to be imported annually under 3-yearly licence of 25th September. (See footnote "a").

N.B.—Quantities allotted under C are not additional to the quotas shown under R.

Per cent. of Total	Companies		Quantities in metric tons			
			Petrol	Refined mineral oils	Heavy or lubricating oils	Gas oils
21.62	Compagnie Française de Raffinage	C	419,000	61,000	40,000	42,000
		R	611,300a	75,700	40,900	104,000
21.34	Société Franco-Américaine de Raffinage	C	356,000	38,000	139,000	45,400
		R	529,000a	47,200	159,900	61,200
15.12	Société des Pétroles Jupiter	C	263,000	37,000	45,000	77,300
		R	380,700a	53,000	4,000b	114,600
9.27	Société Générale des Huiles de Pétrole	C	169,000	26,000	23,000	35,000
		R	251,400a	30,300	600c	62,000
8.09	Vacuum Oil Co. and Cie. Industrielle des Pétroles	C	143,000	18,000	37,000	15,000
		R	208,700a	23,400	59,000	17,300
5.65	Raffineries de Pétrole du Nord	C	108,000	15,000	32,000	12,900
		R	130,500a	6,900	25,100	33,700
4.30	Produits Chimiques et Raffineries de Berre	C	158,000	47,500	30,000	17,250
		R	44,700a	3,600	2,000	4,200
3.20	Brest-Port Pétrolier	C	100,000	10,000	—	8,300
		R	77,500a	3,400	800	6,300
2.52	Raffineries de Pétrole de la Gironde	C	135,000	15,000	—	12,400
		R	—	—	—	—
2.37	Pechelbronn	C	72,000	9,000	18,000	10,500
		R	29,400ae	2,300	— d	11,400
1.74	Les Consommateurs de Pétrole	C	—	—	20,000	2,500
		R	41,400a	14,200	30,500	3,600
	Total	C	1,923,000	246,500	384,000	278,550
	"	R	2,304,600a	260,000	322,800	418,300
4.78	Total of 3-yearly licences accorded to 18 other firms	R	149,800a	6,750	116,900	34,900

a In the year 1932-3 these quantities are to be reduced by 5%, and in the year 1934-5 increased by 5%.

b Licence nominally for 41,000 tons, but 37,000 tons thereof to be obtained from treatment of imported crude oil.

c 21,000 20,400

It will be seen that the *Compagnie Française de Raffinage* (a subsidiary of the organisation established, under State auspices, to treat oils from Iraq) and the *Société Franco-Américaine de Raffinage* (representing the Standard Oil Company interests) each hold more than 21 per cent., the *Société des Pétroles Jupiter* (Shell Royal-Dutch) 15 per cent., and the *Société Générale des Huiles de Pétrole* (Anglo-Persian interests) 9 per cent.

Import Licence System.—Three distinct classes of importers are recognised:—(a) Importers of less than one ton in individual consignments or 15 tons monthly. These are not regarded as wholesale importers; they require no licences to import, and are not subject to the conditions which require importers of larger quantities to maintain stocks for national emergencies. (b) Those whose imports, while exceeding the above-mentioned limits, do not attain 300 tons monthly. In such case application must be made to the Ministry of Commerce for an "ordinary" import licence under the terms of the 1925 law. (c) Those whose imports amount to 300 tons monthly or over. Such importers must apply for a "special" import licence under the terms of the 1928 law.

Ordinary licences.—"Ordinary" import licences are accorded automatically to persons or firms who undertake: to keep at all times a reserve stock of not less than one-fourth of the quantity declared by them for consumption during the preceding twelve months (or, in the event of a decline in consumption, not less than one-third of the quantities so declared during the first three quarters of the preceding twelve months); to furnish a monthly return of the quantities and qualities stocked and the place where they are kept; and to conform to any regulations that may be issued respecting priority of supply for the public services. The reserve stock may be reduced to one-tenth in the case of importers of less than 50 tons monthly who adduce proofs that they import for direct retail sale. Ordinary licences may be transferred in the event of a cession of the business, and are subject to revocation, after a month's notice, only, if the holders fail to abide by the statutory conditions.

Special Licences.—"Special" import licences, instituted by the law of 1928, apply to importers of at least 300 tons monthly. A separate presidential decree must be issued in respect of each licensee, such decree requiring the decision of a committee consisting of the director of the National Liquid Fuel Office and one representative each of the Ministers for Finance, Foreign Affairs, War, Marine, Public Works, and of the Prime Minister (the latter's representative being obligatorily a member of the Superior

Council of National Defence). The decree specifies the principal object of the enterprise, the different categories of products and the maximum quantity of each allowed to be imported yearly, and the conditions (enumerated below) that the holder of the licence must fulfil. The quantity of imports for which the licence holds good may be increased or decreased by a proportion at first fixed at not more than one-tenth in any year, but since December, 1931, at one-fifth, upon notice being given to the licensee, at first six months, but now one month in advance, such increase or decrease to be effected during the second half of the yearly period then in course. The licence may be made valid for any period up to 20 years in the case of crude petroleum and three years in that of petroleum derivatives or residues. Should the licensee, being proprietor of a refinery, install plant capable of operating a new process (as distinct from a mere improvement in existing processes) for the treatment of crude oil, his licence may be extended for a period of not more than ten years from the date at which such new plant is ready to begin working. Notice of consent or refusal to renew the current licence must be given at least 2½ years before the date of its expiry in the case of crude oil and six months in that of derivatives.

Obligatory Reserve Stocks.—The applicant undertakes, as in the case of an ordinary licence, to maintain a reserve stock of at least three months' supply; to give priority to the public services; and to participate, proportionately to the share that his imports represent in the total imports of the country, in the execution of any contracts decided upon by the State in the national interest, or in any organisations that may be set up for such a purpose, without being entitled to lay claim, as a consequence, to any monopoly or privilege. He is required to furnish a substantial guarantee that he will abide by the conditions. The licence may be withdrawn, by decision of the consultative committee, in the event of failure to observe the conditions. Its revocation may also automatically be pronounced, should the holder have resorted to the manipulation of market prices. Any transference of the licence can only be effected by means of a decree in the same form as that of the original licence.

Licences for pre-1928 Wholesale Importers.—As regards persons or firms who, prior to the promulgation of the 1928 law, were already engaged in the wholesale importation of crude petroleum or its derivatives and residues, the law entitled them to a permit for quantities at least equal to the maximum of their imports during the previous five years, provided that they make due application within three months after the publication of the law.

iv. OIL REFINING AND REFINERIES

The State policy for the establishment of an adequate oil refining industry in France, which was embodied in legislation in 1928, has rapidly borne fruit. Among other inducements, the law accorded lower customs duties to oil imported for refining in France, and approved refiners were given licences for 20 years. In 1931, eleven companies were authorised to engage in refining operations and to deliver certain quantities of petrol (1,923,000 tons), burning oils (246,500), lubricating oil (384,000) and gas oil (278,750): total, 2,832,250 tons: these figures exclude residues, for which no licences are required. One of the eleven licensees, the *Compagnie Française de Raffinage*, in which the State is interested, is furthermore entitled to refine a tonnage of crude oil, by-products and residues, equivalent to 25 per cent. of the declared annual total of finished products taken out of bond for home consumption: on the basis of 1932 consumption, the company would thus have a capacity of about 800,000 tons of the four classes just enumerated.

In 1928, only two refineries on an important scale were in operation in France, one near Douai and the other at Pechelbronn in Alsace. By July, 1933, eight more new refineries had been constructed and were operating: one belonging to the *Compagnie Française de Raffinage*, at Gonfreville near Havre; one at Port Jerome on the Seine between Havre and Rouen; one near Rouen at Petit-Couronne; one at Dunkirk; two near Bordeaux, at Pauillac and at Bec d'Ambes; two near Marseilles, on the Etang de Berre and at L'Avera near Martigues. Two more are being constructed or nearly finished, namely a second at Port Jerome, one at Frontignan near Sète on the Mediterranean, and two are projected at Donges on the right bank of the Loire between Nantes and St. Nazaire. The Gonfreville refinery, started in May, 1933, was reported in August to be treating 2,200 tons a day; and the *Compagnie Française de Raffinage* has also under construction a second refinery at Martigues on the Etang de Berre near Marseilles, where several tanks have been already built, but it will probably not be completed before the end of 1934. At Gonfreville sufficient space is available for bringing eventually the capacity of the present works to nearly 4,000 tons a day. The *Compagnie Française des Pétroles*, which increased its capital in August, 1933, from 315 to 475 million francs, is entitled to the French share (23.75 per cent.) of the output of the Iraq Petroleum Company. The Standard refinery at Port Jerome, stated to have cost 400 million francs, and which began working in August, 1933, claims to be the most powerful in Europe (capacity for treating one million tons a year). The French refineries at present are accordingly able to supply about one-quarter of the national consumption: it is expected that by the end of 1934 they will supply more than two-thirds.

Principal Oil Groups with Share Capital (November, 1932).—The following table, taken from the *Revue Pétrolière* of November 5th, 1932, gives the names of the chief groups engaged in refining, with their affiliated concerns, of the storage, and of the oil tanker companies, together with their respective share capitals at that date. The *Revue* observes that although numerous other distributing companies operate in France, the most important are included in this list. The total capital of the refining companies reached 2,288.7 millions, of the storage 256.2 million, and of the tankers 161.13 million. Certain increases in capital have no doubt occurred in the interval, notably that of the semi-State *Compagnie Française des Pétroles*, raised in August, 1933, to 475 millions.

I. OIL REFINING COMPANIES.

Group and Affiliation	Capital Francs	Total
COMPAGNIE FRANÇAISE DE RAFFINAGE	100,000,000	
Desmarais Frères	50,000,000	
Lille, Bonnières et Colombes	50,000,000	
Société Champenoise des Carburants	2,661,000	
Société Française des Carburants	20,000,000	
Motoline	2,000,000	
Société Française des Combustibles Liquides	12,000,000	
Méridionale	10,000,000	
Société Approv. Consom. Huiles Combustibles	4,500,000	
		251,161,000
STANDARD FRANCO-AM. DE RAFFINAGE...	165,000,000	
Bedford	57,250,000	
Economique	103,250,000	
Compagnie Générale des Pétroles	24,000,000	
A. André Fils	21,500,000	
De La Mailleraye	8,600,000	
		379,600,000
SOCIETE DES PETROLES JUPITER ...	525,000,000	525,000,000
STE. GENERALE DES HUILES DE PETROLE	240,000,000	240,000,000
VACCUUM et C.I.P.	154,000,000	
Sinco	10,000,000	
Compagnie Industrielle des Pétroles	60,000,000	
Belpétrole	30,000,000	
		254,000,000
RAFFINERIE DE PETROLE DU NORD ...	100,000,000	
Union Générale du Naphte	5,000,000	
Pétronaphte	10,000,000	
Oléonaphte	2,500,000	
Carburants et Produits de Synthèse	5,000,000	
Huiles, Goudrons et Dérivés	54,000,000	
Pétrole de Languedoc	4,000,000	
		180,500,000

I. OIL REFINING COMPANIES—*continued.*

Group and Affiliation	Capital Francs	Total
SOCIETE DE "PECHELBRONN"	81,000,000	
Société Alsacienne des Carburants	18,100,000	
*Pétroles, Essences et Naphtes	50,000,000	
Petroleum Products Company	2,000,000	
Rémoise des Carburants	560,000	
Brest-Port Pétrolier	2,800,000	
		154,460,000
PRODUITS CHIM. ET RAFFIN. DE BERRE	200,000,000	
Société Toneline	27,000,000	
		227,000,000
RAFFINERIE DE LA GIRONDE	35,000,000	
The Texas Company	2,000,000	
		37,000,000
LES CONSOMMATEURS DE PETROLE	40,000,000	40,000,000
Total		2,288,721,000

2. STORAGE COMPANIES.

Name	Capital Francs
Compagnie Industrielle Maritime	200,000,000
Société du Dépôt de Pétrole de Cherbourg	3,000,000
Docks du Pétrole	4,500,000
Société d'Entreposage des Huiles Minérales	1,000,000
Société Franco-Belge d'Entreposage du Pétrole	3,700,000
Compagnie Occidentale des Produits du Pétrole	20,000,000
Raffinerie du Midi et Société Immobilière du Midi	24,000,000
Total	256,200,000

3. OIL TANKER COMPANIES.

Name	Capital Francs
Compagnie Auxiliaire de Navigation	27,500,000
Association Pétrolière	21,500,000
Mazout-Transports	15,000,000
Purfina Transport et Cabotage	300,000
Société Auxiliaire de Transports	11,400,000
Société d'Armement, d'Industrie et de Commerce	41,776,000
Compagnie Nationale de Navigation	26,000,000
Compagnie Française de Navires-Citernes	2,700,000
Société de Pétrole d'Outre-Mer	13,950,000
Compagnie Fluviale et Maritime de Transport de Pétrole	1,000,000
Total	161,126,000

Proposed State Monopoly of Import and Refining.—The question of the State monopoly of the oil trade, which has been advocated in certain quarters for some years (the principle was voted by both Houses of the French Parliament in 1927), again came to the fore in 1933. After various Parliamentary discussions, it was provided by the Budget law of May that within three

months of its promulgation a commission was to be charged with the task of investigating the practical conditions of the organisation of the monopoly of importation of mineral oils and the possibility of establishing in France the monopoly of refining. The commission was at the same time to investigate the ways and means of procuring petrol tax-free for feeding motor engines not engaged in road transport. The large commission (6 senators, 13 deputies, 8 representatives of various Government Departments, and 4 representatives of other bodies) was appointed at the end of June. Among the chief objections raised in Parliament concerning a refining monopoly were the probable high cost of expropriation, the difficulty of providing the purchase money variously estimated at 2,000 to 5,000 or more millions, and the grave uncertainty as to whether a State monopoly would succeed in yielding to the Treasury the actual revenue of over 3,000 millions. In December, 1933, the commission rejected by a two-thirds majority the principle of State monopoly of importation and refining. It may be noted that already a quasi-monopoly of oil imports exists in the sense that the State legally controls the imports but delegates by licence under fixed rules the importation to specific concerns.

State Participation in Refineries.—The law of the 30th March, 1930, article 8, enacted that in the event of a modern refinery being erected on French territory, “with a view to the execution of contracts of national interest,” the Government might participate in its capital, within a limit of 50 millions. This foreshadowed the ratification of an agreement entered into between the Government and the *Compagnie Française des Pétroles*, on the 17th May, 1924. This was modified by a further agreement of the 25th June, 1930, and the agreement as modified was ratified by Parliament on the 25th July, 1931. It provided, *inter alia*, for a State participation of 25 per cent. in the company's capital, with an option (since exercised) to take up a further 10 per cent. The capital of the company was raised from 315.6 millions to 475 millions in August, 1933. One-tenth of the capital of the company's auxiliary, the *Compagnie Française de Raffinage*, has likewise, under the terms of the agreement of June, 1930, been made over to the State. By article 12 of the same agreement the State bound itself to take all necessary measures to enable the *Compagnie Française de Raffinage* to treat a quantity of oil equivalent to 25 per cent. of the total quantity of finished products declared annually for consumption. In addition, the latter company was authorised by a decree of the 1st April, 1931, to treat the quantity of crude oil equivalent to the quota allotted to all its adherents. The company undertook to give the State a first call on 80 per cent. of that part of its output which might be attributed to the crude oils received by virtue of its participation in the Iraq Petroleum Company, and to allow a uniform rebate of Fcs. 8 per ton on all oil

products delivered to the public services under this right of priority.

Protection Accorded to French Refineries.—Under the customs law of the 16th March, 1928, modified by the law of the 7th April, 1932, the duties on petroleum products were so revised as to provide that the duty on products of distillation of foreign crude oils, at the time of their dispatch from a French refinery, should be on a scale lower than that levied on corresponding products imported from abroad, the difference being as under (minimum tariff) :—

Description	Unit	Duty on foreign product	Duty ex French refinery	Difference in favour of French refiners
Illuminating oil ...	Hectolit.	Frs. 47.00	Frs. 36.35	Frs. 10.65
Petrol	do.	do.	do.	do.
Lubricating oils ...	100 kilog.	77.00	44.00	33.00
† Refined heavy oils of the water white type (known as oil of vaseline, oil of paraffin, etc.) ...	do.	172.50	95.00	77.50
Paraffin wax ...	do.	250.00	172.50	82.50

A further margin of protection is constituted by the fact that foreign products (other than illuminating oil and petrol) have to bear also an importation tax of 6 per cent. *ad valorem* on lubricating oils, paraffins and vaseline, or 4 per cent. on gas oils, fuel oils, road oils and petroleum coke, the basis of calculation in each case being the value of inclusive customs duty and other taxes if any, whereas in the case of refineries treating crude oils of foreign origin, the importation tax is suppressed. In the case of illuminating oils and petrol this tax is replaced by the "taxe unique" of 8 per cent., calculated on a similar basis, and there is no distinction made between the foreign product and that of a French refinery. It is to be noted that in the case of Pechelbronn, the only company treating crude oils of French origin, the margin of protection is not only the differences shown in the last column of the foregoing table, but the whole amount of the duty levied on the foreign product, together with the importation tax according to the nature of the product.

In 1931 the total sum paid in customs duties amounted to 1,387 million francs in the case of refined oils and petrol, and 197 millions in that of heavy oils and residues, apart from internal road

† *Note.*—These oils are known in this country as "White Oils," and consist of Technical White Oils (for the textile trades) and Medicinal White Oils.

taxes, etc., collected by the customs service in respect of imported crude oils after their treatment in French refineries and amounting to 972 millions.

Past Consumption and Future Market Possibilities.— From 1920 to 1932 the imports of petrol into France grew from 466 to 1,979 thousand tons, but declined in 1933 to 1,715 thousand tons, while that of kerosene declined from 305 to 153 and 92 thousand tons. Gas oil, not separately distinguished before 1928, shows an increase from 91½ thousand tons in that year to 356 and 380 thousand tons in 1932 and 1933. The following table indicates, by categories of products, the imports in the six years 1928-1933:—

	Thousand tons					
	1928	1929	1930	1931	1932	1933
Crude oil	14	23	452	519	1,035	2,740
Kerosene	228	237	191	193	153	92
Petrol	1,425	1,676	1,873	2,136	1,979	1,715
Lubricating and other heavy oils	269	280	278	235	197	198
Paraffin	10.4	7.2	7.8	6.4	5.2	4.4
Combustible residues*	118	—	—	—	—	—
Mineral oil tars*	12	—	—	—	—	—
Gas oil	92	165	216	254	356	380
Fuel oil	342	499	545	591	669	626
Road oil and soft tars	62	117	186	73	85	79
Petroleum coke and hard tars	18.5	31	29.5	14	8.6	12.9
Oil of vaseline and of paraffin	0.8	1.2	1.3	1.3	1.2	1.3

* Up to the 16th March, 1928, the various products coming under these two headings were not separately distinguished in the customs returns. After that date they were shown separately as gas oil, fuel oil, etc.

The following estimates of possible future consumption are summarised from an article in the "Revue Pétrolifère" (23rd July, 1932). The consumption of kerosene is declining at the rate of 3 to 5 per cent. yearly. That of petrol has been temporarily affected by the present crisis, but there is every reason to anticipate that, with the resumption of normal business conditions, there should be an increase in the demand for petrol at the rate of about 2 to 5 per cent. annually. The generalised use of gas oil is of comparatively recent growth, and this product appears to have been little affected by business stagnation. It seems likely that the increase may continue, at the rate of about 25 to 30 per cent., for the next few years at least. In the case of fuel oil, there should be a growth of some 5 to 8 per cent. annually. Road oils and soft tars have been greatly in demand for the upkeep of the roads in recent years, and although perhaps the demand will not increase at the same rate, a growth of some 10 to 15 per cent. yearly may be anticipated. The consumption of lubricating oils has been greatly influenced by the conditions prevailing since the beginning of 1931, and it is hardly likely that there will be any immediate increase in the demand, until there is a serious awakening of industrial activity.

The article concludes with the following estimate (offered with all reserves, in view of the wide margins of possible error) of the probable consumption in France of petroleum products within the next few years:—

	1932	1933	1934	1935	1936
	Thousand tons				
Kerosene	232	223	214	205	197
Petrol	2,250	2,340	2,435	2,530	2,630
Gas oil... ..	380	475	590	725	900
Fuel oils	700	750	805	860	920
Road oils and soft tars	215	250	288	330	380
Lubricating oil	330	335	340	345	350
Petroleum coke and hard tars	25 to 30 thousand tons yearly				
Paraffin	9 to 11 thousand tons yearly				

Authorised Imports under Law of 1928.—Prior to the coming into operation of the special licences introduced by the law of the 30th March, 1928, there were 55 concerns holding, under the terms of the 1925 law, temporary licences authorising them to import a total of 8,107,440 tons yearly. Many of these interests have since become amalgamated, and the greater part of the oil imports of the country are now concentrated in the hands of eleven companies. Eleven separate decrees, promulgated on the 1st April, 1931, gave authority to these eleven companies to import annually, for a period of 20 years, quantities of crude petroleum corresponding to the following refined products:—

Metric Tons

Companies	Petrol	Refined mineral oils	Lubricating oils	Gas oil
Compagnie Française de Raffinage	419,000	61,000	40,000	42,000
Société Franco-Américaine de Raffinage	356,000	38,000	139,000	45,400
Société des Pétroles Jupiter ...	263,000	37,000	45,000	77,300
Société Générale des Huiles de Pétrole	169,000	26,000	23,000	35,000
Produits Chimiques et Raffineries de Berre	158,000	17,500	30,000	17,250
Vacuum Oil Company and Compagnie Industrielle des Pétroles	143,000	18,000	37,000	15,000
Raffineries de Pétrole de la Gironde	135,000	15,000	—	12,400
Raffinerie de Pétrole du Nord Brest-Port Pétrolier	108,000	15,000	32,000	12,900
Exploitations Minières de Pechelbronn	100,000	10,000	—	8,300
Les Consommateurs de Pétrole	72,000	9,000	18,000	10,500
... ..	—	—	20,000	2,500
Total	1,923,000	246,500	384,000	278,550

As regards other petroleum products (fuel oil, road oils, tar, paraffin, vaseline, etc.), there is for the time being no limit set to the quantities that may be imported. The following is a summary of consumption in 1930-1932 :—

Year	Metric tons			
	Petrol	Lamp oil (or kerosene)	Gas oil	Fuel oil
1930	1,928,443	209,870	215,940	545,417
1931	2,161,000	220,600	307,500	658,000
1932	2,222,700	206,700	463,000	802,400

There still remain, however, many importers of less than 15 tons monthly, who require no licence, and importers of less than 300 tons monthly, who hold "ordinary" licences under the 1925 law, and whose imports add considerably to the total tonnage authorised by the "special" licences above-mentioned. In addition there exist the three-year licences to the extent to which they exceed the twenty-year licences, as well as the possibility for the Compagnie Française de Raffinage to import crude oil for treatment equivalent to 25 per cent. of the total quantity of refined oils declared for consumption in any year.

Included in each of the decrees of the 1st April, 1931, was a clause whereby the licensee undertook to construct one or more refineries, those equipped only for first distillation and cracking to be completed by the 1st October, 1933, while a delay of one year more was accorded in the case of plant designed to cover every phase of the refining processes. Guarantees ranging from 1½ to 22¼ millions, according to the size of the projected refinery, were exacted from the licensees, with provision for the release or repayment of these sums according to a definite programme: 30 per cent. in half-yearly instalments proportionately to the progress of construction, and the remaining 70 per cent., after the refineries shall have reached the producing stage, by fractions of one-fourth proportionately to the constitution of the reserve stocks.

Refineries in Operation or Under Construction.—The distributing companies already established in France are estimated to have sunk 2½ milliard francs in the construction of refineries on French soil, and it is estimated that over one milliard more will be expended by the eleven companies to whom the special import licences have been granted. Ten refineries were already working in August, 1933 :—

Pechelbronn : at Merckwiller, in Alsace, 40 kilometres north of Strasbourg. Treatment capacity 130,000 tons yearly.

Courchelettes (Anglo-Persian): close to Douai. Treatment capacity 200,000 tons yearly.

Petit-Couronne (Royal Dutch): 12 kilometres below Rouen. Treatment capacity, at present 700,000 tons, being increased to 800,000 tons.

Berre (Saint-Gobain): on the Etang de Berre, near Marseilles. Treatment capacity 400,000 tons.

Bec d'Ambès : at the junction of the Dordogne and the Gironde. Treatment capacity 300,000 tons.

St. Fol, near Dunkirk : Raffinerie de Pétrole du Nord : Present capacity 300,000 tons, eventually to be increased to 500,000 tons.

Gonfreville (Cie. Française de Raffinage) : on the Tancarville Canal, close to Havre. Present treatment capacity 800,000 tons, with an eventual increase to 1½ million tons.

Port Jérôme (Standard Oil Company) : on the Seine, 36 kilometres from Havre. Treatment capacity over one million tons.

Pauillac (Royal Dutch) : on the Gironde, 47 kilometres below Bordeaux. Treatment capacity 300,000 tons.

L'Avéra (Anglo-Persian) : on the Etang de Berre, near Marseilles. Treatment capacity 300,000 tons.

Of five other refineries, that of the Vacuum Oil Company at Port Jérôme is finished (250 to 300 thousand tons capacity) and that of the same company at Frontignan, near Sète, designed for a capacity of 100 to 120 thousand tons, is practically completed. The Raffinerie de Provence, which is in course of construction for the Compagnie Française de Raffinage at Martigues, on the Etang de Berre, is designed for an eventual treatment capacity of a million tons : in August, 1933, the reservoirs were being built. Of the two refineries projected at Donges, between Nantes and Saint Nazaire on the Loire, one appears to have entered on the construction stage.

The following notes respecting the individual licence holders and the capacity of their installations will be of interest :—

1. *Cie. Française de Raffinage*.—Capital increased in July, 1932 from 100 to 200 million francs. This enterprise is a subsidiary of the *Compagnie Française des Pétroles* (capital 475 million francs), the company formed to acquire from the French Government its share of 23.75 per cent. in the Iraq (formerly Turkish) Petroleum Company. The parent company took a 55 per cent. interest in the subsidiary, retaining 45 per cent. and handing over 10 per cent. to the State in accordance with the terms of its conventions with the latter (June, 1930). The *Compagnie Française de Raffinage* has two refineries in course of construction. The first, the *Raffinerie de Normandie*, at Gonfreville, on the Tancarville Canal, close to Havre, is connected with the oil port at Havre by a pipe-line 10 kilometres in length and is accessible to vessels of 5,000 tons. The tanks have a storage capacity of about 600,000 cubic metres. The refinery commenced operations in 1933 with an initial capacity of 800,000 tons to be increased eventually to 1½ million tons a year. Pending completion of the pipe-line from Iraq to the Mediterranean, scheduled for 1934, which will deliver the crude oil that this refinery is intended to treat, recourse will be had to Soviet Union oils and others of mid-European origin (Roumanian and Polish). The process will be divided into two stages: the first, preliminary distillation and cracking, resulting in the production of petrol, solvents, illuminating oils, gas oil, diesel oil and fuel oil; and the second, complete distillation for the production of the whole range of petroleum derivatives. Particular attention will be paid to lubricating oils. There are to be two tubular distilling units each capable of producing 400,000 tons yearly, plant for refining by the *Edeleau* process, cracking apparatus, an electric power station, a recuperation plant for the treatment of the refinery gases with a view to the recovery of the ether, etc.

The company's second refinery, to be known as the *Raffinerie de Provence*, will occupy a site of 148 acres at Martigues, on the *Etang de Berre*, near Marseilles. It will also treat oil from the Iraq fields. The original plans were designed for a treatment capacity of a million tons and storage capacity exceeding 300,000 tons. The construction of the reservoirs was in progress in August, 1933.

The *Compagnie Française de Raffinage* has no distributing organisation of its own, but is associated with a number of distributing concerns already existing, namely: *Desmarais Frères*; *Lille, Bonnières et Colombes*; *Société Champenoise des Carburants*; *Société Française des Carburants*; *La Motoline*; *Les Consommateurs de Pétrole*; *Société Française des Combustibles Liquides*; *Compagnie Méridionale des Pétroles*; *Société pour l'Approvisionnement des Consommateurs d'Huiles Combustibles*.

2. *Standard Franco-Américaine de Raffinage*.—This concern, a subsidiary of the Standard Oil Company, completed in 1933, after two years of work and at a cost of 400 million francs, the construction of a refinery, the largest in Europe, at Port-Jérôme, on the banks of the Seine, between Havre and Rouen (the point, 35 kilometres from the river mouth, at which the Rouen Chamber of Commerce plans to create a port specially designed for the petroleum traffic). Two pipe-lines of 35 kilometres length connect this refinery with the petroleum reservoirs at Havre. The plant, designed for the treatment of over a million tons yearly, includes provision for manufacturing the whole range of petroleum products. Apart from the refinery and its dependencies, the company has built on the neighbouring hillside a model village designed to house its personnel. Over 1,200 workmen have been engaged in the work of construction.

Distribution of the company's output is ensured through: the Bedford Petroleum Company; Economique; Compagnie Générale des Pétoles; André Fils et leurs Associés; and the Société La Mailleraye.

3. *Société des Pétoles Jupiter (Royal Dutch-Shell interests)*.—The company has two refineries. The first situated at Petit-Couronne, 12 kilometres below Rouen, was built during 1927-28 and extended during 1931-1932. It has a present treatment capacity of about 700,000 tons per annum, storage accommodation for about 100,000 tons of crude oil and 80,000 tons of finished products. Tankers are able to mount the Seine and to moor at a concrete mole, connected with the refinery itself by a road of 800 metres. The distillation plant, entirely of French manufacture, burns fuel oil. Two groups of workmen's dwellings provide accommodation for 216 families.

The second refinery, situated at Pauillac on the banks of the Gironde, 47 kilometres below Bordeaux, was put under construction in August, 1931, and commenced operations in October, 1932. It is capable of treating daily about 600 tons of light crude oil and 300 tons of heavy crude oil, and of storing 47,000 tons of crude oil and finished products. The charging and discharging of vessels can be effected alongside the refinery.

The Petit-Couronne refinery is designed for the production of the whole range of petroleum products, whilst that at Pauillac is intended only for the first distillation and cracking.

4. *Société Générale des Huiles de Pétoles*.—This concern, whose capital, originally 100 million francs, was increased in 1922 and 1924 first to 227 millions and then to 240 millions, was created in 1921 under the auspices of the Anglo-Persian Oil Company in collaboration with a group of French industrialists and financiers, about half the capital being held by the Anglo-Persian. The company's refinery at Courchelettes, close to Douai, is one of the oldest in France. As far back as 1865 a primitive system of

refining was practised there, treating crude oils from America. In 1883 a refining works was constructed, and in 1885 the "Ville de Calais," the first tanker flying the French flag, began to discharge its cargoes at Calais for transport by rail to Courchelettes in tank wagons. Early in the war the plant was dismantled piecemeal and carried away into Germany, prior to the systematic destruction of the buildings. In 1922 the new refinery was constructed. Adequate supplies of crude oil are ensured by the company's association with the Anglo-Persian interests. Some 200,000 tons of crude oils are treated yearly, and the storage capacity of the reservoirs has been gradually extended from 8,000 hectolitres in 1885 to a present total in excess of 100,000 tons.

A second refinery was completed in August, 1933, being constructed on a splendid site of 383 acres at L'Avéra, close to the Etang de Berre near Marseilles, by the company's subsidiary the Société de Raffinage des Huiles de Pétrole. The geographical position of the new refinery is much more convenient than that of Courchelettes for the treatment of crude oil coming from Persia. (The company already has owned at L'Avéra since 1922 an oil conditioning plant, a petroleum port and a railway siding.) The plant is designed to treat between 300 and 350 thousand tons of crude oil yearly. Reservoirs to the number of 63 will provide storage capacity for 50,000 cubic metres of crude oils and 74,000 cubic metres of finished products. Groups of dwellings 70 or 80 in number for the accommodation of personnel have been constructed in the immediate vicinity of the refinery. The equipment of the Société Générale des Huiles de Pétrole for handling its products includes about 50 lighters, 500 railway trucks and 375 lorries, while about 8,000 roadside pumps have been installed to assist in distribution.

5. *Compagnie des Produits Chimiques et Raffineries de Berre.*

—This company (formerly the Société Franco-Egyptienne), which is associated with the Société des Pétroles Toneline, and owes its existence to the great chemical and glass firm, Saint-Gobain, has spent so far, for land, constructional work, acquisition of patent rights, work in course of execution and other outlay, a sum in excess of 300 millions. The refinery at Berre, occupying a site of 568 acres alongside the Etang de Berre close to the railroad from Marseilles to Paris, began to operate in August, 1931, and is now producing a complete range of petroleum products. The plant, which is capable of treating 400,000 tons annually, is so arranged as to be readily adapted to the treatment of crude oils of various origins. As there is not sufficient depth of water to enable tankers to berth alongside the refinery, a submarine pipeline (the first in Europe) 24 inches in diameter has been constructed to connect the storage reservoirs with the mole, 535 metres from the shore of the lake, at which the tankers will moor. A vessel of 12,000 tons can discharge its cargo in 48 hours, while lighters of 500 tons can be loaded in two hours.

6. *Vacuum Oil Company*.—The Vacuum Oil Company (with which are associated the *Compagnie des Huiles Sinco*, the *Compagnie Industrielle des Pétroles* and the *Société Belpétrole-France*) has two refineries, one at Port Jérôme on the Seine, 35 kilometres from Havre and about 100 kilometres from Rouen by river, and the other at Frontignan, in the Hérault on the Mediterranean coast a few kilometres east of Sète. The Port Jérôme refinery, designed to treat from 250,000 to 350,000 tons yearly, produces the complete range of petroleum products. The Frontignan refinery, which was completed in the autumn of 1933, is designed for an initial output of 100,000 to 120,000 tons yearly by the processes of first distillation and cracking only, the capacity to be increased subsequently when the need arises, as it is expected that, with the development of the company's markets in the north of Africa, expansion of the works will be called for at a relatively early date.

7. *Société des Raffineries de Pétrole de la Gironde*.—The original capital of 35 millions was raised in March, 1932, to 70 millions, powers to increase the issued capital to 100 millions not having yet been completely utilised. The new refinery at Bec d'Ambès, 30 kilometres north of Bordeaux, at the junction of the Garonne and the Gironde, commenced in September, 1930, has been in operation since the beginning of 1932. It is estimated that about 110 or 120 millions have been expended in its construction. The site is exceptionally well suited for an enterprise of this character both from the points of view of security and general accessibility, as it forms a sharp triangle whose two long sides are constituted by the river banks. A branch railway line, the preliminary work on which has been commenced, will ultimately connect the refinery with the Paris-Orléans system, while the nearness of Bordeaux, an important centre of consumption, provides an outlet almost at the company's doors. By way of provision for future development, the company holds an option on a further 50 acres of land adjoining the 86½ acres on which the present refinery is situated. The plant is stated to have a treatment capacity of 300,000 tons yearly, though in some quarters 200 to 250 thousand is asserted to be nearer the reality. Although the plant is at present employed chiefly for the production of fuel oil, it is also capable of producing coke, whenever the market may be favourable to the sale of the by-product, thus giving a maximum yield in petrol. The reservoirs have a storage capacity of 45,000 tons of crude oils and 73,000 tons of finished products.

8. *Raffinerie de Pétrole du Nord*.—This concern is interested principally in Soviet Union oils, the distribution of which is assured through its associated companies: *Union Générale des Naphtes*; *Petronaphte*; *Oleonaphte*; *Carburantes et Produits de Synthèse*; *Huiles, Goudrons et Dérivés*; and the *Société des Pétroles du Languedoc*. Situated at Saint-Pol-sur-Mer, the oil port in course of development close to Dunkirk, the refinery of the *Pétrole du Nord* was completed in July, 1932, and commenced operations

in the following month. It has a present treatment capacity of 300,000 tons, to be increased eventually to 500,000 tons, and the company's import licence foreshadows a yearly output of 108,000 tons of petrol, 15,000 tons of refined oils, 32,000 tons of lubricating oils and 12,900 tons of gas oil. A contract that was concluded in August, 1932, between the Soviets and a French group representing the "Pétrole du Nord" and the "Compagnie Française des Pétroles" interests, provides for a yearly supply of Soviet Union crude oil amounting in 1933 to 150,000 tons and in each of the years 1934-37 to 400,000 tons; a clause in the contract permitting a margin of 30 per cent. above or below these annual quantities.

9. *Société Brest-Port Pétrolier*.—Since the issue of the decree (1st April, 1931) authorising this company to import sufficient crude oil to permit of a yearly output of 100,000 tons of petrol, 10,000 tons of refined oils and 8,300 tons of gas oil, the enterprise has been absorbed by the Pechelbronn interests. The Brest project has been abandoned in favour of a refinery at Donges, where the Pechelbronn refinery will have at its command, in addition to the tonnage authorised in its own import licence, that originally attributed to Brest-Port Pétrolier.

10. *Société Anonyme d'Exploitations Minières Pechelbronn*.—The company's issued capital of 40 millions was in 1924 increased to 162 millions, in addition to which there are 30 millions of 5½ per cent. bonds outstanding. The refinery, which provides employment for 92 engineers, overseers, etc., and 700 workmen, is situated on the site of the oil deposit at Merkwiler, 40 kilometres north of Strasbourg. This is the only company engaged in the treatment of oil from French sources. The existence of the Pechelbronn deposit has been known since 1498, and its exploitation has been attempted at various times from 1627 onwards. Sequestered from its German owners, the property in 1921 passed into the hands of the present French company in consideration of a purchase price of 41 million francs payable in annuities, a lease being accorded for 99 years. For some years the annual output of crude oil has varied between 60 and 74 thousand tons, in addition to which the company's refinery treats about 35 to 40 thousand tons of crude oil of South American origin. The refinery does not treat any semi-refined products, and the crude oil imported is specially chosen with a view to ensuring characteristics that complement those of the Pechelbronn oils. The treatment capacity is about 130,000 tons yearly. Being situated in close proximity to coalfields, the refinery depends chiefly on coal as a fuel, using in addition sundry residues from the refining processes. The reservoirs have a storage capacity of 80,000 tons. Connections by rail are assured by a private siding connected with the station at Soultz-sous-Forêts. Access by water is via Antwerp and the Rhine, up which

river barges of 1,000 to 1,500 tons are able to advance as far as Lauterbourg; the oil being there transferred to tank-wagons for transport by rail to the refinery, a distance of 25 kilometres. The equipment commanded by the Pechelbronn company includes one motor-driven oil-tanker of 12,8/0 tons (hired on time charter), seven barges owned by the Compagnie de Transports Rhénans, 290 tank wagons, 65 tank lorries. Canteens, infirmary, workmen's and employees' dwellings, etc., are all provided by the company in accordance with the most up-to-date ideas. The sale of the Pechelbronn company's products is assured by its two subsidiaries, the Société Alsacienne des Carburants (petrol) and the Société des Huiles Antar (oil for motor-cars). The output of the refinery in 1931 consisted of:—

	Tons
Petrol	13,529
Illuminating oil... ..	19,641
Gas oil or fuel oil	9,462
Lubricating oil	37,069
Tar	16,190
Paraffin	1,811
Total	97,702

The table appearing below indicates the equivalent in finished products of the crude oils that the Pechelbronn company is authorised to import annually for a period of 20 years.

Petrol	72,000
Refined mineral oils	9,000
Lubricating oils	18,000
Gas oil	10,500
Total	109,500

11. *Les Consommateurs de Pétrole*.—This is an organisation representing the large railway and steamship companies, who are important consumers of lubricating oils. It is proposed to erect at Donges, in the Loire-Inférieure, about 10 kilometres from Saint-Nazaire, a refinery capable of treating 50,000 tons annually and of producing 20,000 tons of lubricating oils and 2,500 tons of gas oil.

IV.—ELECTRICITY SUPPLY

1. SCALE AND NATIONAL IMPORTANCE OF THE INDUSTRY

Importance in National Economy. The production and distribution of electricity in France provides employment for some 150,000 workers, and the capital invested is now about thirteen

milliards. The generating capacity of thermic and hydro-electric power stations combined represented about 9½ million kilowatts (or 6 million kilowatts normally available) at the beginning of 1933; the yearly output of electrical energy, which exceeds 14 milliards of kilowatt-hours, has been estimated at about one-twentieth of the total world output. The industry is far from having exhausted either its forms of development or its consumption possibilities. The increasing degree of rural electrification and the growth in the use of electrical apparatus in the household have tended to offset, in a certain measure, the decline in consumption brought about by industrial depression.

Capital Invested.—The latest published returns indicate that at the beginning of 1933, the 1,200 companies producing or distributing electrical energy had a total capital of about 16 milliards. New investments in 1933 must now bring the total to 17 milliards. From 1927 onwards there was an awakened activity, the recorded issues of capital or bonds during the four years 1927 to 1930 being nearly four times as much as during the previous five years 1922-26; falling back, however, in 1931, almost to the same level as in 1929. The following table shows the distribution of issues in 1927-32:—

Year	Million francs			
	Capital issues		Bond issues	Total
	New companies	Increases		
1927	137	757	475	1,369
1928	34	535	491	1,060
1929	12	773	1,018	1,803
1930	10	662	3,069	3,741
1931	19	151*	1,914	2,084
1932	247	28	621	896

* Lowest for ten years.

In 1931, as will be seen from the foregoing table, the marked preference for recourse to loans instead of making new issues of registered capital, which had already become manifest in 1930, was still further accentuated, the proportion of capital issues falling below one in 12. There were no individual capital issues exceeding 25 millions, but there were debenture issues of 150 millions by the *Compagnie Parisienne de Distribution d'Electricité*, 100 millions by Alais, Froges et Camargue, 75 millions by the *Société d'Electricité de Paris*, and six smaller issues of 60 million francs or more. In 1932, out of the total of 247 millions in new issues, 240 were by the *Compagnie Nationale du Rhône* (formed for the triple purpose of obtaining power, irrigation, and better navigability).

Productive Capacity.—As a consequence of the progress in power station construction in the last five years, France has further consolidated her position among European nations as a producer of electricity.

The combined productive capacity of thermic and hydro-electric power stations advanced, between the 1st January, 1926, and the 1st January, 1931, from 5,069,000 to 8,373,000 kilowatts, of which 5,593,000 kw., then represented thermic units and 2,780,000 kw. hydro-electric. In the three years that have since elapsed, there has been an addition of about one million kilowatts of installed capacity. Four of the principal thermic stations (St. Ouen, Gennevilliers, St. Denis No. 1 and Issy-les-Moulineaux) are each capable of generating from 200,000 to 400,000 kw. Two others (Vitry-Sud and St. Denis No. 2) have begun to operate with installed capacities of 220,000 and 150,000 kw., and will be enlarged as occasion warrants, to an ultimate capacity of 500,000 and 400,000 kw. respectively.

Output.—From 1923 to 1930 the output of electricity in France was doubled, growing at the rate of one milliard kilowatt-hours each year, from 7,490 to 15,839 million kw.h. : in 1931 the latter figure sank to 14,350 million and in 1932 to 13,590 million kw.h., a decline of 5.3 per cent. compared with 1931 and of 14.2 per cent. compared with 1930. The following table gives, for the years 1926 to 1932, the total output of power stations delivering energy to general distribution systems and the respective proportions furnished from thermic and hydroelectric sources :—

	Millions of kw.h.		
	Thermic	Hydro-electric	Total
1926	6,525	4,743	11,268
1927	6,331	5,057	11,388
1928	7,378	5,598	12,976
1929	8,310	5,960	14,270
1930	8,430	6,975	15,405
1931	8,355	5,995	14,350
1932	7,708	5,882	13,590

Production in 1930 was rather more than one-sixth of that of the United States, $6\frac{1}{2}$ per cent. less than that of Germany, 7 per cent. more than that of Japan. Imports and exports of current are insignificant in amount; during the period in question imports varied between 253 and 606 million kw.h. and exports between 20 and 123 million kw.h. Losses in transformers and in transmission absorbed from 1,204 to 2,139 million kilowatt-hours, corresponding to from 12.8 to 15.6 per cent. of the total output.

Notwithstanding the great activity displayed in the construction of hydro-electric power stations, the proportions of thermic and hydro-electric output remain practically stable; the percentage of total output attributable to hydro-electric stations being 43.1, 42.8, 44.8, 41.6, and 41.6 in the years 1928 to 1932 respectively as compared with 45.5 per cent. in 1923 and 42.1 per cent. as the average of the five years 1923-27. This percentage, however, should become substantially higher within the next three or four years, when the numerous high-powered hydro-electric stations now in course of construction are completed. Anticipating a probable consumption of 500 kw.h. per inhabitant by 1935, producers were aiming at a capacity of production, by that time, of 18 to 20 milliard kw.h. yearly; but the rate of new construction has been slowed down considerably since the spread of the economic depression. Production from thermic units in the northern half of the country is expected to fall short of the region's requirements, and will be made good by the yield of the Kembs station on the Rhine, whilst the southern half of the country should only consume about 70 per cent. of the energy then available from hydro-electric sources, leaving a surplus of some two milliard kw.h., if needed, to supply the wants of the North.

Geographical Distribution of Power Stations.—Nine-tenths of the potential water-power resources of France being situated to the south of a line from Bordeaux to Belfort near the Swiss border, nearly the whole output of hydro-electric power is produced in the southern half of the country. In fact, the two counties of Savoy and of Isère, which are East and South-East of Lyons, and the two counties of Hautes- and Basses-Pyrénées along the Spanish frontier, together account for more than 50 per cent. of the total hydro-electric production. At the 1st January, 1931, out of hydro-electric plant with a total production capacity of 2,163,985 kw. (exclusive of small stations of less than 1,000 kw.) no less than 1,175,100 kw. were situated in the South-Eastern region, over 577,000 in the South-West, 353,000 in the region of the Central Plateau; while the northern half of the country could lay claim to only 58,170 kilowatts. These proportions are unlikely to be appreciably modified until the completion of the large-scale Rhine programme (the Kembs and its seven companion stations along the Rhine between Basle and Strasbourg). Hydro-electric power stations still in the "project" stage represent, in the North-East, a potential addition of 441,290 kilowatts of power normally available and in the North and North-West, 161,640 kilowatts.

In the case of thermic stations, whose installed capacity at the 1st January, 1931 (excluding small stations of less than 1,000 kilowatts) was 5,231,520 kilowatts, although naturally the North, with its huge coal resources, predominates, the distribution is more general. The five counties of the Seine, Nord, Pas-de-Calais, Moselle and Meurthe-et-Moselle, which, be it noted in passing, are

the five chief industrial counties in France, together account for 65 per cent. of the productive capacity. In the Nord and Pas-de-Calais counties the production is in the hands of the great mines which have constituted special distribution organisations, whilst in the two Eastern counties of Moselle and Meurthe-et-Moselle great metallurgical concerns are important suppliers of electric power and light in this area. Paris and its neighbourhood had at the commencement of 1931 an installed capacity of 1,360,000 kilowatts (since increased by 30,000 kw.), stations in the North represented nearly 1,247,000 kilowatts, and those in the East 644,700 kilowatts, while the Centre, South and West possessed a combined capacity of nearly 1,465,000 kilowatts.

Transmission Lines.—Three transmission lines of 220,000 volts are already either in service or nearing completion (Kembs-Troyes-Paris, Saint-Pierre-Le Creusot-Troyes-Paris, Brommat-Paris and Eguzon-Saumur) and ten lines of 150,000 volts, while considerable progress has been made in the inter-connection of high-power transmission lines throughout the country. The total length of transmission lines belonging to distributing concerns alone was 194,685 miles at the beginning of 1931, and in that year there were 100 companies each distributing more than 20 million kw.h., 26 of whom delivered more than 100 million kw.h. and 26 between 50 and 100 million kw.h.

Consumption.—The consumption of current per inhabitant was doubled between 1923 and 1930, passing from 163 to 332 kw.h.

Nearly one-fifth (18.6 per cent.) of the total power is consumed by the electro-chemical and electro-metallurgical industries, 5.9 per cent. by traction, and 9 per cent. by lighting and domestic appliances. Miscellaneous industries consume 46.5 per cent. in the form of current at high tension and 6.5 per cent. at low tension. In Paris the yearly consumption of current has developed from 88 million kilowatt-hours in 1913 to 654½ million in 1931. In the former year 65 million kw.h. served for lighting and 23 million for "other uses." The proportions have not changed appreciably since 1925. Although the slackening of industrial activity has brought about a reduced consumption of electricity since the latter months of 1931, this decline has been compensated to a considerable degree by the development in household consumption, due partly to the increasing degree of electrification throughout the country and partly to a growth in the use of heating and other apparatus. Reports from the North, including the textile manufacturing district around Lille, show that the reduced consumption of electricity first became apparent in August, 1931. At the beginning of 1932 the reduction had attained 20 to 22 per cent.; there was a slight improvement from February to May, when the figures recorded were only 15 to 16 per cent. lower than those of the corresponding months in 1931.

H. THERMO-ELECTRIC PRODUCTION

Power from Thermic Units.—Of the 8,373,000 kilowatts which, at the 1st January, 1931, represented the total electrical generating capacity of French power stations, thermo-electric stations accounted for 5,593,000 kw., or just over two-thirds, while new thermic stations in course of construction, or additions being made to the capacity of existing stations, represented a further 628,594 kw. It should be observed, however, that these figures relate only to electric generating stations, whose output is delivered, in whole or in part, to a public distribution system, and do not include, for instance, the electrical installations of firms producing current exclusively for consumption in their own factories and workshops. The true thermo-electric capacity, therefore, must be considerably greater than that recorded by the official returns. These figures show an increase of 679,783 kw., or nearly 15 per cent., in comparison with the installed capacity at the beginning of 1929, and of 318,794 kw., or 103 per cent., in the amount of new construction under way. Power stations employing coal, coke or lignite as fuel account for 87.8 per cent. of the total capacity, those employing blast-furnace or coke-oven gases 5.3 per cent., those employing both solid and gaseous fuel 6 per cent., and those employing heavy oil as fuel only 48,985 kw., or 0.93 per cent. As an instance of the economic utilisation of waste matters, it may be mentioned that four stations in the Paris area, burning household refuse, together develop 27,800 kw. of power normally available (49,250 kw. installed capacity), corresponding to a yearly output of about 160 million kilowatt-hours. Five State- or municipally-owned stations (the national armament factory at Tulle, the engineering workshops at Roanne, and the municipal power stations of Colmar, Metz and Bordeaux), have a combined capacity of some 45,000 kw.

Nearly two-thirds (62.2 per cent.) of the total thermo-electric generating capacity is found in the Paris area, the North and the East of France, their individual proportions being 26.0, 23.8 and 12.3 per cent. (1,360, 1,247 and 645 thousand kilowatts, excluding stations of less than 1,000 kw. Enterprises for the production and distribution of electrical energy own 60 per cent. of the total capacity, coal-mines 19.85 per cent. and metallurgical concerns 10 per cent. The negligible extent to which the electro-metallurgical and electro-chemical industries, as well as the railways, resort to power of thermic origin, tends to be confirmed by the fact that these two groups, together with public bodies and miscellaneous industries, share between them only 56,750 kw., or 1.02 per cent., of the total thermo-electric capacity.

New thermic stations constructed since 1928 are few in number, but very considerable additions have been made to the capacity of existing units, the numerous extensions of power stations attached

to coal mines being particularly noticeable. The principal new power stations are: in the suburbs of Paris the Vitry-Sud, or Arrighi, station (220,000 kw.) of the *Union d'Electricité*, described in the following paragraph; the Chalon-sur-Saône station (100,000 kw.), which began to operate early in 1931; the Mazingarbe station of the *Mines de Béthune*, designed for a generating capacity of 100,000 kw., the first 40,000 kw. of which were put into service late in 1931; and the additional station of the *Mines de Vicoigne, Noeux et Drocourt* at Hénin Liétard (30,000 kw.), also inaugurated at the end of 1931. France now has at least 38 thermic power stations of 40,000 kw. or over, 24 of which, included in the following list, either already possess, or will very shortly have installed, equipment of 70,000 kw. upwards:—

PRINCIPAL THERMO-ELECTRIC POWER STATIONS IN FRANCE.

	Installed capacity at 1st Jan., 1929 Kilowatts	Installed, or under construction 1st Jan., 1933 Kilowatts
Saint-Ouen (Paris suburbs)	330,000	400,000
Gennevilliers do.	340,000	340,000
Vitry-Sud (Arrighi) do.	—	220,000
Saint-Denis do.	100,000	204,000
Issy-les-Moulineaux do.	96,000	200,000
Cornines	100,000	185,000
Sequedin	65,000	124,500
Grand Quévilly (Rouen)	70,000	120,500
Sainte-Tulle	60,000	106,665
Maubeuge	38,000	106,000
Ivry-sur-Seine (Paris suburb)	42,000	105,000
La Mouche	80,300	102,800
Strasbourg—Port du Rhin	41,000	90,000
Beuvry	70,000	87,500
Vitry-Nord (Paris suburb)	90,000	86,000
Bully	65,000	83,100
Chocques	39,000	80,700
Cap Pinède	42,250	76,500
Vendin-le-Vieil	54,000	75,000
Courrières	60,000	75,000
Labuissière	30,000	75,000
Le Havre	42,750	72,500
Chantenay	58,750	71,250
Cusset	46,900	70,000

A second station at the Paris suburb Saint-Denis, in course of construction, is intended to have eventually a capacity of 400,000 kw., 150,000 kw. of which will be ready in 1933, while that of the new Vitry-Sud station will later be increased to 500,000 kw. The *Mines de Lens* are constructing a new station of 30,000 kw., the orders for some of its machinery being placed in 1931. The

adoption of the latest modern devices has greatly improved the ratio of power output to fuel consumption, and it is stated that units such as St. Ouen, Gennevilliers, Comines, for instance, now consume, per kilowatt of power generated, only half the quantity of coal that they consumed in 1913.

Arrighi Power Station.—Perhaps the most noteworthy addition in recent years to the thermic generating capacity in France is the new power station of the *Union d'Electricité* at Vitry-Sud, on the southern side of Paris, which was inaugurated in July, 1931. With the equipment then installed it was capable of generating 220,000 kilowatts from four groups of turbo-alternators each of 55,000 kw. maximum capacity (normal output 45,000 kw.). Provision is made in the plans for an increase of the capacity, in a few years' time, to 500,000 kw., when the power consumption in the Paris area shall have developed sufficiently to need such an addition. As the station will then be one of the most powerful in Europe, a brief description of its installation may perhaps not be out of place. Coal supplies can be received both from a private siding permitting of the unloading daily of two trainloads of 1,500 tons each, and from barges which can unload directly alongside the works on to a quay 160 metres in length, equipped with grabs capable of handling 200 tons an hour. From the coal yard, which holds a reserve of 80,000 tons, or sufficient to keep the turbines running for 25 days, the fuel is transported by automatic conveyors handling 300 to 350 tons an hour, to "boulet" crushers (two crushers of 9 tons capacity hourly per boiler), whence it is fed to burners of the turbulent type (5 per boiler) consuming three tons of pulverised coal an hour, their rate of combustion being automatically controlled. Water is pumped up from the Seine by pumps with a total power of 10,000 h.p. (5,500 h.p. already installed), to the nine boilers, each capable of yielding 135 tons of steam per hour. The turbo-generators, working at 1,500 r.p.m., produce three-phase current, 50 periods, at a tension of 13,500 volts. Three 25,000 kw. step-up transformers for each group of turbo-alternators convert the tension to 60,000 volts, prior to transmission from the station by eight underground cables each capable of carrying 50,000 kva. In addition to being connected with the other principal power stations of the Paris region at Vitry-Nord, Issy, Puteaux, Gennevilliers, Nanterre, St. Ouen, etc., the new station is linked up with the Eguzon power of the Paris-Orleans railway and with hydro-electric stations of the Central Plateau, via Chevilly and Chaingy.

III. HYDRO-ELECTRIC PRODUCTION

Its Importance for France.—The permanent inability of French coal mines to meet home requirements became more accentuated in the years following the war, when through war devastation they produced, e.g. in 1919, only half the output of 1913.

This deficiency in fuel, even when after the restoration of the mines the national production had mounted from 41 million tons in 1913 to 52½ millions by 1926, provoked, as a consequence of the expansion of the activity of the great coal-consuming industries and of thermo-electric stations, ever greater imports. In the six years 1926-31 home production averaged 53.1 million tons and imports 29.6 millions: three-eighths approximately of the average consumption of 82.7 million tons came therefore from abroad, and the annual cost of the imports averaged 3,867 million francs, or at the then prevailing conversion rate of 124 francs to the £, nearly 31.2 millions sterling. A great impetus was given shortly after the war to the development of water power resources by the desire to reduce these foreign payments, which in gold were even greater in 1919-22 than in 1926-31. The consumption of coal by thermic power stations is officially given for the years 1927-29 at 6½, 7, and about 9½ million tons respectively. The utilisation of the water power resources of France, known to be great, was recognised to be urgent, but the superior cost of installation of the necessary plant for production compared with that required for a thermo-electrical station retarded the development. The remoteness of the water resources from great centres of population and of industrial production—for the utilisable streams are situated in the hilly region of the Isère, of the Pyrenees, and of the Central Plateau (Massif Central)—increased the cost not only of the construction but also of the distribution. Capital at moderate rates of interest was not readily available for enterprises not likely to yield before the lapse of some years, and when the selling prices of their product were determinable by index figures neglecting to consider the rate of remuneration of capital invested. On the other hand, as the areas having water power are situated far from French coal mines and are dependent for their coal upon foreign suppliers, the stimulus to turn their water power resources to account was the greater. In recent years, thanks to the cheapening of money, to the effective encouragement direct or indirect of the State, to the utilisation of German deliveries in kind, the development of water power resources has made notable progress, the generating capacity of hydro-electric stations having advanced from 2,134,000 kilowatts in 1926 to 3,400,000 in 1933.

State Aid for Water Power Development.—In recent years the State has contributed substantially to the promotion of water power schemes. Its contribution takes the form of subsidies or advances for the construction of power stations, for scientific investigation and research, and for preparatory work. In the three financial years 1930-31, 1931-32, 1932 (9 months) the total allocations were 73 millions of which 67 millions were for the construction of works. In addition, the State provided out of German deliveries in kind much expensive plant and machinery as well as a large number of German skilled and unskilled workers

(e.g. in the Truyère, Chambon, Verdon, Kembs, etc., undertakings).

Capital Invested.—Investments in French enterprises for the utilisation of water power, which in 1890 were only Fcs. 600,000, were 161.7 millions in 1900, 677 millions in 1910 and 1,026 millions in 1914. In 1928-31, the last four years for which figures are yet available, there were additional investments of 733, 1,114, 2,760 and 1,170 millions, making a grand total of 11,232 millions engaged in hydro-electric enterprises at the beginning of 1932.

Organisation of the Industry.—The possibilities of a profitable development of hydro-electric power were demonstrated by the success attending the efforts in 1895 of a paper maker at Lancey in the Isère county to harness a waterfall of 500 metres. In 1901 was formed at Grenoble the *Chambre des Forces Hydrauliques, de l'Electrometallurgie, de l'Electro-Chimie et des industries qui s'y rattachent*, subsequently transferred to Paris and closely allied with the *Comité des Forges de France*. The Chamber now has 170 members, whose installations represented at the beginning of 1932 a total generating capacity of 4,321,350 kilowatts (of which, 2,660,373 kw. for hydro-electric stations alone), and in the course of 1931 distributed 7,970 million kilowatt-hours, of which 6,540 million were developed from hydraulic sources. Grenoble has always been closely associated with the development of water-power in France, and a goodly share of the financing that has rendered this development possible has been borne by bankers of the Lyons-Grenoble region, who early realised the possibilities offered by the waters descending from the Alps. The *Crédit Lyonnais*, two regional banks, the *Banque Charpenay* and the *Banque du Dauphiné*, were largely instrumental in financing (and in some cases sponsored) many of the leading hydro-electric, as well as electro-metallurgical and electro-chemical, enterprises; while other banks, not directly connected with this region, which have given noteworthy support to the hydro-electric industry, include the *Société Générale*, the *Banque de Paris et des Pays-Bas*, and the *Banque Renauld* (of Nancy). In the Pyrenees region, great stability and elasticity have been ensured by the formation of the *Union des Producteurs d'Electricité des Pyrénées Occidentales* which, under the aegis of the *Midi* railway company, the *Alais-Froges-Camargue* electro-metallurgical concern, the *Compagnie d'Electricité Industrielle*, the Penarroya mines and other leading producers, constitutes one large group for the distribution of electric power in the South-western portion of France. In other parts of the country it is not uncommon to find ten, a dozen or more separate companies combining themselves into a consortium to carry through a scheme of mutual interest. The affiliation of practically all these firms with the *Chambre des Forces Hydrauliques* tends towards a high degree of uniformity in policy,

and a close link with the other branches of the electrical industry is maintained through the association of the various syndicates in one great central organisation, the *Union des Syndicats de l'Electricité*.

Water-Power Harnessed.—Competent authorities have estimated that the natural water-power resources of France are capable of yielding about 9,200,000 h.p., or 6,770,000 kw. at average water levels, with a minimum of 4,600,000 h.p., or 3,383,000 kw., when the volume of water is at its lowest. The three chief regions of potential energy are: (1) the Savoy, Dauphiny and the French Alps (one-half of the total power); (2) The Pyrenees (nearly one-third); and (3) the Central Plateau (nearly one-fifth). At the beginning of 1931, the date of the latest official return, 41 per cent. of this power had been harnessed, there being 225 hydro-electric generating stations of at least 1,000 kw. with a total installed capacity of 2,163,985 kw. (power normally available 951,539 kw.), 4,265 smaller stations corresponding to an additional 219,223 kw. (163,368 kw. normally available), and over 29,000 non-electric power stations equivalent to a further 396,901 kw. of installed capacity. With the addition of Pizançon and Laval de Cère in 1931, and Kembs and Brommat, both of which entered into service at the beginning of October, 1932, there are now 15 hydro-electric stations of at least 35,000 kw. capacity, *viz.* Kembs (Rhine) 80,000 kw., ultimately to be increased to 186,000 kw.; Brommat (Aveyron) 68,000 kw., to be increased subsequently to 167,000 kw.; Eguzon (Indre) 62,500 kw.; Bancairon (Alpes-Maritimes) 55,000 kw.; Sainte-Tulle (Basses-Alpes) 50,000 kw.; Pizançon (Drôme) 50,000 kw.; Rioupéroux (Hautes-Alpes) 41,810 kw.; the three stations of Pinet (Aveyron), Miégebat (Basses-Pyrénées) and Le Hourat (Basses-Pyrénées), 40,000 kw. each; Viclaire (Savoie) and Laval-de-Cère (Corrèze), 37,000 kw. each; La Mativie, on the river Cère, 36,250 kw. Roche-le-Peyroux (Corrèze) 36,000 kw.; and Pougny-Chancy (Ain) 35,000 kw. Having regard to the large amount of construction work still proceeding, much of which was scheduled for completion at an early date, it is probable that the total installed capacity, by the end of 1932, was not less than 3,400,000 kilowatts. The growth in the total generating capacity of hydro-electric stations in France is indicated in the following table:—

GENERATING CAPACITY OF HYDRO-ELECTRIC STATIONS IN FRANCE, 1900 TO 1933.

(Kilowatts).

At 1st January	In operation		Under construction (Power normally available)
	Installed	Power normally available	
1900	368,000	—	—
1904	552,000	—	—
1908	721,280	—	—
1912	978,880	—	—
1916	1,067,200	—	—
1920	1,398,400	—	—
1924	1,766,400	—	—
1925	1,840,388	—	—
1926	2,134,400	1,181,400	—
1927	2,273,140	1,223,700	325,593
1928	2,346,450	1,297,000	356,700
1929	2,518,534	1,340,950	298,260
1930	2,773,500	1,411,700	396,670
1931	2,780,109	1,414,900	424,305
1932	3,003,109	1,516,750	405,780
1933 (estimated) ...	3,400,000	1,715,000	210,000

New Stations Completed.—During the year 1931 eighteen new hydro-electric stations, with a total installed capacity of 223,000 kw. (101,845 kw. normally available) began to function. This increase was considerably greater than in any recent year, the figures for the years 1927 to 1930, expressed in terms of power normally available, being 73,308, 43,965, 63,760 and 3,200 kilowatts. The most powerful stations completed in that year (1931) are as follows:—(figures in parenthesis indicate the power "normally available")—the Pizançon station of the *Energie électrique Isère Vercors*, on the Isère river, 50,000 kw. (18,000); the Laval-de-Cère station of the *Société Hydroélectrique de la Cère*, on a tributary of the Dordogne, 37,000 kw. (22,200); the Sabart station on the Vicdessos, in the Ariège basin, 31,500 kw. (13,600); the Eygun-Lescun station on the Gave d'Aspe, in the Basses-Pyrénées, 21,000 kw. (13,500); and the Tramezaygues station in the Haute-Garonne, 19,500 kw. (6,900). Of outstanding importance in 1932 were the inaugurations, both in October, of the Kembs power station (80,000 kw.), the first of eight to be constructed on the Rhine, and of the new Brommat station (60,000 kw., or 280,000 kw. with its companion station of Sarrans). A yearly output of about 800 million kilowatt-hours each is expected from the Kembs and Brommat stations within about two years, when their full equipment comes into operation. Among the other 40 power

stations or reservoirs on which work was progressing at the beginning of 1932, fifteen were expected to be in operation before the end of the year, their combined "normally available" power being 58,380 kw.

Construction : Present and Future.—In the period 1928-30, when financial conditions were becoming somewhat easier and when the effects of the world depression had not yet begun to be felt in France, there was a revival of activity in respect of hydro-electric schemes that had been temporarily postponed. At the beginning of 1929, 1930, 1931 and 1932, the number of points at which new construction was taking place was 28, 25, 44 and 42 respectively, and the magnitude of the projects in course of realisation, expressed in terms of capacity normally available, was 298,260, 369,670, 424,305 and 405,780 kilowatts. It is expected that the power stations of Portillon d'Oô (*Compagnie d'Electricité Industrielle*, 3,130 kw.) Camon (*Energie Electrique de la Haute-Garonne*, 6,940 kw.), both of which are in the Haute-Garonne, and Vintrou (*Société des Forces Motrices de l'Arn*, 5,870 kw.) in the Tarn, will be in operation before the end of 1933. The Paris-Orleans railway company has taken up again the work on the Marèges station, which was suspended in 1926. The construction of the dam was resumed in 1930, and that of the power station early in 1932, and the whole of the work should be completed by 1935. This station, which is close to the Coindre station of the same company, will not only furnish the additional power required for the Orleans-Tours line* and the Vierzon-Brive line, both now undergoing electrification, but will act as a junction from which transmission lines carrying 150,000 and 220,000 volts will radiate towards the great hydro-electric stations of the Upper Dordogne, the Cère and the Truyère, on the one hand, and towards Paris (via Chaingy, near Orleans) on the other. The station of La Cellette, also for the Paris-Orleans company, should be completed about the same time. The new station of 8,200 kw. at Cize-Bolozon, on the Ain, for the *Energie Electrique Rhône-Jura* (in which *Le Creusot* is interested) has been under construction since 1928, and was to have been completed by the early part of 1931, but some delay appears to have occurred in the final stages. The same concern proposes afterwards to undertake the harnessing of the Chezery and Pont des Pierres falls on the Valserine (in the north-east corner of the Ain County). The *Usines du Rhône* are reported to have under consideration the building of one power station of 35,000 kw. and three others with a combined capacity of 10,250 kw. In pursuance of the programme respecting the utilisation of the Rhine (further reference to which will be found in the paragraph of this chapter relating to the Grand Canal of Alsace) the stations of Fessenheim, 72,450 kw., Ottmarsheim, 69,650 kw., and

*Electric traction inaugurated 19th July, 1933

five others ranging from 53,700 to 60,300 kw. may be undertaken in turn after the rest of the installation of the Kembs station has been completed.

The revival of interest in hydro-electric undertakings is indicated by the number of new applications for concessions to exploit water-power resources, which greatly increased between 1926 and 1930, declining again in 1931, as is shown by the following table :—

Year	Applications	Concessions granted	Representing an installed capacity of
			Kilowatts
1926	16	—	—
1927	32	19	165,612
1928	30	12	75,624
1929	44	24	125,585
1930	81	21	114,070
1931	51	15	47,945

Dams and Reservoirs.—The seasonal variations in the flow of water, whether the supplies are influenced by winter rains (as in the Central Plateau) or by the melting in early summer of snows (as in the Alps and the Pyrenees) have long constituted a serious impediment to the most effective utilisation of potential water-power resources; for it is self-evident that the utility of a power station is regulated by its ability to furnish power whenever it is needed, irrespective of climatic conditions. Many projects have been elaborated, therefore, for the formation of emergency reservoirs, from which supplementary supplies of water could be drawn whenever the flow of water from river sources proved to be insufficient to operate the hydraulic turbines at full capacity: or alternatively, such accumulated water could be utilised to operate separate power stations whenever required. Hitherto there have been no large reservoirs in France except those at Lac Léman on the Franco-Swiss border (551 million cubic metres) and the Lac du Bourget in Savoy (165.1 million cubic metres). At the beginning of 1931 there were in course of construction 18 new reservoirs of over one million cubic metres capacity, chief among these being: the Sarrans dam (to hold 200 million cubic metres) on the Truyère, in the South-West of France, which forms an integral part of the Brommat enterprise; the Chavanon reservoir (170 million cubic metres) in the Dordogne basin, in the Centre, being constructed for the Paris-Orleans railway company; and that at Castillon (136.6 million cubic metres) on the Verdon, a tributary of the Durance, in the South-East. Later in the same year work was begun upon L'Aigle (179 million cubic metres) on the Dordogne and upon Le Sautet (130 million cubic metres) on the Drac.

Among other schemes that appear likely to materialise in the near future are, in the South-East of France, four reservoirs in the

Durance basin, namely : Saint-Cannat (on the Durance) and Caré-juan (on the Verdon), each 125 million cubic metres, Les Angles (on the Verdon) and Comps (on the Artuby), each 120 million cubic metres, while two other projects, the execution of which appears at present to be more distant, relate to the construction of a large reservoir of 500 million cubic metres at Serre-Ponçon, on the Durance, and one of 150 million cubic metres at Pradal, on the Truyère, in the South-West. Somewhat different in conception is the Lac Noir enterprise in the Vosges, sponsored by the company interested in the Kembs power station, and now in course of realisation. In this case it is not a question of supplementing a shortage of water, but of putting to practical use, during the hours of the day when the demand for electrical power is slack, power from Kembs that would otherwise run to waste; making it serve to pump up water from the Lac Noir to the Lac Blanc, 128 metres higher, and thus accumulate a reserve of water that will represent a potential energy of 100,000 kw.

Grand Canal of Alsace.—(See also under "Inland Waterways.") In the upper reaches of the Rhine there are certain abundant reserves of potential energy which have hitherto remained untapped. Between Basle and Strasbourg, where there is a descent of 108 metres in the level of the stream, the normal flow, prevailing throughout at least six months in the year, is 1,000 cubic metres a second, or 86.4 million cubic metres daily, while at flood times the volume increases to 2,400 cubic metres a second. On the basis of the normal flow, there is a possibility of generating 900,000 h.p., or 662,500 kilowatts. Projects for the commercial exploitation of these hydro-electric possibilities, combined with improvements in the navigability of the Rhine, were put forward in 1902, and a German company with this end in view was formed in 1910; but many difficulties, financial and political, intervened, and it was not until after the war, when the rights of development of water power on those parts of the Rhine common to France and Germany had passed into French hands under the Versailles Treaty, that any real progress was made with the scheme. In 1922 the *Société des Forces Motrices du Haut-Rhin* was formed, with a capital of 25 million francs (since increased, by stages, to 245 millions), having as its main object the construction of hydro-electric stations on the Rhine. Pending the elaboration of its construction programme, the company took over from the industrial city of Mulhouse an existing thermic station of 40,000 kw., together with a concession for the distribution of electric power, the municipalities of Mulhouse and Guebwiller retaining substantial interests in the new company. The distribution of electricity in the Mulhouse and Guebwiller district has since been developed from 74 million kw.h. in 1920-21 to 301 million kw.h. in 1929-30. This station will be suppressed eventually and power drawn from Kembs.

The Rhine development scheme includes the erection of eight large power stations at intervals along the course of that river. The first, already constructed at Kembs, about 10 miles below Basle, will ultimately be equipped to produce 186,000 kw. The next station contemplated is Ottmarsheim (69,650 kw.), followed by Fessenheim (72,450 kw.), Vogelgrün (60,300 kw.), Marckolsheim (61,300 kw.), Sundhouse (61,300 kw.), Gerstheim (56,300 kw.), and Strasbourg (53,700 kw.). In each case a feed canal will conduct the water from the Rhine to the power station, while another canal, temporarily serving to carry the water back to the river after passing through the turbines, will in due course become the feed canal of the next station. The combined generating power of the eight stations will approximate to 650,000 kw., permitting a yearly output of more than five milliard kilowatt-hours. The Kembs station alone is expected to give a yearly output of 800 million kw.h., sufficient to furnish about two-thirds of the estimated total power requirements of Eastern France (15 counties) in 1935.

The *Société "Energie Electrique du Rhin"* (capital 125 millions), formed in December, 1927, as an offshoot of the *Société des Forces Motrices du Haut-Rhin*, began early in 1929 the actual construction of the Kembs station, and the official inauguration by the President of the Republic took place on the 9th October, 1932. The canal had already been opened to navigation in the previous spring. At that time two of the six 33,000 kw. units were in place, and three of the others have since been put into service. At the point, five kilometres from the Franco-Swiss frontier, at which the feed canal leaves the river, a large dam 12 metres in height has been constructed at State expense (largely with the aid of reparations in kind), at a cost of 150 millions. This dam, incidentally, raises the water level by eight metres. The feed canal, after continuing for a distance of four kilometres, divides into two branches, one leading to the power station and the other serving for navigation. There are two locks, of 185 and 100 metres' length respectively, with a practicable width of 25 metres. Five openings in the barrage, each 30 metres in width, fitted with floodgates controlled by metal valves, regulate the supply of water for the turbines in the power station. The cost of the station itself, 600 millions, has been provided by private enterprise. Part of the power generated will be conveyed to Paris by means of a 220,000-volt line passing through Troyes, at which point the Kembs station will be linked up with the vast system of interconnected lines now being extended to cover the whole country. The generating capacity of the Kembs station is not expected to be sufficient to cope with the peak load, while on the other hand, during the night hours a very considerable quantity of energy would be running to waste. It is intended, therefore, to utilise this spare power to pump up water from the Lac Noir, as described in the foregoing section on dams

and reservoirs, thereby constituting a reserve supply of water that can be used during peak hours to complement the output from the Kembs station itself.

Rhone Electricity Production Scheme.—Between the Swiss frontier and Avignon, a distance of 268 miles, the level of the Rhone descends 332 metres, and the potential energy waiting to be harnessed has been estimated at nearly 12 milliard kilowatt-hours yearly. As far back as 1878 schemes were put forward for utilising this power, but half a century was to elapse before definite measures to that end were taken. With the technical equipment now available, competent authorities consider that it should be possible to capture about 35 per cent. of the energy theoretically available, or $4\frac{1}{2}$ milliard kw.h., equivalent to a coal consumption of about $4\frac{1}{2}$ to 5 million tons yearly. Already four hydro-electric power stations, with a combined installed capacity of 81,600 kw., have been erected: the Pougny-Chancy station (35,000 kw.) of the *Energie Electrique Rhone et Jura*, two provisional stations of 12,400 and 10,200 kw. at Coupy (Ain) and Eloise (Haute-Savoie) belonging to the *Société française des Forces hydrauliques du Rhone*, and the Cusset (Jonage) station of 24,000 kw. belonging to the *Société Lyonnaise des Forces motrices du Rhone*. The *Société des Forces hydroélectriques du Rhone*, replaced in December, 1921, by the *Compagnie Nationale du Rhone*, was constituted with the active participation of the State and of the Municipality of Paris (the latter taking up 60 millions, or one-fourth, of the issued capital of 240 millions) to carry the project into realisation. Present plans provide for the ultimate construction of 20 power stations, of which eight (including the Cusset station above-mentioned) will be above Lyons, six between the point at which the Rhone is joined by the Saône and the Isère, four between Isère and the Ardèche, and two between the town of Orange and the sea. According to the latest calculations, the section above Lyons will yield just over 300,000 kw., and the Middle-Rhone 630,000 kw. In the middle of 1929 preliminary work was begun with a view to the construction of the most powerful of these stations, that of Génissiat (Ain), designed to produce 157,000 kw. Next in order of importance are the Mondragon station (Vaucluse) 132,000 kw., Montélimar (Drôme) 92,000 kw., Valence (Drôme) 81,000 kw., Villeneuve-Jes-Avignon (Vaucluse) 65,000 kw., while the others will all, with one exception, be between 21,000 and 50,000 kw.

It is expected that navigation and agriculture will both derive considerable benefit from the carrying into effect of this long-deferred scheme. The difficulties of navigation on a river with a current as swift as that of the Rhone will be substantially reduced by the series of locks that are to be incorporated in the power-station buildings; and the provision of electric current at very low price should prove an inducement to farmers to devote

more attention to the vast plains in the south-east, such as those of the Crau and the Camargue, which are at present difficult of culture on account of insufficient irrigation.

The total expenditure required for the execution of the complete programme, estimated originally at 900 millions, and accepted by the Ministry for Public Works in 1919 at a figure of 1,780 millions, is now expected to be in the neighbourhood of five milliards.

Paris Region.—Paris being far removed from the mountainous districts wherein abundant sources of water-power are offered, has hitherto depended mainly upon thermic sources for her electrical energy. Out of $1\frac{1}{2}$ milliard kilowatt-hours of current consumed yearly, only 17 millions are at present derived from hydraulic sources. It is only within the last few years that improvements in the technique of long-distance power transmission have made it feasible to carry to Paris the surplus production of Pyrenean or Alpine origin. The watershed of the Seine and its tributaries, however, offers possibilities by no means to be neglected, and plans have been drawn up for the establishment of a number of hydro-electric stations that should be able, in the course of a few years, to provide Paris with about 100 million kw.h. yearly. Among the outstanding features of this scheme are: a reservoir at Les Settons (in the Nièvre county, to the north of Château-Chiron) to hold 22 million cubic metres and two artificial lakes at Crescent and Bois-de-Chaumeçon, to hold 24 million cubic metres between them, the whole to involve an expenditure of some 30 million francs and to furnish an output of 41,000 kw.; an artificial lake at Montigny-en-Morvand (in the same locality) to hold 93 million cubic metres of water from the river Yonne, costing 50 millions and developing 18 million kw.h. yearly (in this part of the scheme, 45 per cent. of the expense would be borne by the State and the remainder by the Municipality of Paris and the various county authorities and water-supply companies interested); two reservoirs at Beaugard and Frémoy (Yonne county) to hold 110 million cubic metres from the waters of the Serein, to cost 60 millions and provide 18 million kw.h. yearly. Five other reservoirs which it is proposed to construct in the Marne county, at Chantecoq, Morge, Grand Orient, Lahorre and Champaubert, would have a combined capacity of 433 million cubic metres, the quantity of power to be derived therefrom ranging from 18 million kw.h. yearly in the case of Chantecoq to 1.8 million in that of Champaubert.

Among the projects for supplying Paris from localities farther afield, that of La Truyère (in the Alps) is being pushed actively ahead. That of Marège was held up, owing to the reduction of deliveries in kind under the Young Plan, but had been resumed by the Paris-Orleans railway company in 1930-32, and will probably be ready for service towards the end of 1935. Other schemes in the Central Plateau also have been held up for some

time, owing to the high rate of interest on borrowed money, but with the recent lowering of bank rates there is every prospect of these schemes being resumed shortly : they are expected to furnish some 200,000 kw. for the use of the Paris area. As regards the new stations that may be constructed on the Rhine, after the completion of Kembs, it is expected that 40 per cent. of the power generated there will become available for the Paris region, and a similar proportion of the power to be generated on the Rhône by the realisation of the projects of the *Compagnie Nationale du Rhône*. Chaingy near Orleans) and Maréges (near Coindre) to the south of Paris, and Troyes to the east, are destined to be the points of concentration at which power from the Pyrenees, the Central Plateau, the Alps and the Rhine stations will be received and carried forward to Paris. To this end, a network of high-power transmission lines designed to carry 220,000 volts is in course of construction.

Progress in the Utilisation of Water Power.—The " *Annuaire de la Houille Blanche* " has published an interesting set of tables relating to the working of five important companies in different parts of France, engaged in the generation and distribution of electrical energy. From the following table it will be seen that in 1931 the productive capacity of the hydro-electric installations belonging to these companies was $2\frac{1}{2}$ times as great as it was 18 years earlier, in 1913, while that of their thermo-electric units was $3\frac{1}{2}$ times as great :—

End of year	Productive capacity of generating stations (Thousand H.P.)			Length of transmission lines -Kilometres
	Hydraulic	Thermic	Total	
1913 ...	127	85	212	6,320
1918 ...	177	103	280	6,978
1921 ...	264	133	397	7,793
1922 ...	268	144	412	8,881
1923 ...	268	144	412	8,950
1924 ...	270	148	418	9,188
1925 ...	270	213	483	10,300
1926 ...	270	223	493	11,400
1927 ...	284	223	507	12,765
1928 ...	344	264	608	13,843
1929 ...	347	284	631	15,145
1930 ...	347	300	647	16,871
1931 ...	347	300	647	17,420

The foregoing figures relate to units actually in operation at the end of each of the years shown. The capacity of hydro-electric units will probably be increased by about 100,000 kw. in the next three or four years, as one new station is under construction and the harnessing of another fall is contemplated, the combined power of the two falls representing 50,000 kw. " normally

available." It will be observed that these companies have made very little addition to their productive capacity since the end of 1928. As the resources of the more powerful hydro-electric stations, notably in the Central Plateau and in the Pyrenees, become more readily accessible through the growing development of a network of high-power transmission lines, distributors find it more advantageous to draw upon those resources, and there is accordingly a tendency for producers and distributors each to specialise, to an increasing extent, in their respective branches of the industry.

During the same period the amount of capital invested, in the five companies in question, grew from 245 to 1,613 million francs, or $6\frac{1}{2}$ times, while the dividends distributed increased from 4.8 to 86.2 millions. The number of users at the end of 1931 was seven times that for 1913. The use of electricity for power purposes is not increasing at the same rate as for lighting purposes—the former having grown about $3\frac{1}{2}$ times and the latter more than fivefold, according to the latest available figures (those for the year 1928).

CAPITAL INVESTED, AND DEVELOPMENT OF CONSUMPTION.

End of year	(Million francs)			(Thousands)		
	Share capital	Debentures	Dividends	No. of users	No. of lamps	Connected H.P.
1913	122	123	5	62	759	138
1918	168	184	11	93	1,145	204
1921	263	322	13	123	1,498	247
1922	263	350	17	137	1,712	255
1923	310	432	30	154	1,812	270
1924	380	432	27	172	2,239	282
1925	385	430	35	199	2,572	340
1926	395	475	36	219	2,902	370
1927	559	565	52	284	3,492	401
1928	604	534	62	342	3,983	467
1929	604	585	64	396	4,434	487
1930	722	725	83	423	4,851	501
1931	752	861	86	431	5,091	506

NOTE.—The figures in the last three columns relate to four companies only.

Electricity from Tidal Energy.—According to the return issued by the Ministry of Public Works, there were at January 1st, 1931, eight projects for the construction, at various points on the coast of Brittany, of power stations designed to utilise energy from the tides, the total capacity represented by these proposals, measured in terms of power normally available, being 100,700 kw. (In that region the difference of level between high and low tides is 12.9 metres.) The project for the station at Aber Vrac'h, in Finistère (1,100 kw.), has been abandoned after the preliminary

construction work had so far progressed that it was hoped that the station would begin to operate in 1933. The promoters of the scheme had obtained from the State in 1923 the promise of a subsidy of ten million francs and a guarantee for the interest on debentures issued; but the necessary ratification by Parliament was repeatedly postponed until at length the company, seeing no chance of securing payment of the sums promised, was dissolved in October, 1932. Its subsidiary company, the *Société Marémotrice de la Rance*, which proposed to erect on the river Rance, near St. Malo, tidal energy stations capable of generating 45,000 kw., has suffered a similar fate. The failure of this enterprise automatically entails the abandoning of the more ambitious scheme for the establishment, at a cost of some 500 millions, of a series of about 20 such stations, at suitable points on the coast between Brest and St. Malo, linked up with each other and connected with a great artificial lake at Guerlédan, whose waters were to have been utilised during the hours when the tidal energy did not suffice. (This has not, however, involved a cessation of work on the Guerlédan power station at Blavat, on the Nantes-Brest canal. This station has now been completed and, with an installation capable of generating 12,900 kw., delivers normally 2,980 kw.). For the last three years no further progress appears to have been achieved in respect of schemes that had been contemplated by other promoters, for the establishment of tidal energy stations in the bay of Fresnay in the Côtes-du-Nord (47,200 kw.), in the bay of Arguenon also in the Côtes-du-Nord (3,400 kw.), at Le Crottoy, in the Somme estuary, and elsewhere, financial difficulties having apparently proved insuperable obstacles. (Some 200 to 300 millions were required for the Somme enterprise alone.) As regards the invention of M. Georges Claude (the inventor of the Claude sulphate of ammonia process), for utilising the difference between the temperature of sea water at different levels, some progress has been made. The experimental installation at Ougrée-Marihaye, in Belgium, having proved satisfactory, two endeavours have been made to construct a larger plant on a semi-industrial scale on the South American coast.

IV. ELECTRICITY DISTRIBUTION

The Eight Main Distribution Systems.—The organisation of the distribution of electrical energy throughout France may be divided into eight main regions: the supply of each region is more or less concentrated in the hands of a group or consortium of producers and distributors in the particular region. Thus, the South-Western area is served by the U.P.E.P.O. (Union des Producteurs d'électricité des Pyrénées occidentales); the Centre by the *Société des Forces Motrices de la Truyère* and its associated companies; Burgundy by the *Compagnie Bourguignonne de Transport d'Énergie*; the South-Eastern corner containing Avignon,

Marseilles, Nice, and other places by the *Energie Electrique du Littoral Méditerranéen*; the Alps and Savoy by the U.N.I.E. (Union pour l'Industrie et l'Electricité); the coal-mining and industrial region of the North by the *Société de Transport d'Energie Electrique du Nord*; Alsace-Lorraine and the counties adjacent thereto by the *Forces Motrices du Rhin*; and Paris and its suburbs by the *Compagnie Parisienne de Distribution d'Electricité* and the *Union d'Electricité*. The following notes relate to the first six of these groups, the other two being dealt with in other parts of this chapter.

(1) In the South-Western corner of France, a most effective utilisation of the energy produced by the hydro-electric stations in the Pyrenees is ensured by a concentration of interests, the distribution of electricity in the whole of the area comprised between the Pyrenees and a line passing through Bordeaux and Montpellier being centralised in the hands of the U.P.É.P.O. (Union des Producteurs d'électricité des Pyrénées occidentales), a group constituted at the end of 1922 on the initiative of the Midi railway company, with which are now associated eight other companies, chief among which are the *Compagnie d'électricité industrielle*, the *Alais, Froges et Camargue* electrochemical and electrometallurgical concern, the *Société des produits azotés* and the *Société minière et métallurgique de Penarroya*. The group controls 20 hydro-electric power stations with a total installed capacity of 341,000 Kw. and an average yearly output in excess of one milliard kilowatt-hours (two-fifths of which is developed by the five large stations of the Midi railway company), in addition to having at its call part of the energy produced by thermic stations in the region. Two large transformer stations at Lannemézan (east of Tarbes) and Laruns (south of Pau) act as centres of concentration, the former for the output of stations in the valleys of the Gave de Pau, Gavarnie, Nestes and Pique, and the latter for that of stations in the valleys of Ossau, Aspe and the Gave de Pau also. One main transmission line carrying a voltage of 150,000 starts from these stations, running in duplicate along the central Pyrenees and up to Bordeaux via Pau and Dax, with a single branch going off to Portet-Saint-Simon (near Toulouse) and another to Saint-Victor (near Millau), the total length being 502 miles. With the completion, in the spring of 1934, of an extension beyond Toulouse in the direction of Montauban, another 69 miles will be added. The current arriving at the two transformer stations at a tension of 60,000 volts, is stepped up to 150,000 volts and thence transmitted to Dax, Bordeaux and Toulouse, where the voltage is again reduced to 60,000. Approximately one-fifth of the total output is consumed by the Midi Railway for traction on its electrified lines (now 924 miles) and the balance, after supplying the whole industrial and domestic requirements of the region, is readily absorbed by the electrochemical and electro-metallurgical works of *Alais, Froges et Camargue*, the works of the *Société des produits azotés* producing calcium carbide, cyanamide and various ferro-alloys, and by other works belonging to subsidiaries of the *Compagnie d'électricité industrielle*.

(2) The Central Plateau (Massif Central) is a region of production rather than of consumption of electrical energy. The *Société des Forces Motrices de la Truyère*, the *Compagnie Hydro-electrique d'Auvergne*, the *Union Electrique* and their associated companies are actively engaged in harnessing the available water-power resources and (through their subsidiary the *Société de Transport d'Energie du Centre*) linking up with neighbouring distribution systems. The centre of the system is the new station at Brommat which, with its companion station of Sarrans now in course of construction, will ultimately (1935) command an installed capacity of 270,000 kw. and attain a yearly output of some 700 million kilowatt-hours. Situated between

Brommat and Sarrans are the transformer station of Brézou and the distribution station of Rueyres, serving as the point of departure of 220,000 volt lines in two directions. The principal of these, conveying energy from Brommat to Paris, gathers on its way the output of Coindre and of Eguzon, with a line branching off at Eguzon towards Saumur and Angers. Upon the completion of the Marèges and La Mativie stations, in 1935 and 1937 respectively, these will also be linked up with the main Brommat-Paris line by short branches. A second line at 220,000 volts connects Rueyres with Monistrol, St. Etienne and Lyons, forming a link with the hydro-electric system of the Alps. Between these two lines is one of 150,000 volts in the direction of Clermont-Ferrand, Gueugnon and Dijon, which will ultimately connect with Kembs; and a second line of 150,000 volts to Bagnols and Marseilles' is connected since October, 1932, with the Pinet (Saint-Victor) and Lannemezan stations of the U.P.E.F.O.

(3) Farther to the **North-East** is the **Burgundy** region served by the *Compagnie Bourguignonne de Transport d'Energie*, whose rôle is that of an intermediary between producers and consumers. The company has constructed a network of lines serving the whole of the district between the Seine, the Loire and the Rhône, and in particular the counties of Ain, Jura and Saône-et-Loire. Its principal sources of thermic energy are the power stations of Chalon-sur-Saône, le Creusot, Blanzay, Epinac, Champvert, and its principal hydro-electric sources Pougny-Chancy, Cize-Bolozon, Chartreuse-de-Vaucluse. At Garchizy, where a thermic station has hitherto served the Nivernais area, a large station is to be erected, linking with the existing 120,000-volt line belonging jointly to the *Compagnie Bourguignonne* and the *Compagnie d'Interconnexion Rhône-Eguzon*, which serves for the transfer, in winter, of the available balance of power from Eguzon, and in summer, that from Chancy-Pougny and Chalon. In 1930 the company's cable from Champvert to Bourges was put into service. In December, 1931, an associated concern, the *Société de Transport d'Energie du Centre*, began to operate its 120/150-thousand-volt line joining the post of Cize-Bolozon with that of Villefranche-sur-Saône. In August, 1932, was completed the company's main link with the Central Plateau, a line at 150,000 volts passing through Gueugnon, Bayet and Clermont-Ferrand.

(4) The **Alps and Savoy** district, of which Lyons and Grenoble are the chief centres, stretches eastwards from those towns to embrace Savoy and the French Alps, and is served by the system of the U.N.I.E. (Union pour l'Industrie et l'Electricité), which is identified with the new station being constructed at the Gorge du Sautet, on the river Drac. This station alone will have an installed capacity of 67,500 kw. and a yearly output of 185 million kilowatt-hours. Companion stations of Cordéac and Saint-Pierre, to be constructed when Sautet is finished, will be equipped for 50,000 and 75,000 kw., with a combined output of 350 million kw.h., and two more power stations to be constructed subsequently below that of St. Pierre will add 100,000 kw. and 340 million kw.h. Lines carrying a tension of 150,000 volts will form interconnections between Sautet, Cordéac, Pariset, St. Pierre d'Albigny, Bissorte, Albertville and a host of other hydro-electric and thermic stations in the region of Savoy and the Alps. Until the putting into service of the Saint-Pierre station, a provisional line at 150,000 volts serves to distribute energy to Grenoble and Lyons. This will later be replaced by a line at 220,000 volts going to Paris by way of the new station at Henri-Paul and the junction station of Troyes.

(5) The district in the **South-Eastern corner of France** comprised within the six counties of Alpes-Maritimes, Var, Bouches-du-Rhône, Basses-Alpes, Hautes-Alpes and Vaucluse, forming a triangle of which the apex is St. Etienne, and the base is Montpellier-Marseilles-Nice-Italian frontier, is served by the *Energie Electrique du Littoral Méditerranéen*, a company formed in 1907 under the auspices of the Thomson-Houston interests and the *Société des Grands*

Travaux de Marseille. The four adjoining counties of Hérault, Gard, Drôme and Ardèche are served by two associated or subsidiary companies who purchase their current from the above-mentioned company. Either directly, or through subsidiaries such as the *Forces Motrices de la Haute-Durance*, *Forces Motrices de la Durance*, etc., the company has long been actively associated with the development of hydro-electric energy in the Alpine region, as well as acting as a distributing company for an area including the whole of the Riviera, Marseilles and its neighbourhood, and extending as far north as Valence and Briançon. Fifteen hydro-electric power stations, with a total installed capacity of about 186,000 kw., of which two built since the war are the most powerful, St. Tulle (50,000 kw.) and Bancairon (55,000 kw.), are the main sources of energy.

(6) In the North of France the reconstitution of the distribution system after the ravages of war was accompanied by an all-round reorganisation and general concentration of interests. Up to 1914 the supply was assured mainly by three subsidiaries of the Lens, Béthune and Bruay coal mines, respectively, and by five independent producing and distributing companies, with 1,191 miles of high tension and 1,029 miles of low tension lines serving 344 communes (190 in the Nord county and 154 in the Pas-de-Calais, corresponding to 28 and 17 per cent., respectively, of the total number of communes in those counties). Their total installed capacity was 200,000 kw. After the war, when, with the assistance of State payments for war damages, the destroyed power stations were rebuilt and the transmission lines re-established, producers and distributors formed a consortium, the *Société de Transport d'Énergie Electrique du Nord*, to develop the distribution system throughout the two counties. The great thermic stations of the region, including those of the mines, of the Lille district, of the Valenciennes-Douai-Hautmont region, of Hirson and of Beautor, were linked up by 45,000-volt lines (though some of the individual companies within the group have lines of 90,000 to 150,000 volts), to facilitate the ready transfer of energy. By the beginning of 1932 the number of communes electrified had been increased to 638 in the Nord and 864 in the Pas-de-Calais, corresponding in both cases to 96½ per cent. of the total number of communes. The length of transmission lines grew from 4,492 miles in 1925 to 10,304 at the beginning of 1931 (of which, 5,327 miles high tension and 4,977 miles low tension), while the installed capacity of power stations was increased from 573 to 1,120 and 1,303 thousand kilowatts at the commencement of 1925, 1930 and 1931 respectively. The output in 1930 exceeded 2,270 million kilowatt-hours. The lines from Bully to Amiens and from Vendin-le-Vieil to Péronne, designed to support voltages of 150,000 and 220,000, constitute the first step towards the linking of this region with Paris and the rest of France, to which reference is made in the paragraph on the interconnection of power stations.

Interconnection of Power Stations.—The goal at which producers and distributors of electrical energy in France have been aiming in recent years is the creation of a vast network of high-power transmission lines to link the main sources of power supply (and in particular the hydro-electric sources) with the great centres of consumption. This involves the transmission of energy over distances exceeding in some cases 500 kilometres (310 miles); and one of the main problems to be solved was that of conveying power at a tension of 220,000 volts over such distances without excessive losses in transmission. Progress in electrical engineering practice and improvements in the quality of conductors have overcome this difficulty. Financing has been facilitated firstly by recourse to German deliveries in kind, and when these were suspended, by a

cheapening in the cost of loans. General agreement has been reached on the point of adopting 60 and 90 thousand volts for secondary transmission lines and 1,500 volts for subsidiary supply lines; and the great diversity of practice whereby, for instance, current at 25, 42 and 50 periods was found in different parts of Paris, 25 periods all along the Riviera, and so forth, has been eliminated by the adoption of alternating current at 50 periods as a standard. Modifications in the plant of the *Compagnie Parisienne de Distribution d'Electricité*, on the system of the State railways and elsewhere, to bring them into line with this standardisation, are practically complete, and the system of the *Energie Electrique du Littoral Méditerranéen* is now alone in adherence to the 25 periodicity.

The water-power resources of the Alps and the Pyrenees, of greatest value in the summer, those of the Central Plateau, the Rhine and the Rhône, at their maximum in the winter, and the great thermic stations of the coal-mining, metallurgical and industrial areas in the North, the East, the Paris region and in the vicinity of Lyons and St. Etienne, will form within two or three years part of a comprehensive electrical supply system in which any temporary insufficiency at one point can at once be made good from afar. The three principal channels of supply, designed to operate at a tension of 220,000 volts, are :

- (a) from the Kembs power station on the Rhine to Troyes and Paris, linked up at Troyes with the thermic stations of the north and with the line from the south bringing power from
- (b) from the Brommat and Sarrans stations on the Truyère to Paris, passing en route through the Marèges station on the Dordogne, those of Coindre and Eguzon, to Chaingy (Orleans) and Chevilly, the point of junction with the supply system of Paris;
- (c) from Eguzon to Saumur.

The first line at 220,000 volts was put into service at the end of September, 1932. Starting from Rueyres, between the Brommat and Sarrans stations, it goes via Marèges, Eguzon and Chaingy (Orleans) to Chevilly, the transforming post south of Paris, constructed by the Paris-Orleans railway company, and connected by underground cables with the Villejuif station of the *Union d'Electricité*. A second line of equal capacity is now being laid along the same route, in readiness for the completion of the Marèges station and for connection with the station of La Mativie on the Cère. Of the line from Kembs to Paris, the portion between Kembs and Troyes is completed.

Supplementing these three main lines will be ten others of 150,000 volts, connecting :

- (d) Vincey (in the Vosges, north-west of Epinal) with Ronchamp (Haute-Saône) and Liebvillers in the Doubs, to the south of Montbéliard ;
- (e) Chalon-sur-Saône (Saône-et-Loire) with Besançon (Doubs), Liebvillers and Kembs;
- (f) Kembs with the La Noir (in the Vosges) and La Neuveville;

- (g) Cize-Bolozon (on the river Ain) with Villefranche (Rhône);
- (h) Rheims with Epemay (Marne) and Troyes (Aube);
- (i) Gueugnon (Saône-et-Loire) with Bayet (Allier), Clermont-Ferrand (Puy-de-Dôme) and Brommat (Aveyron);
- (k) Sautet (in the south of the Isère country) with Champagnier (Isère), La Bissorte, Albertville (Savoie), Lyons, and Bagnols-sur-Cèze (Gard);
- (l) Saint-Victor (Gard) with Bagnols;
- (m) Brommat with Bagnols and Marseilles;
- (n) Bordeaux with Angoulême and Saumur.

The Gueugnon—Clermont Ferrand line entered into operation in August, 1932, and the Saint-Victor—Bagnols line in October of the same year, while a line connecting Champvert with Bourges, and forming part of the link between the hydro-electric station of Eguzon and the thermic and hydro-electric stations of Bourgogne and Savoy, was put into service in the course of 1930, and the Cize-Bolozon—Villefranche line was completed in December, 1931. The construction of a 220,000-volt line from St. Pierre to Paris, passing through Lyons, the new station at Henri-Paul, and Troyes, was at one time contemplated, but this project appears now to have been abandoned. Meanwhile, the portion between Grenoble and Lyons is being operated on a tension of 150,000 volts.

Two main lines now run right across the country from north to south, save for a short break of 33 miles between Amiens and Beauvais in the case of one of them. The one, starting from Dunkirk, passes via Amiens, Beauvais, Paris, Orleans and Eguzon, to Auzat in the Pyrenees, and the other, joining the first at St. Omer, runs from Calais, by way of Belfort, Besançon and Lyons, to Marseilles and Toulon.

Rural Electrification.—The contribution of the State towards the electrification of country districts has been immense in recent years. Whereas in 1920 the budget contained a modest contribution of less than 161,000 francs for this purpose, the credits allocated in the financial years 1928, 1929-30, 1930-31 and 1931-32 attained 230, 437½, 350 and 420 millions, or a total of 1,437½ millions for the four years. These sums include a provision of 300 millions allocated under the National Equipment law, a proposal to devote another 200 millions to electrical power development or transmission undertakings being overruled on the grounds that suitable provision had already been made in the finance law of March, 1931.

In the four years 1928-31, 10,550 more communes were equipped with electric light and power; and at the beginning of 1932 there remained only 6,299* communes out of a total of 38,004 (less than 17 per cent.), with a population of about 2½ millions (7 per cent.) not yet provided with electricity. Of the 31,705 communes now served with electricity, 19,530 were so equipped with the aid of State grants through the Ministry of Agriculture, and 12,175 without any such assistance. In six counties (Seine, Vienne, Loire-Inférieure, Bouches-du-Rhône, Loiret and Deux-Sèvres) every

* Further reduced to 4,600 (12.1%) at 1st Jan., 1933.

commune is endowed with electricity, 18 others have 95 per cent. or more of their communes so provided, and in 49 counties more than three-fourths of the communes enjoy the benefits of electricity. The extension of electrical facilities continues without interruption but at a necessarily slower rate owing to the greater part of the field being already covered; and it is anticipated that within two or three years the work of electrification throughout France will be completed, save for a few isolated communities where exceptional difficulties would make the cost of installation excessive. Current consumption increased to 330 kw.h. per inhabitant in 1930, declining to 320 kw.h. in 1931 as a result of the large setback in industrial consumption. How far from saturation point is the present level of electric power utilisation in France will be apparent when it is remembered that in Switzerland the consumption per inhabitant in 1931 was 537 kw.h., in the United States 584, in Canada 1,230, and in Norway upwards of 1,300 without taking any account of the power produced for consumption within the works of the generating companies (i.e., not passed over general distribution lines). The corresponding figure for Belgium was 224 and for Germany (in 1930), 210.

Electricity as an Aid to Agriculture.—Schemes for the distribution of electrical energy in rural areas are assisted from State funds, both by means of subsidies and by long-term advances through the National Agricultural Credit Fund (*Office National du Crédit Agricole*). Under the law of the 2nd August, 1923, the Fund was empowered to grant advances (usually for a period of 30 years, but in a few exceptional cases, for 40 years) at a low rate of interest, up to a maximum equivalent to the sum collected by the county, communal or other organisation concerned. By the budget law of the 30th December, 1928, the maximum was increased to twice the amount raised by the collectivity itself; and it is now proposed that the amount of the advance should be made uniformly equal to twice the sum raised by the collectivity, instead of this sum being a maximum. A Bill to this end is in course of preparation by the Minister for Agriculture. The grant of a loan is contingent upon the cost of the enterprise not exceeding a certain maximum, announced each year, per inhabitant supplied: this maximum being set at 400, 450 and 500 francs for 1927, 1928 and 1929, and at 600 francs for 1930 and 1931. With the passing of time, the cost per head tends to mount on account of the increasing remoteness of the communities yet to be supplied. It is also proposed, therefore, that instead of there being a set limit, each project should merely be subject to checking to ensure that due economy is observed. The rate of interest on the advances, originally 4 per cent., has been gradually reduced, until for the years 1930 and 1931 the Fund had to pay the Treasury 2.6 per cent., and in its turn charged the actual borrowers 2.9 per cent.

Budgetary provision of 70 millions was made in 1927 for advances under this head, 100 millions in 1928 and in 1929, 120 millions for the financial year 1930-31 (15 months), 150 millions for 1931-32, and 100 millions for the financial year 1932 (9 months). Up to the end of 1931 the total amount of advances sanctioned since the law of August, 1923, came into effect was nearly 445 millions (of which 365 millions had been already paid out); enabling electric current to be carried to 6,820 communes, with a population of $3\frac{1}{2}$ million inhabitants: in addition to which, 60 long-term loans amounting in all to 27 millions were accorded under an earlier law of the 5th August, 1920. In the five years 1927-32 alone, out of 718 applications examined, 682 were granted loans; 310 $\frac{1}{2}$ millions were provided by the collectivities themselves, 354 $\frac{1}{2}$ millions in the form of advances from the State, and 255 $\frac{1}{2}$ millions as State subsidies, a total of 920 $\frac{1}{2}$ millions.

Rural Consumption for Power Purposes Stationary.—

One of the main objects of the Government in encouraging the extension of electrical current distribution in country districts is that of improving or stimulating agricultural production by generalising the use of electricity for ploughing and dairy-farming operations of various kinds. Little or no progress appears to have been made in this direction, to judge from the annual returns of the National Agricultural Credit Fund. Not only is there a retrogression in the total amount of energy supplied, per kilometre of line in use, but the bulk of the current consumed by rural communities continues to be for lighting purposes; and the following table shows that the proportions serving for power purposes and for lighting and domestic uses, respectively, have remained practically unchanged during the last five years for which returns have been issued.

[TABLE]

UTILISATION OF ELECTRICITY BY COMMUNITIES HAVING BENEFITED BY LOANS UNDER THE 1923 LAW.

Year	Number of communes	Total consumption in kilowatt-hours						
		Per kilometre of line	Per subscriber			Per inhabitant supplied		
			Force	Lighting and domestic	Total	Force	Lighting and domestic	Total
1927 ...	1,950	933	35	73	108	5.4	11.4	16.8
1928 ...	2,290	900	30	72	102	5.1	12.2	17.3
1929 ...	2,335	900	28	78	106	5.0	14.0	19.0
1930 ...	3,076	806	32	71	103	5.4	12.1	17.5
1931 ...	3,551	741	31	73	104	5.4	12.9	18.3

This may be attributed partly to the farmers' ignorance of many possible applications of electricity on the farm, and partly to the reluctance of many of the distributing companies to supply energy for power purposes at rates substantially lower than those for lighting and domestic uses. Attention has been called to both points in the annual reports to which allusion was made above, and the companies have been urged to embark upon suitable propaganda with a view to a more comprehensive appreciation of the advantages of electricity.

In the districts surrounding Paris, ploughing by electricity has been adopted to a certain extent, 45,000 to 50,000 acres being so ploughed in the last ten years. In the north, some attempt at generalising the practice of ploughing by electricity has been made by the *Société pour les Applications de l'Electricité*, a subsidiary of the distributing company for the Valenciennes-Cambrai-Anzin district. This company introduced in 1928 a system of ploughing under contract for the local cultivators (in particular, the beet-sugar cultivators of the Cambrai region), at a fixed rate based on a minimum of 250 hectares (617 acres) yearly, portable units being employed, which can pick up current from the existing high-tension lines at 15,000 volts. The amount of capital tied up works out at about Fcs. 2,000 per hectare (2.47 acres) worked.

Electricity in Industry.—To an ever-growing extent, electricity is being applied to the requirements of industrial production. Its application is greatest in the case of the aluminium industry, to which a separate chapter of this report is devoted. (See pp. 232-6). Of the 14 aluminium factories in France, the eleven belonging to the *Compagnie Alais, Froges et Camargue* (capital 262½ millions) consume over 900 million kw.h. yearly, obtained from 12 hydro-electric and seven thermic power stations. This company gives employment to 9,000 workers, of whom about 3,300 work in the electrometallurgical factories. The three other factories belong to the *Société d'Electrochimie d'Ugine* (capital 88 millions), and derive their power from 12 hydro-electric and three thermic stations with a combined capacity of 150,000 h.p., giving work to 5,900 workers in France. The production capacity of these aluminium works has grown from 13,500 tons in 1913 to 27,000 in 1928, and enlargements now under way will shortly make possible a yearly output of 35,000 tons. Calcium carbide, a by-product of aluminium production, was produced to the extent of 88,105 and 95,000 tons in 1929-31 (as against 41,000 tons in 1913): the production of steel in the electric furnace rose from 91,074 tons in 1927 to 128,299, 151,000, 153,688, 159,000 and 158,000 in 1928-32: that of ferro-alloys, after reaching 50,000 tons in 1928, declined to 40,000 tons in 1929: ten to twelve thousand tons of chlorates are produced yearly. The electro-chemical and electro-metallurgical industries alone usually consume from one-fifth to one-sixth of the electrical

energy generated in France; their consumption advanced from 2,151 million kw.h. in 1927 to 2,636 million in 1928, and 2,934 million in 1930. In 1931 and 1932, however, their consumption declined to 2,095 and 1,720 million kw.h., or one-seventh and one-eighth respectively, of a total consumption attaining 14,860 and 13,970 million kw.h. The large proportion of towns equipped with electricity supply makes it possible for works of all kinds, large and small, to avail themselves of electrical power. The latest official returns show that in 1930, electrical traction absorbed 923,709,000 kilowatt-hours, miscellaneous users of high-voltage current consumed 7,331,029,000 kw.h., while current supplied at a low voltage for purposes other than lighting or domestic uses amounted to 1,018,139,000 kw.h. More recent figures quoted lately by the general secretary of the Electricity Producers' and Distributors' Association show a consumption in 1931 and 1932 of 1,565 and 1,455 million kw.h. by the collieries, 950 and 670 million kw.h. by the steel industry, 890 and 870 million kw.h. by electric traction, 7,825 and 7,160 million kw.h. delivered to general distribution systems, and 2,075 and 2,095 million kw.h. lost in transformers or during transmission.

CHAPTER IV.—METAL AND ENGINEERING INDUSTRIES

I.—IRON AND STEEL

1. PRODUCTION

Great Advance in National Output Capacity.—In the years of maximum extraction (1929 and 1930) the French output of certain important minerals and metalliferous ores was in some cases more than double that of the pre-war France; and in other cases certain considerable new assets to the national economy were developed to the fullest extent. Thus, iron ore reached 51 million tons against 21.9 million in 1913: bauxite, 643,000 against 310,000 tons: potash salts 506,000 tons of K_2O against nil: mineral oils, 82,000 tons against practically nil, and coal 55 against 40.8 million tons. The recovery of Alsace-Lorraine brought these higher potentialities in iron ore, potash, and mineral oils, and increased the coal figure by about 5 million tons (destined to be further augmented in a couple of years by two million tons annually as a result of the development of the new coalfields now taking place in Eastern Lorraine in the St. Avold and other concessions). Pyrites forms an exception, the output being only two-thirds of that of 1913.

Since early in 1931 an all-round reduction of output has occurred, but the above figures indicate the high measure of French capacity in these fields in prosperous years. Although Poland, Spain and the U.S.S.R. are turning to account their potash resources, their combined production is still too limited to affect the virtual monopoly of Germany and France, whose ten-years agreement as to prices and markets has still about three years to run. France is the largest bauxite producer, although the intensive development of the Hungarian mines brought output in 1928-1929 up to nearly half that of France (over 300,000 against 643,000 tons). As a producer of iron ore France comes after only the United States, producing with the latter two-thirds of the world output: in 1929 the French output of 51 million tons, together with the 2.2 million tons of Algeria, was practically equal to that of the United Kingdom and of the rest of Europe combined. Iron ore exports, which were 27 million tons in 1928 or 70 per cent. greater than in 1913, exports to the Saar Territory being excluded, fell in 1932 to 10 millions, of which nine-tenths went to Belgium and Luxembourg. German purchases fell from 3.2 million tons in 1928 (i.e., 50 per cent. of German production in that year) to 712,000 in 1932: and the United Kingdom purchases, which reached their highest point in 1929 with 183,000 tons, fell in 1932 to 8,600 tons. On the ground

of the possibility of the unduly rapid consumption of French iron ore resources proposals have been made to restrict exports, under a quota system : in the report (November, 1932) on this point to the National Economic Council it is stated that the reserves represent only a very feeble percentage, 2 to 3 per cent., of the world resources, and that they risk being exhausted in forty years.

Iron Ore Disposal Problem.—Since the recovery of Lorraine, with its vast iron ore resources, France has been faced with the problem of handling an ore output nearly twice the amount of her requirements. Thus, in 1930, 1931, and 1932, with an ore output of 48.8, 38.8 and 27.8 million tons, her ore consumption appears to have been about 27.2, 22.1 and 15 million tons, leaving an exportable surplus of 21.6, 16.7 and 12.8 million tons. The exports in these years were 15.1, 12.4, and 10.1 million tons. In 1933, when output was 30.4 million tons, exports were 11 million against 10 million in 1932. Belgium, already appearing in the trade returns as the largest purchaser of French iron ores, has been taking in the last few years an increasing proportion of the total exports (74.7, 75.7, 77, 81, 90 and 85.5 per cent. respectively in 1928-1933), though actually a considerable part of this goes to Germany. The recorded exports to Germany in 1927-1933 were 2.1, 3.2, 2.7, 2.4, 1.6, 0.7 and 1.2 million tons. These figures, when compared with those of pig-iron production in Germany, indicate a tendency to revert to her former preference for French ores : in 1927 they were rather less than one-sixth of the pig-iron tonnage, but the fraction has grown gradually larger until it was over one-fourth in 1931. Holland is also a large customer, taking in some years practically half as much as Germany.

Heavy Fall in Output Since 1929.—French production of pig-iron reached its highest point in 1929, when the tonnage was double that of the France of 1913 (10.36 against 5.2 million tons); or, if the 1913 tonnage of the recovered Lorraine be comprised, it was 14 per cent. greater than the 1913 output within the post-war frontiers. Very slight (2.5 per cent.) in 1930, the decline in 1931 was 20 per cent., and in 1932, 46 per cent., on the 1929 output. The French industry, however, felt the crisis far less rapidly and less severely than certain other important producers : in 1930 the United Kingdom, German and United States' tonnages fell respectively by 18, 28 and 26 per cent. : in 1931 by 39, 30 and 50 per cent. : and in 1932 by 5, 35 and 52 per cent. Belgium and Luxemburg were fortunate in well maintaining their output : the former, with 4.04 millions in 1929, produced 3.36, 3.23 and 2.73 millions in 1930-32, and the latter, with 2.90 millions in 1929, showed 2.47, 2.05 and 1.92 millions in 1930-32. In 1933 French production notably improved from March, and monthly output for the year averaged 527,300 tons against an average of 463,000

for 1932, representing an increase of 13½ per cent., though still lower by 39 per cent. than the 1929 level. At the end of 1933, there were 90 blast furnaces in fire, or 8 more than a year earlier, and more than in any month since November, 1931.

In steel production 1929 showed also the highest figures with 9.69 million tons, which was more than twice the 1913 figures (4.68 millions) for pre-war France, and 39 per cent. greater than the 1913 output including that of the recovered Lorraine. In this case also the decline in 1930-32, which was 3, 19.5, and 42.2 per cent. was less than in other important countries. The United States' output fell from 56.43 millions in 1929 to 40.69, 25.94 and 13.30 millions (i.e., by 76 per cent.), and that of Germany from 16.24 to 8.29 and 5.76 millions (i.e., by 65 per cent.). United Kingdom output was 9.63, 7.32, and 5.20 millions (46 per cent.). In 1932 French steel output amounted to 5.60 million tons: in 1933 an improvement set in, and production averaged 543,300 tons, an advance of 16.3 per cent. upon the figures for 1932, though still lower by 32.8 per cent. than in 1929.

France's rank among Six Chief Producers.—France has greatly advanced her world position both in pig-iron and in steel output. The following table shows that her pig-iron tonnage rose from 7.41 per cent. in 1913 to 12.9 per cent. in 1929, and to 21.31 per cent. in the bad year 1932, when she held second place. In steel in 1932, when she narrowly missed the same rank, her percentage increased from 6.92 in 1913 to 16.37 per cent.

Country	Pig Iron			Steel		
	1913	1929	1932	1913	1929	1932
	%	%	%	%	%	%
United States	44.78	53.19	33.83	46.93	57.64	38.81
Germany	27.48	16.73	15.09	27.95	16.33	16.79
United Kingdom	14.84	9.45	13.93	11.49	9.84	15.58
France	7.41	12.94	21.31	6.92	9.75	16.37
Belgium-Luxemburg	3.54	5.05	10.65	3.65	4.12	8.18
Saar	1.95	2.62	5.19	3.06	2.32	4.27
	100	100	100	100	100	100

French output in that year was therefore 61 per cent. of the 1929 peak, compared with Belgium 68, Luxemburg 64, the United Kingdom 54, Germany 40, the United States 31, Czechoslovakia 30 per cent.

Pig-Iron.—Nearly the whole of French iron ore, pig-iron and steel is derived from the coal and ore-bearing regions adjacent to the German, Luxemburg and Belgian frontiers. In the case of pig-iron, that area furnishes 91 per cent., of which 43.5 per cent.

In Appendix VIII will be found the monthly average and the total yearly production of pig-iron and steel for 1913-1933.

from the contiguous Meurthe-et-Moselle, Ardennes and Haute-Marne counties (of which Nancy is the capital), 34.2 per cent. from the Moselle county (*i.e.* the recovered Lorraine), and 13.4 per cent. from the North (*i.e.* near the Belgian frontier). Phosphoric pig-iron constitutes 90 per cent. of the total output (78 per cent. Thomas and 12 per cent. foundry pig), hematite 7 per cent. (about equally divided between Bessemer and foundry castings), leaving 3 per cent. to be made up by semi-phosphoric, Spiegel-iron and ferros. The average production of the different varieties in 1928-1930, the years of highest output, expressed in thousands of tons, was: Thomas, 7,835, phosphoric foundry pig 1,214, semi-phosphoric 147, hematite for castings 366, refinery and Bessemer 352, Spiegeleisen and ferro-alloys 224.

Steel.—The same border districts in 1928-30 furnished 87.3 per cent. of the total steel output, 38.6 per cent. coming from Meurthe-et-Moselle, 30 per cent. from Lorraine and 18.7 per cent. from the North. Of the steel output in the same three years, averaging 9,533,000 tons, Thomas steel accounted for 6,597,000 tons, or 69.2 per cent. (of which 5,478,000 tons from Meurthe-et-Moselle and Moselle); Martin steel 2,682,000 tons, or 28.1 per cent. (of which 1,066,000 tons from the above-mentioned counties, 795,000 tons from the North, 440,000 tons from the Centre, and 381,000 tons from the South-West, the South-East and the West together); electric steel 143,000 tons, or 1.5 per cent., Bessemer steel 96,000 tons or 1 per cent., and crucible steel 15,000 tons, or 0.2 per cent.—a relatively large advance in the case of electric steel, as it formed only 1.1 per cent. of the steel output in 1927. In 1932 and 1933 electric steel output further increased, to 158,000 and 180,000 tons.

Steel Output and Home Consumption.—In pre-war days 92 per cent. of the steel output was consumed in France, but with the post-war expansion of output capacity that percentage fell to 66 and 53 in 1926 and 1927. For the six years 1928-1933 home consumption averaged 62.2, the highest percentage having been 65.2 in 1929. These percentages do not include the exports of pig-iron, which ranged from 3 to 5 per cent. of output, nor the large tonnage of engineered steel products (separately considered in the section on engineering). The leaders of the industry have given their opinion that external markets must be found for quite half French production if output is to be in keeping with the immense expansion in capacity.

Certain Recent General Developments.—Of the two outstanding metallurgical areas the Moselle before the war was characterised by the preponderance of its pig-iron over its steel production, whereas in the Meurthe-et-Moselle (or Nancy) area the balance was fairly even. In the former the powerful plants of de Wendel, of Rombas, Knutange, Hagondange, produced

indeed steel as well as iron, but half a dozen other large works comprised no steel mills: in recent years a noted increase of steel mills capacity has occurred in the Moselle (or Lorraine) county. On the other hand, in the adjacent Saar territory, now forming part of the French Customs area, where before the war the principal steelmakers were wont to draw their pig-iron supplies from the (then German) Moselle, the pig-iron capacity has been considerably increased by the erection of new, or the extension of old, blast furnace equipment. Another development of a general character is the advance in the quality of French steel output: the relative output of semi-finished to finished products, which was one to three in 1928 (1.50 to 4.37 million tons), was one to four both in 1932 (.99 and 4.07 millions) and in 1933 (1.13 to 4.52 millions).

The production of electric steel is also making its way north-eastwards from the centre and south-east, many electric furnaces having been erected in the east since 1928. The bulk of the output, both of electric steel and of high speed and special steels, is always located in the centre and south-east (at Le Creusot and in the St. Etienne and Grenoble regions), where hydraulic power supplies electricity in abundance.

Native Coke Scarcity.—In 1913, France was dependent upon foreign countries for 53 per cent. of her metallurgical coke, 41 per cent. coming from Germany alone, whence moreover was likewise derived a large part of the smalls employed for the production of coke in France. This position has now been to a certain extent relieved. As a result of the vigorous coking policy pursued both by the metallurgical concerns and by the coal-mining companies, France has so far developed her metallurgical coke capacity that she is now able to produce two-thirds of her requirements in metallurgical coke. Production attained 9.1 million tons in 1929. Although she still depends on foreign sources of supply for something like 30 per cent. of her coking coal requirements or, taking coke and coking coals together, rather more than 60 per cent., in normal times, of her needs in metallurgical coke, 40 per cent. of these imports are obtained from foreign cokeries or mines owned or controlled by French interests. Of the coke imports, 4.6 to 5.5 million tons in 1927-1930 (declining to 3.4 and 2.0 million tons in 1931 and 1932), Germany supplied about three-fourths while reparation payments continued, but her contribution has since dropped to less than two-thirds. Holland supplies rather more than one-fifth.

II. ORGANISATION

Organised Control of Production by Industry Itself.—
From the standpoint of the regulation on a nation-wide scale of

metallurgical production and of the adaptation of that production to probable effective demand, great advance has been made by the French metallurgical industry, largely induced no doubt and quickened by the collapse of the world steel markets in 1930-32, which threatened to lead to disastrous competition also in the home market. The eventful happening was the agreement reached at the end of December, 1931, by the greatest steel producers to accept the regulation by quota of their output on the basis of their production in 1929 and 1930, the quota to be established by three arbitrators for each works. It was likewise agreed to bring into activity in the first quarter of 1932 the then existing *comptoirs* which had survived the dissolution in 1922 of the central *comptoir*, or *Comptoir Sidérurgique*, namely, those for semi products, joists, heavy plates, medium plates, hoops, and to create or revive the *comptoirs* for bars and thin plates. By March, 1932, all these *comptoirs* had been organised under agreements for three years (instead of the three-monthly periods as formerly); and others, e.g. for pipes, galvanised plates, tin plates, wire rod, rails, were already existing, or were brought into existence. Their functions had also been enlarged in several cases: besides fixing prices, they might fix output quotas, and be the sole sales agency for the specific commodities (e.g. for semi products, bars, etc.). The activities of the *Comptoir Sidérurgique*, which constitutes the leadership and the connecting link for the separate *comptoirs*, were fully revived about the same period. In many respects this regulation of the industry therefore corresponds to the long-dated German system whereby a crude steel cartel with seven separate organisations for separate branches controls the production and sale of steel. This internal organisation was a practically indispensable preliminary to the effective participation in international agreements.

Methods of Practical Control of Production and Selling.—In the period between the important decision of the greatest producers and the autumn of 1933, certain alterations occurred, but they were mainly in the direction of improved and tightened organisation. In October, 1933, the following nine metallurgical *comptoirs*, created or revived since December, 1931, regulated on common lines the output and sales of the specific products with which they were concerned, under the general leadership of the *Comptoir Sidérurgique*:

- Semi Products—blooms, billets, sheets, bars
- Joists, channels of 80 m/m and over
- Bars and other Sections
- Hoops and Strips
- Plates, Heavy and Medium (over 2 m/m thick)
- Thin Sheets (under 2 m/m thick)
- Universal Bars
- Round Bars for seamless tubes
- Railway Material: rails, sleepers, fish-plates, sole plates.

A high metallurgical authority has kindly furnished an account of their objects and methods. "The object of these different *comptoirs* is to secure an equitable distribution of the orders between the works as well as an equitable distribution of the receipts obtained by the sale of the goods delivered, in taking into account the production capacity of the works, the situation they have acquired on the market, the quality of their output, their geographical position relatively to the other producing works or to the divers centres of *comptoirs*." They deal at once with home and foreign sales. This rule must necessarily be applied in the case of commodities for which international *comptoirs* are operative so as to secure that the participating countries are represented solely by the collective national organisations for the particular products. Each member is allotted in advance a fixed fraction of the orders to be taken by his *comptoir*. Buyers may apply directly to it, or to the individual works, or to the special selling organisations of the works, but only the *comptoir* is entitled to make contracts with would-be purchasers, the members having renounced the right to accept orders on their own account. Severe penalties are imposed for infraction of this condition. The *comptoir* therefore distributes the orders, taking account of the various relevant considerations, but it is bound to see that at the close of the set financial period each member receives his due quota of the total orders. "The *Comptoir* thus assures a parallel activity among all its members who profit or who suffer to the same relative extent by the prosperity or by the apathy of the market." Each *comptoir* draws up all invoices relative to the market." Each *comptoir* draws up all invoices relative to the business in its own special branch, and receives all payments: it divides the net profits among all the works on a pre-arranged basis. Prices paid to a given works depend on the commodity supplied, the location of the works, but two works in the same locality, which have supplied the same goods, receive the same rates of payment. But the price paid is independent of the customer and of the place of delivery, the *Comptoir* having selected the supplier on the basis of the quota allotted to his works. As regards the direction: the board of each *comptoir* elects its own chairman, and transacts all the business in its own special commodities, but a central committee has been established, consisting of the chairmen of the nine *comptoirs*, and is presided over by the president of the *Comptoir Sidérurgique*. At the headquarters of the latter is conducted the whole system, which has involved an office organisation on a very large scale.

Complete Renovation and Enlargement of Metallurgical Industry, 1914-1933.—Since 1914 the vast majority of iron and steel works within the pre-war frontiers of France have been either entirely reconstructed and equipped in the most modern manner, or have been very substantially reorganised and refitted, enlargements having been effected in both cases. And the recovery

of Lorraine brought not only the doubling of French iron-ore resources but also numerous very large and already modern metallurgical works with which were linked reversionary interests of no mean importance in very large modern works or mines in Luxembourg, the Saar and elsewhere. In the non-war areas these developments were mainly consummated during the war years, wherein Martin furnaces were increased in number by 100 per cent., converters by 102 per cent., electric furnaces by 90 per cent., crucible furnaces by 105 per cent.; but substantial further improvements and extensions were also effected in after-war years, and even as late as 1931, 1932, and 1933. In the East and North, wherein was located that two-thirds of pre-war French metallurgical capacity, which was all but totally annihilated in the war, the general rehabilitation, undertaken and executed principally in the years 1919-1925, was steadily pursued at least up to 1931.

Mainly Financed by the Nation.—The French nation financed on a very large scale the post-war resurrection and restoration of the industry, through the payments of compensation in keeping with the magnitude of the war damages sustained. The national payments were supplemented by collective or individual loan or bond issues made to the public on the guarantee both of approved claims on the State maturing at later dates and of the good-will and assets of the affiliated concerns.

The national cash contributions, which were inevitably on a large scale, indicate the measure of the financial resources made available since 1919 by the nation itself for the reconstruction and equipment in accordance with the most approved modern practice of approximately two-thirds of the industry. One concern, which between 1919 and 1930 had incurred well over 600 million francs of fresh capital expenditure, had received up to 1931 about 450 millions from the State : another mining and metallurgical company had received up to a recent period 648 millions : a third, whose fresh expenditure reached over 400 millions, obtained 225 millions from the State : three or four more received 200 to 300 millions apiece : two or three more 100 to 120 millions. Many other iron-ore and metallurgical concerns with inferior claims also obtained considerable but less substantial compensation. By collective action war damaged works also raised a loan of 500 million francs in 1920 (when the sterling exchange value of the franc averaged for the year 51.21 francs). Metallurgical works also benefited, of course, in the matter of plant and equipment and of other supplies, from the German deliveries in kind.

Wholesale Application of Best Modern Practices, 1919-25.

—These resources enabled the installation of the most approved methods of lay-out, of plant and of general equipment. Missions of experts were sent abroad, notably to America, to study the best ore-mining, coke oven, blast furnace, and steel mills practices. In pig-iron production many basic improvements were introduced

in replacement of the old scheme of things. Thus at certain works may now be seen as many as 7 or 8 furnaces in due order, usually with an individual daily capacity of 200 to 250 tons but many also of 450, 380, 350, 300 tons, all providing the recovery of by-products, equipped with mechanical charging of ore and coke, and with scientific methods for observing and meeting the due needs of the furnaces in fuel, gas, water, and other respects. French ironmasters of set purpose have not adopted the 800, 1,000 or more ton furnaces that have found favour in America and in Germany, but French individual average furnace capacity has been more than doubled in the course of after-war reconstruction. The new coke works connected with the blast furnace undertakings are designed on a far larger scale and comprise full recovery of by-products. In the steel works may be noticed powerful blooming-mills (including very fast electrical mills), cogging down to 140 to 150 tons an hour, continuous rolling, billet, rail, etc., mills, many of American origin, powerful machines for medium plates, many of German origin, not to forget the most modern open hearth and other furnaces and converters.

Technical improvements have of course been introduced into every branch of the process of iron and steel production. As the ore mines shared the general destruction, they also partook of the general restoration: the most complete mechanisation possible has been introduced in ore getting and handling, and in its conveyance to the furnaces. Central stations, which have been fitted with far more efficient machinery, often supply the locality or district with light and power; and in some districts, notably in the East, through the Société Electrique de Sidérurgie Lorraine, collaboration exists between the separate works. Hoisting and conveying machinery, which form so important an element in metallurgical works, have been greatly developed: the supplies of heavy tools, machine tools and other machinery, have been increased. Scientific analysis of products is now frequently provided by new and highly equipped laboratories at the works themselves.

Continuous Betterment 1925-32.—The persistent prosperity of the French metallurgical industry in the years succeeding the reconstruction of the works damaged in the war led to the continuous betterment of the plants in the pre-war area down to 1930, and even since the depression became severe. Thus Longwy undertook in 1930 and 1931 the building of two new blast furnaces, enlargement of an after-war modern cokery, new electric generating units, plant for metallic sleepers; the Boucau, the Commentry-Fourchambault et Decazeville, the Denain et Anzin, concerns are among others reported as having carried out important improvements in 1930 and 1931, Micheville in 1932, and Montbard-Aulnoye in 1933.

The Lorraine works (*i.e.* those in the present Moselle county) that came within French territory in 1918 were for the most part

already great and modern works, some having been erected later than 1900 : many had in 1913 produced 600,000 tons of pig and 500 to 600,000 tons of steel. In many of these works considerable improvements and extensions were undertaken since the war. Thus at Rombas three modern blast furnaces of 320 to 380 tons daily capacity were installed in 1920, 1927 and 1929 : in 1930 a new Thomas steel mill with seven converters was being built, a new Martin steel mill with four Welmann tipping furnaces of 60 tons capacity was planned and of its ten trains of rolls six were being radically improved, whilst cement capacity was tripled in 1931. At the de Wendel works new and enlarged furnaces (of 350 tons and of 200 to 250 tons) have been built, and considerable general improvements have been carried out in the various branches of their production : late in 1929 a public issue for £1,600,000 was made for the further overhauling of their Hayange works. Similar improvements and enlargements have been executed at several other Lorraine concerns. The *Société Lorraine Minière et Métallurgique*, which has operated on the largest scale in this respect, installed at Thionville between 1924 and 1928 two batteries of coke ovens, and added in 1925-30 to existing works a conveyor for taking coke direct from the oven to the blast furnace, a dry gas purifier, two new 6,000 h.p. blowers, two turbo-alternators of 12,000 kw. apiece ; and in 1930 to 1932 it established large new steel works with induction, electric Martin and Thomas furnaces, two sets of medium or small rolls for special steels, one of larger rolls for Martin and Thomas furnaces and a forge.

In view therefore of the substantial expansion of the industry in the non-war areas both during and after the war, of the almost universal reconstruction and equipment of entire works in the Northern and Eastern war areas and of their persistent improvements since the more specific war restoration period ceased, and of the already modern but further improved and expanded Lorraine industry, it can be claimed that the great bulk of the present French metallurgical industry has been recast in the period from 1914 to 1932.

Relatively Light Charges on the Industry.—In respect of heavy fixed or permanent charges for capital expenditure this recast metallurgical industry enjoys most important relief. The wholesale and improved reconstruction of two-thirds of the pre-war strength, as having suffered war damage, has been shown to have been executed in large proportion at the cost of the nation : for corresponding war compensation reasons no doubt the Belgian and German industries also enjoy considerable relief, as having received substantial contributions from their respective nations either for rehabilitation or for compensatory re-installation within German territory of undertakings to make good Lorraine works lost through war events. The French nation, moreover, made further considerable contribution to the industry in 1919 and 1920

by ceding to various groups at low prices, and with long periods of credit, many large modern works, usually owners of great ore resources and of various other contingent rights. Thus one Lorraine concern, which in 1913 had yields of 2.6 million tons of ore, of approximately 650,000 tons of pig-iron and over 500,000 tons of steel—the two latter have since exceeded 700,000 and 600,000 respectively—was sold for 94 millions: a second, with yield in 1913 of two million tons of ore, 760,000 tons of pig-iron and of 600,000 tons of steel, for 122 millions: a third with yield of $1\frac{1}{2}$ millions tons of ore, and 575,000 tons of pig and nearly 600,000 tons of steel, for 117 millions: a fourth with an output of 1.4 million tons of ore and of 250,000 tons of pig-iron for 34 millions: a fifth, owner of ore-mines, blast furnaces, steel works and large participator in two coal mines, with an output of over 300,000 tons of steel, for 18 millions: a sixth, with two ore-mines, four blast furnaces, and pig-iron output capacity of over 200,000 tons, for 42 millions. As payments were only due in instalments, usually spread over perhaps ten years, these formal sale prices (and therefore the obligations entailed) were in reality far lower, and they were also radically reduced by the fall in the internal value of the franc in the succeeding years; they became, say in the years 1926-1930, only one-third of the original stipulated price in francs. And the serious relief afforded as regards permanent charges, arising out of the acquisition cost of such moderate cost of concerns already provided with several ore-mines, four to ten blast furnaces, coke batteries, steel works, attendant power stations and general equipment, may be estimated by consideration of the single fact that the cost alone of a modern blast furnace installation of 200 to 350 tons daily capacity would probably range from 15 to 25 million francs.

Concentration in the Industry.—The French metallurgical industry has achieved a high, but not an undue or inflexible, measure of concentration. Its framework, constituted before the war, was vastly enlarged and consolidated by war events and consequences. The four-year pressure for munitions on the greatest scale, when 62 and 64 per cent. respectively of French pig-iron and steel capacity had passed into enemy hands, inevitably forced great extensions or new construction in non-war areas, which was undertaken mainly by the few greater firms and was inspired and partly or wholly financed by central authorities. The recovery of Lorraine in 1918 not only brought again within the French metallurgical fold its most powerful producer at the present time, but also led to the partition among the chief French groups of numerous important and well-equipped ex-enemy works in Lorraine and to the acquisition by these groups of interests in ore and coal mines also in Lorraine or of metallurgical works or kindred interests in Luxembourg and elsewhere, that had originated in Lorraine property

brought under sequestration. As the great bulk of the entire metallurgical equipment of the East and North of pre-war France was destroyed in 1914-18, and had to be built anew (for example great well-known works like Mont St. Martin of Longwy, Jœuf of de Wendel, Homécourt and Hautmont of the *Acéries de la Marine et Homécourt*, Micheville, Senelle-Maubeuge, Pont-à-Mousson near Nancy, Denain et Anzin near Douai, Jeumont, etc.), the movement towards concentration and working agreements was greatly promoted in 1919-25 by virtue of understandings as to nature of future output as between works to be rebuilt (e.g. between Homécourt and Micheville), or by amalgamation or pooling of financial claims or interests in ore and coal mines or in iron and steel works. During this reconstruction process the bigger groups were thus enabled to advance sectionalisation of output as between their already-owned works, to acquire interests in works with certain specialities which they themselves might thus have discarded, or otherwise increase their industrial domains.

For many years past the bulk of the iron ore mines have been held in few hands, and four or five principal groups produce, or can influence the production of, quite four-fifths of the national iron and steel output. As regards *iron ore mining*, the de Wendel concern possesses half a dozen mines and has various participations. Its allied companies own or participate in others: e.g. Senelle-Maubeuge owns two and participates in five more, and Knutange (in which Schneider and others are also participants) possesses ten and works three more in common with the Senelle-Maubeuge and with the Denain et Anzin companies. Schneider and its group own numerous mines and participate in others (e.g. those of the vast Arbed-Terres-Rouges concern, Aubrives-Villerupt, etc.). The four owned mines of the Marine et Homécourt company can yield $1\frac{1}{2}$ million tons a year; its allied companies are also large producers (e.g. the Rombas company, which works eight and leases four more, showed 2.4 million tons in 1930: the Micheville company owns five and produced 1.4 million: the Pont-à-Mousson owns eight and produced about $1\frac{1}{2}$ million). A fourth group leader, Longwy, owns nine mines (with an average output of 2 million tons in 1928-30): one of its affiliated companies, the *Société Lorraine Minière et Métallurgique*, owns two, one of which produced 1.4 million tons, and participates in ten others.

Concentration in *iron and steel output* is also marked. The two Lorraine works of Hayange and Moyeuve belonging to de Wendel averaged in the years 1928-30 approximately 1.1 million tons of pig, 1.2 million of steel and .95 million of finished steel products: their works at Jœuf in the adjoining county of Meurthe-et-Moselle about 350 to 400,000 tons, and allied concerns in France about half a million tons more. The Knutange works in Lorraine (joint participation of de Wendel, Schneider, Senelle-Maubeuge, Denain et Anzin, and others) averaged 672,000 tons of pig and

585,000 tons of steel in 1928-30: another Lorraine works, Hagon-dange, which is a joint participation in a former German works of about 20 steel and engineering works under the name of *Union des Consommateurs de Produits Métallurgiques et Industriels*, averaged for the same years 1.30 million tons of ore, 558,000 tons of pig, and 535,000 tons of steel: a third Lorraine works, Rombas, probably reached similar averages. In fact five concerns in the Moselle county are said to produce four-fifths of the Lorraine pig and all the Lorraine steel. In the adjoining Meurthe-et-Moselle county three-quarters of each is produced by seven works whose tonnage ranges from 300,000 to 500,000 tons: thus Longwy in 1930 produced approximately 500,000 tons of iron and steel, and Micheville, Joeuf, Homécourt each produced over 400,000 tons, and three others each from 300,000 to 400,000 tons. In the Northern area two concerns account for 60 per cent. of the pig-iron and 50 per cent. of the steel, whilst in the Centre one concern produces one-third of the total.

A similar policy of concentration has also been pursued as regards *coal and coke supplies*. With the coal industry strongly organised and centralised in comparatively few hands, the metallurgical groups are in close alliance either as owners of large collieries themselves or as participators in many others. They joined with great collieries in 1919 to secure control of the great Sarre and Moselle mines (2½ million tons) in Lorraine, and they are also combining now to develop the coal-fields in the East of Lorraine destined to produce 2 million tons in a couple of years. They hold considerable interests in the chief French collieries producing coke, own German or other foreign mines yielding coking coal, and are large producers of metallurgical coke.

Such groups do not attain the concentration dimensions found in German or American industries; and they are less rigidly organised. Controlling individually as they do both the output of their principal raw materials in the form of ore, coal and coke, and the output of from 1½ to 2½ million tons of iron and steel, they are organised on a sufficiently large scale to take their place independently and successfully in home and foreign markets, being enabled to sectionalise and otherwise order their production to the best advantage, to provide adequate finance, and to maintain efficient representation.

National and Other Organisation for Output and Marketing. — *National Organisation.*—The metallurgical economy of France is observed to be well compacted in its framework, being dominated by a few important groups with extensive ramifications and possessing large producing units, to have been recently modernised throughout in all technical respects, and to be rationalised to a high degree. Endeavours have long and persistently been made by the industry further to organise output and marketing from the national and international standpoints

through central offices called *comptoirs*. In their early conception, these fulfilled the function of the familiarly known cartel, and confined themselves to regulating prices for their members. The first, the Longwy *comptoir* for metallurgical products, dates back to 1876: others were for axles 1892, joists 1896, carriage springs 1896, Thomas steel 1897, metallurgical exports 1904, the Meurthe-et-Moselle pig iron *comptoir* 1905, and the tubes in 1906. These and similar creations underwent various vicissitudes up to 1914, but the consortium and co-operating spirit that emerged under the stress of the years 1914-18, and the greater collective action required for organising reconstruction and the distribution of ex-enemy metallurgical properties, caused a large measure of after-war cohesion. Late in 1919, the *Comptoir Sidérurgique de France* was formed for home and foreign sales of semi products, joists, rails: and although it ceased to function as a selling organisation on its dissolution at the end of 1922, it survived as a sort of sponsor to other *comptoirs* and negotiated international agreements. Thus, under its aegis, was formed in 1926 a rails *comptoir* for home and foreign operations, in 1927 a similar *comptoir* for wire rod, in 1930 the *comptoir* for heavy and medium sheets: in 1931 the existing *comptoir* for semi products and joists split into two, one to be concerned with the home sales of joists and partially for abroad, and the other to be for semi products and for home trade only; in the same year was formed a *comptoir* for merchant bars, which, as it left its first members free to solicit orders for themselves, was at first rather a registration than a controlling office, but it now appears to centralise orders and to conform to the line of conduct adopted by most present-day *comptoirs*. In the same year, when the utmost strain was put on the loyalty of members of *comptoirs* as a consequence of the trade collapse and of the keen competition for any business going, some of the *comptoirs* were reaching their expiry and others were in great risk of dissolution (*e.g.* the semi-finished products *comptoir* was renewed in August, but broke down in the following October). The danger of complete disorder in the home market and of excessive cutting of prices both at home and abroad was finally brought home to the chief producers, and, as will be seen in later paragraphs, agreement for the organisation of home output and of the fixation of prices was reached in the last days of 1931.

Working agreements connected with individual *comptoirs* were already in being, or were reconstituted, in 1932: those of makers of wire, of nails, of steel sleepers, of sections, of tinplates.

International Organisation.—International agreements respecting specific steel products have existed for nearly thirty years (*e.g.*, that for rails), but none matched in scope and importance the International Crude Steel Agreement, first concluded in October, 1926, between France, Germany, the Saar, Belgium and

Luxemburg, and to which Austria, Hungary and (with limitations) Czecho-Slovakia subscribed as from the beginning of 1927. Under this agreement, steel production quotas for each participant were fixed in advance, and tonnage excesses were penalised by fine; but prices were not fixed, nor were exportable quotas to foreign markets apportioned. On its expiry in March, 1930, it was formally renewed for short periods, but it may be regarded as having been in operation throughout 1931 and 1932. Negotiations were conducted with a view to its renewal upon a different basis: namely, instead of determining in advance the national *output* of the national participants, and fixing penalties for excess production, to take the exports in a given period and to assign to each participant exportable quotas, and to create international selling organisations that would rest upon national controlling bodies organised in the participating countries. Great difficulties were encountered in the long drawn out negotiations which were finally successful in February, 1933; and, in May, the French, German, Saar, Belgian and Luxemburg groups signed a convention, to take effect as from June 1st, for the setting up of international *comptoirs* to regulate for five years the sale of all main current products (semis, joists, merchant steels, heavy and medium sheets, large flats and hoops). The base is total exports in the first six months of 1932 of the countries concerned, with certain rectifications. The quota in that period of crisis is taken at 6.8 millions as compared with one of 11 millions for a similar period of prosperity; and as the exports advance within these limits, the French and German quotas improve to the detriment of others such as Belgium and Luxemburg, which had relatively far more satisfactory exports in the 1932 period, and which are far more dependent on export markets. By April 1st, six international *comptoirs* had been virtually constituted for the current products just enumerated, and they commenced operations as from June 1st, 1933.

Other existing international *comptoirs*, for rails, wire rod, and tubes had continued to function normally and to be prolonged: and in 1931 an agreement respecting drawn wire was reached. The rails agreement, which originated in 1904, was reconstituted in March, 1926, with the United Kingdom, France, Belgium, Luxemburg and Germany as members. In January, 1927, Austria, Hungary and Czechoslovakia came in; and in April, 1929, a new agreement was concluded for six years with the adhesion of the Steel Export Association, representing the two largest rail producers in the United States. Each of the parties agrees to respect the home markets of the others, and a quota system is introduced for orders for rails and fish-plates for export. In the case of the wire rod agreement, entered into between France, Germany, Belgium and Luxemburg, in July, 1927, and renewed for five years from January, 1932, production and sales are regulated on the basis of the *statu quo*, but sales within the home markets and certain other territories, such as colonies, are regarded as outside the scope of the agreement. A drawn wire manufacturers' agreement was reached

at the end of November, 1931, between France, Belgium, Luxemburg, Germany, Czechoslovakia, Holland, Denmark and Hungary, to remain in force for five years. In addition to the usual agreements respecting limitation of production, a central sales office is set up for export business. The tubes agreement (in respect of tubes up to 318 mm. external diameter), originated at the end of July, 1926, was in March, 1930, renewed for a further ten years. The parties to it are France, Belgium, Germany, the Saar, Czechoslovakia, Hungary and Poland. Regulations are made as regards production and sales, both internal and export. On the 1st March, 1929, France, Belgium and Luxemburg entered into an agreement respecting pig-iron.

Large Scale Selling Organisation for Home and Foreign Markets.—The principal concerns or groups have established large-scale organisations for seeking and maintaining direct permanent connections with their home market by means of their own numerous offices, agents, and depots. Thus the Marine et Homécourt group, besides exercising at its Paris headquarters the general control of the sales of its varied output in metallurgical and further transformed products, has created two special companies, one for home, and one for foreign, trade, entitled Davum and Davum Exportation. The former has its depots in 10 large French towns and its agents in nine others. The export organisation, acting also for associated but independent companies, which was stated a few years ago to represent a combined capital of 6 to 700 million francs, claims to have "its agencies, affiliated undertakings and branches throughout the world." In both 1928 and 1929 its foreign sales reached the then value of about five million sterling: in 1930 and 1931 the quantities exported were 711,000 and 750,000 tons. The Longwy concern has its depots and agents in eighteen French towns; and the foreign trade of its own and associated companies, with a combined total capital of about 700 millions, is conducted by the company Longovica, with offices in India, the Far East, South America, Poland, Czechoslovakia, Spain and elsewhere. A new foreign selling organisation, entitled ACTUMA (*Compagnie pour l'Exportation des Aciers, Tubes et Matériaux de Construction*), was created in January, 1933, with a capital of 12½ millions, for the purpose of developing the foreign sales of Longwy, Louvroil et Recquignies, Rombas, Differdange-St. Inglebert-Rumelage, the Société pour la Fabrication des Tubes et Emboutis. It apparently works in close co-operation with the Marine et Homécourt group: it was reported in October, 1933, that the representation of the latter in certain parts of South America was merged in ACTUMA. The de Wendel and the Schneider groups have similar widespread organisation for the chief markets of the world. They have independent selling organisation or have affiliated connections either commercial or industrial in many countries. Thus Schneider apparently controls the ARBED concern in Luxemburg and the great SKODA

concern in Czechoslovakia: the former with its output in good years of about 2.3 million tons of iron and steel has long had the widespread selling organisation known as Columeta. Schneider also controls works in Germany (near Cologne, at Nuremberg), and is connected with enterprises in Poland, Central and South-East Europe, Spain, North and South America and elsewhere.

French Metallurgical Influence Abroad.—French metallurgists have immensely extended their international position since 1913 not only by the great development of their internal production capacity but also by the acquisition of far-reaching interests in many European countries and by the actual magnitude of their increased foreign transactions. French interests in the iron and steel trade in Luxemburg, the Saar and Czechoslovakia are very great; and considerable interests of varying importance have been acquired or extended in Belgium, Germany, Holland, Poland, Roumania and in South-Eastern and Central Europe generally. Very considerable metallurgical interests before the war in Russia have been affected by Russian events. In South America and in the Far East French business, already substantial before the war, has been well maintained. The necessity to find foreign markets for national output far in excess of home consumption capacity also impelled the most strenuous French competition in foreign markets, and brought French goods forward prominently in most of the foreign markets, where in 1913 they occupied a minor place.

General Trade Organisation.—The French iron and steel industry has long been strongly organised for its common interests, having as its general staff the influential body known as the *Comité des Forges*. Founded in 1864 by the Eugène Schneider of the period, the *Comité* embraced already in 1867 three-quarters of the undertakings. Even by 1876 it had brought into life the first metallurgical *comptoir* (or central organisation of producers of certain specific products for fixing periodically quotas of output or of prices, or both): in 1892, 1896, 1904 others followed. Within its fold were gradually brought the vast majority of the separate associations for definite branches of production, all of which retained complete autonomy, although they accepted the same person as director of each and every association. Under the same roof and under the same direction was also brought the central body of employers' associations, founded in 1901, known as the Federation of Metallurgical, Mining, and Allied Industries. By 1910 the *Comité des Forges* had developed into the greatest concentration of masters' associations for a multitude of general purposes that France knew: and from that period the French iron and steel trade may be regarded as having been powerfully organised and strongly led.

At its headquarters, besides the general secretariat, were established sections for parliamentary, legislative, legal, and labour questions: for customs, transport and economic questions: for technical questions. The trade and general intelligence services

were organised on an extensive scale. Members were not only supplied on request with information relative to all questions concerning the metallurgical trade, but were also regularly provided with printed notes on foreign trade news, printed circulars of a technical, economic, statistical or general nature, a monthly bulletin, an important monthly technical review (*Revue de la Métallurgie*), a yearly report, and a bulky year-book giving information respecting the capital, capacity, output, etc., of each member. Through regional federations in the East, North, the Loire, and other areas the *Comité* operated in the provinces.

Its efficiency was testified at once on the outbreak of war, when several ministries (Public Works, War, Marine) entrusted the *Comité* with the centralisation and distribution of orders for steel supplies. It co-ordinated the efforts of individual manufacturers of munitions, e.g. of light shells, of heavy shells, of fire arms, of automatic rifles, of machine guns. Under its general guidance, metallurgical equipment (e.g. in Martin furnaces, converters, electric furnaces, crucible furnaces) was increased. It became the greatest buyer and distributor of certain foreign supplies (e.g. pig iron and high speed and special steels from Great Britain, magnesia and silica bricks). Its co-ordinating influence and its formation of consortiums or groups for producing purposes in the war, were strong contributory factors towards the present concentration and consolidation in the industry; and at the close of the war that influence was exercised and felt in the re-arrangements, working agreements, and fusion of French concerns in pre-war France itself, in the recovered provinces, in Luxemburg and in the Saar. It aided to solve in the years 1919-22 the grave and pressing problem for French metallurgy of coal and coke supplies, and in 1923 it successfully urged forward the home output of coke. It worked in 1919-1922 for the re-establishment of the *Comptoirs*, and was most active in bringing about the creation of the International Crude Steel Cartel in 1926. In 1930-33 it has vigorously promoted the revival of the activities of the *Comptoir Siderurgique* and the voluntary control by self-elected bodies styled *Comptoirs* of the main branches of home production. It enlarged its regular services of general and technical intelligence. It reformed and fortified towards the close of the war the Federation of Metallurgical, Mining and Allied Industries, already under the direction of the same chief, to which over 120 masters' associations were affiliated in 1930. This important organisation (housed in the same building and with general identity of management with the *Comité*), and whose directing committee is representative of mines, heavy metallurgy, lighter metallurgy, engineering, and miscellaneous, and which has four large sections (labour, fiscal, legal, intelligence), manages the industrial accidents insurance, pensions and old age funds of the affiliated trades and their family allowance system, deals with vocational training, maintains a foreign labour office, which, up to 1930 had introduced

about 400,000 foreign workers, undertakes and advises on housing extension and improvement, and performs in other ways general welfare work for the industry.

III. LABOUR

Large Numbers Employed by Metallurgical Concerns.—

The greatest single employer in the metallurgical industry is the de Wendel firm: like the Aciéries de Longwy, it has not undertaken to a considerable extent transforming or engineering business, as have the Schneider and Homécourt groups, which themselves or through affiliated concerns, manufacture field and siege artillery, naval guns, arms, plates, boilers, dredgers, gas engines, locomotives, mining, sugar and other machinery, machine tools, electrical material, optical and scientific instruments, and so forth. In 1927-30 the de Wendel firm was understood to employ directly about 38,000 persons, of whom 13 to 14,000 in its Petite Rosselle coal mine in Lorraine (output over 2 million tons: its Westphalian mine produced also over 1 million tons): in its many affiliated companies such as ore and coal mines, steel, tinplate, etc., undertakings, perhaps 20 to 25,000 more were employed, *e.g.* 4,500 at Senelle-Maubeuge and 14 to 15,000 in coal mines in which it holds interests such as the Thivencelle, Douchy, Clarence, Crespin. The Etablissements Schneider, which for generations has been almost the sole great employer of the town of Le Creusot (population 26,000 in 1926) in or near which it has three separate works, has eight other works (Chalon-sur-Saône, Havre, Bordeaux, Champagne-sur-Seine, etc.) and various affiliated works (Caen, Paris, etc.), and may be deemed to have employed directly in 1928-30 about 25,000, and perhaps 15,000 or more in its associated concerns situated in France. The Homécourt company, which has its centre South-West of Lyons in several separate towns near St. Etienne, has also two large works (Homécourt and Hautmont) in the East and North, employed directly in 1927-30 about 18,000 workers: it has also large interests in coal and ore mines and in steel works (Rombas, Redange, Dilling, etc.) each employing many thousands. The Longwy group appears to have employed directly about 10,000 persons in iron and steel production.

Labour Force : Preponderant Foreign Element.—At the end of 1929, the year of the maximum output, 264,000 persons were employed in the metallurgical industry, apart from the 40,600 in the ore mines: three years later the numbers had fallen to 197,300 and 22,000 and 71 per cent. were on short time. Two-thirds of the reduction occurred in 1931. In December, 1933, when 153,000 persons were employed in metallurgical establishments having at least 100 employed persons, 48.6 per cent. were

working full time and 33.1 between 40 and less than 48 hours a week : at the same date the corresponding percentages for the 493,400 in engineering establishments were 54 and 20.

In the East and North, the major portion of the workers are foreign. In 1930 in certain Eastern ore mines and works 75 per cent., in others 65 to 70 per cent. of the manual workers are foreigners, mainly Poles, Italians, Czechoslovaks, Luxemburgers, Belgians, even North Africans. Even in Norman or in Central or South-Eastern or South-Western works thirty to forty per cent. were foreigners (Italians, Spaniards, Algerians, etc.). The percentages have since declined as a result of the seriously reduced output and of the foreign labour employment regulations which definitely favour the engagement of native workers in times of unemployment, but it is probably correct to say that in 1933 over 50 per cent. of the manual workers in the French metallurgical industry as a whole were aliens.

Labour Organisation Little Developed.—Trade union organisation in the French metallurgical industry has shown little sign of real development. Several causes appear to explain this situation. The ore mines are nearly all placed in rural or semi-rural localities; and the bulk of the metallurgical works are either similarly placed or, when in communities of a more pronounced urban character, they frequently happen to be the sole metallurgical, and usually the vastly predominating, local employer (e.g. at Le Creusot, in the three or four small towns grouped either side of St. Etienne like St. Chamond, Firminy, at Denain, Joef, Homécourt, Hayange, Rombach, etc.). The high proportion of alien workers of diverse nationalities and of various tongues is alone a potent handicap to the practical work of organisation. As the French workers spring mainly from rural surroundings and may be small peasant proprietors, they are often at core agriculturally minded, ready to return to the land at any moment; and the bulk of the alien immigrants come likewise from rural homes in Poland, Italy and elsewhere: the antecedents and upbringing of a large proportion tend to render them somewhat indifferent or averse from vocational grouping of an industrial character. Collective bargaining and collective agreements such as prevail in Great Britain are non-existent, wages being separate agreements or contracts between employer and employed: immigrants introduced into France also come in under individual contracts. Nor do the mine-owners and steel masters appear to be favourable to their regular organisation on trade union lines. There exists, however, a central metal-workers' union, with headquarters in Paris. On the other hand, the masters make very abundant provision for the welfare of their workers and their families: family allowances are paid, a very large proportion of the married workers are given houses or flats at low rents, hostels with cheap board and lodging have been built for the unmarried:

schools of various types (ordinary and technical, apprenticeship, domestic economy, dressmaking, etc.), sports grounds, recreation halls, theatres, hospitals, convalescent homes, and so forth are maintained.

iv. FOREIGN TRADE

Remarkable Expansion in Export Trade up to 1931.—Compared with the metallurgical exports of the France of 1913, those of the years 1926-31 showed astonishing expansion. Pig-iron and castings exports in the years 1926-28 were respectively seven, eight, and six-fold those of 1913: in 1929-31, nearly six, five and four-fold. The highest figures were 836,000 tons in 1927 (99,700 tons in 1913): that in 1932 was only 198,000 tons, and in 1933 only 172,000 tons.

Iron and steel exports advanced in an equally remarkable fashion: from 649,000 tons in 1913 to 4,427,000 tons in 1927, or about sevenfold. In 1928-31 they likewise declined from the 1927 zenith figure, have been respectively 4,068, 3,360, 3,243, 3,045 tons. In 1932 they were still over three times (2,180,000 tons) those of 1913: in 1933, with exports of 2,445,000 tons, they were somewhat above the 1932 rate. In some of the boom years exports in certain classes attained frequently eight, ten, fifteen and even thirty times the 1913 figure: *e.g.*, ingots, blooms, billets, bars, plates and sheets, hoops and strips, wire-rod, etc.

In the five years 1928-32 the total weight of pig-iron, iron and steel exports diminished year by year from 4,703 to 3,923, 3,770, 3,468, 2,378 thousand tons. The exports in 1933, namely, 2,617,000 tons were about 239,000 tons higher than in 1932. These totals exclude iron and steel manufactures. The table on page 228 shows in detail the course and nature of the export trade. It is perceived that bars predominate as a single item, followed by blooms and billets, rails, machine wire, cast iron, structural iron and steel. The export of scrap, which has long been regulated, reaches the large annual figure of about 300,000 tons.

French imports are inconsiderable in relation to her exports. The largest item is often scrap, as may be seen from the table on page 229.

[TABLE]

FRENCH EXPORTS OF PIG-IRON, IRON, AND STEEL, 1928 TO 1933
(Metric tons).

	1928	1929	1930	1931	1932	1933
Pig-iron	634,604	562,554	527,065	423,062	197,631	172,418
Ferro-alloys	10,286	10,206	9,841	11,147	5,670	7,483
Iron and steel:						
Ingots	52,771	40,621	68,391	75,132	16,217	7,500
Blooms and billets	2,538,943	453,253	567,749	388,466	237,151	290,951
Bars	1,628,139	1,628,139	1,428,692	1,401,123	1,045,330	1,149,314
Fine tool steel	987	1,620	1,206	1,376	759	1,028
Special steels	1,280	2,421	1,382	1,328	460	596
Machine wire	248,367	208,129	163,672	149,767	118,745	136,476
Hoops and strips	122,247	95,405	101,281	113,795	98,682	116,306
Sheets: hot-rolled, uncut...	107,145	68,043	81,663	95,077	78,156	92,473
" " cut	121,881	89,370	78,161	64,497	48,344	47,482
" " cold-rolled	3,686	4,020	2,025	1,188	507	2,153
" " special qualities	31	261	73	838	562	639
Flat slabs	14,036	12,094	13,301	10,895	6,759	21,395
Tinplate	23,576	30,317	25,361	34,307	30,267	38,165
Iron and steel wire	67,423	48,704	44,551	58,706	51,443	61,469
Rails	382,249	325,633	330,326	279,474	144,457	152,005
Wheels and tyres	9,956	12,038	13,210	7,866	5,039	5,007
Axles	8,313	8,233	6,354	7,054	1,006	1,225
Scrap: cast iron	22,872	14,220	5,585	24,571	22,085	21,438
" " iron and steel	342,152	317,839	310,153	329,459	274,464	298,166
Cast iron manufactures	307,358	293,320	251,075	195,606	120,754	162,117
Iron and steel: structural	224,896	231,723	232,055	80,196	107,314	102,779
" " tubes	91,599	71,225	59,848	40,609	48,390	71,857
" " domestic holloware	19,915	25,407	21,991	17,510	13,360	13,792
" " manufactures, other	108,754	116,401	76,196	58,975	48,108	59,828
Total weights (tons)	5,465,327	4,671,196	4,421,297	3,872,024	2,721,680	3,034,962
Total values (million francs)	4,150	3,963	3,562	2,833	1,639	1,892

FRENCH IMPORTS OF PIG-IRON, IRON AND STEEL, 1928 TO 1933.

(Metric tons).

	1928	1929	1930	1931	1932	1933
Pig-iron	40,391	40,356	170,668	88,130	61,844	91,876
Ferro-alloys	18,691	15,929	6,043	2,562	1,547	1,352
Iron and steel:						
Ingots	52	202	6,353	1,652	1,938	2,480
Blooms and billets		767	28,221	15,297	19,261	18,856
Bars	14,782	45,645	62,006	72,607	70,813	37,060
Fine tool steel	1,001	1,310	1,379	801	616	647
Special steels	5,097	7,976	5,377	4,233	2,156	3,238
Machine wire	296	1,172	2,138	1,431	5,158	7,858
Hoops and strips	4,325	6,241	15,139	8,890	5,879	7,507
Sheets: hot-rolled, uncut... ..	2,522	12,764	35,763	34,368	17,814	14,780
" " cut	2,182	3,847	4,204	4,268	3,065	3,134
" cold-rolled	1,357	4,984	1,588	1,970	228	368
" special qualities	1,157	2,822	23,899	23,212	7,661	11,756
Flat slabs	468	717	1,509	509	164	118
Tin plate	15,166	27,393	24,819	9,834	4,284	4,116
Iron and steel wire	3,273	4,797	6,414	4,838	3,179	3,622
Rails	3,946	6,238	2,155	2,436	2,038	515
Wheels and tyres	734	1,012	3,860	2,825	567	1,203
Axles	59	120	697	304	96	113
Scrap: cast iron	2,668	8,573	10,004	4,617	2,686	3,390
" iron and steel	58,579	44,845	62,779	54,649	93,239	113,994
Cast iron manufactures	9,328	12,535	20,611	20,598	20,058	7,506
Iron and steel: structural	4,162	36,050	49,060	28,180	10,703	4,763
" " tubes	9,181	19,281	20,948	15,201	9,127	9,280
" " domestic holloware	2,468	3,312	4,205	4,124	3,002	2,845
" " manufactures, other	12,518	29,629	45,323	36,103	16,916	17,802
Total weights (tons)	214,403	338,427	615,162	443,639	364,093	370,179
Total values (million francs)	426	832	1,082	760	402	360

Very Large United Kingdom Purchases up to 1932.
 —The United Kingdom had become in after-war years one of the greatest markets for French iron and steel. In the three years 1911-13, the tonnage averaged 21,800 tons: in 1913 itself it was 41,590 tons: but in 1927 it reached 1,297,000 tons or 31 times the 1913 figure. In that year the United Kingdom purchased almost exactly one-fourth of the total exports of 5,263,000 tons of iron and steel. The following table, which shows the course of the total export trade during the period of seven years from 1927 to 1933, indicates the downward movement since the peak year: in 1932 the pig-iron exports had fallen to one-thirteenth of 1927 and to less than one-third of the average of 1928-31, and the iron and steel to about 35 per cent. of 1927 and two-thirds of the average of 1928-31. In 1933 the decline was very marked: practical cessation of exports to the United Kingdom of pig-iron, and a great reduction in the export of steel (in 1932 United Kingdom purchases represented about one-sixth of total iron and steel exports; in 1933, only one-tenth).

FRENCH EXPORTS OF PIG-IRON, IRON AND STEEL.

Year	Pig-Iron Thousand tons		Ferro-Alloys Tons		Iron and Steel Thousand tons	
	Total	Of which, to Great Britain	Total	Of which, to Great Britain	Total	Of which, to Great Britain
1927	836	271	7,271	882	4,427	1,026
1928	635	50.7	10,286	1,222	4,068	654
1929	563	37.2	10,206	222	3,360	445
1930	527	78.5	9,841	—	3,243	560
1931	423	73.7	11,147	343	3,045	659
1932	198	19.8	5,670	301	2,180	373
1933	172	2.0	7,483	—	2,445	250

The outstanding purchases of the United Kingdom are seen to have regularly been blooms, billets, bars, with considerable quantities of hoops and strips, wire-rod and machine wire, and of scrap. The part of blooms, billets and bars is preponderating. In 1927 they reached 897,000 tons out of 1,026,000: in the years 1928-32 they represented regularly about four-fifths of the total, and in 1933, two-thirds. Details of the course of both French imports from Great Britain and of French exports to Great Britain are given in the accompanying table.

	French Imports from Great Britain						French Exports to Great Britain					
	1928	1929	1930	1931	1932	1933	1928	1929	1930	1931	1932	1933
Pig-iron	20,304	21,704	45,382	23,143	7,802	10,584	50,684	37,194	78,489	73,728	19,815	2,019
Ferro-alloys	3,636	3,428	268	I	41	*	1,222	222	—	343	301	*
Iron and steel:												
Ingots	I	—	—	—	—	—	4,280	—	—	2,576	625	I
Blooms and billets	—	—	—	—	—	—	—	60,013	117,995	130,073	93,113	88,203
Bars	1,603	2,916	5,851	2,315	1,906	1,967	496,699	296,285	323,613	389,719	195,698	79,787
Fine tool steel	267	226	206	115	60	*	26	37	88	102	35	*
Special steels	1,258	3,063	538	225	155	*	—	42	—	258	118	*
Machine wire	47	378	1,144	744	467	*	35,300	23,499	20,622	16,743	8,417	11,055
Hoops and strips	1,312	1,393	945	923	508	*	45,476	29,968	35,603	53,280	45,611	29,350
Sheets: hot-rolled, uncut	813	3,350	2,462	888	421	1,255	5,359	1,188	2,117	11,146	6,021	2,164
Sheets: hot-rolled, cut	522	234	372	850	75	*	20,229	5,595	1,532	1,627	1,554	285
Sheets: cold-rolled	174	—	—	—	—	—	—	—	—	—	—	—
Sheets: special qualities	155	278	1,660	1,839	519	440	—	—	—	I	—	—
Flat slabs	—	—	—	12	—	—	1,092	1,071	510	1,779	—	—
Tinplate	13,633	26,289	21,005	9,088	3,656	2,920	—	—	—	—	—	—
Iron and steel wire	870	933	1,172	540	465	633	3,328	619	845	1,333	236	*
Rails	167	I	I	118	—	—	12,001	3,598	26,253	16,493	1,388	—
Wheels and tyres	—	—	—	—	—	—	—	59	—	466	—	—
Axles	—	I	19	3	18	*	9	16	—	117	—	—
Scrap: cast iron	181	2,382	631	—	—	—	1,499	—	—	—	—	—
Scrap: iron and steel	116	226	2,862	8,374	2,847	*	28,983	20,859	29,934	33,648	19,933	29,271
Total iron and steel, crude or semi-manufactured	21,150	41,434	39,172	26,313	11,228	15,381	654,411	443,031	559,743	659,490	372,897	249,510
Cast iron manufactures	613	362	737	491	209	*	13,344	16,913	14,274	5,781	545	*
Iron and steel, structural	62	195	311	99	43	53	1,216	—	—	—	—	—
Iron and steel tubes	596	885	1,341	970	759	536	1,473	643	2,129	1,724	1,578	742
Iron and steel domestic holloware	53	52	102	102	61	*	479	428	380	193	67	102
Iron and steel, manufactures, other	2,128	2,386	2,456	2,094	1,452	22	4,269	2,901	2,174	2,342	207	16
Total values (pig-iron, ferro-alloys, iron and steel: excluding manufactures) (million francs)	78.7	132	118.4	57.4	18.2	21.4	431	301	348	336	131	79.4

*Not yet published.

French Imports from the United Kingdom.—French purchases in the United Kingdom are comparatively small. In 1927, when the United Kingdom purchases of pig-iron and iron and steel were 271,000 and 1,026,000 tons respectively, the corresponding French purchases were 16,000 and 19,000 tons. The following table shows the movement of United Kingdom exports to France in 1927-33.

FRENCH IMPORTS OF FIG-IRON, IRON AND STEEL.

Year	Pig-Iron Thousand tons		Ferro-Alloys Tons		Iron and Steel Thousand tons	
	Total	Of which from Great Britain	Total	Of which, from Great Britain	Total	Of which, from Great Britain
1927	38.7	15.8	28,367	8,339	78	19.3
1928	40.4	20.3	18,691	3,636	118	21.2
1929	40.4	21.7	15,929	3,428	181	41.4
1930	170.7	45.4	6,043	268	298	39.2
1931	88.1	23.1	2,562	1	249	26.3
1932	61.8	7.8	1,547	4	241	11.2
1933	91.9	10.6	1,352	*	235	15.4

*Not yet published.

The French industry is protected by substantial import duties on iron and steel products. The duty per ton on ordinary pig-iron is 51 francs, on hematite 80 francs, on iron or steel sheets according to class and thickness from 172 to 940 francs. Special alloy steels carry a duty of 750 francs if containing 0.2 to 2 per cent. of molybdenum, or 0.1 to 0.5 per cent. of vanadium or titanium, 0.5 to 6 per cent. tungsten, and of 15 per cent. *ad valorem* if containing more than 6 per cent. manganese. Ordinary rails pay 150 francs or if with over 9 per cent. manganese, 250 francs. In addition to these duties, most iron and steel imports were subject to the 15 per cent. surtax from November, 1931, till December, 1933, and to the 4 per cent. or 6 per cent. *taxe à l'importation* (calculated on c.i.f. value plus the customs duty). On the 1st January, 1934, various import quotas (plates, hoops, etc.) were enforced.

II.—ALUMINIUM AND MAGNESIUM INDUSTRIES

Position of the French Industry.—Second to the United States in 1913 as a producer of aluminium, one estimate assigning her about 13,500 against 29,000 tons out of a total of 78,000 tons, France now ranks after the United States and Canada, and in some years since the war has been surpassed by Germany and Norway. Her maximum output of about 29,000 tons appears to have occurred in 1929, the year with highest total figures, namely 264,000 tons, of which the United States, Canada, Germany and Norway produced 85,000, 35,000, 82,700 and 24,400 tons

respectively. In 1931-33, when world figures were 230,400, 149,000 and 134,000 tons respectively, France showed 24,400, 14,300 and 14,100: United States 80,500, 46,800 and 38,000: Canada, 31,000, 17,500 and 15,900: Germany, 26,700, 18,700 and 13,500: Switzerland, 16,000, 8,000 and 12,200: Italy, 11,500, 13,200 and 11,800: and Great Britain 15,000, 10,000 and 11,400 tons. In 1931-33, French output was $10\frac{1}{2}$, $9\frac{1}{2}$ and $10\frac{1}{2}$ per cent. of the total, compared with about 16 per cent. in 1913. In this comparatively new industry, which produced only 7,000 or 8,000 tons in 1900, and which has been especially developed concurrently with the growth of the motoring, aviation and electrical industries, Germany and Norway have made the greatest advance in Europe, their output in 1929 having been thirty and thirteen fold greater than in 1913. France, who enjoys special advantages as a producer by reason of her immense home resources both in bauxite and in hydraulic energy, had increased her output by the same year only $2\frac{1}{2}$ times.

Concentration.—The whole of French aluminium output, with the exception of a very small quantity made by a large motor-vehicle firm in its Savoy works at St. Michel-de-Maurienne (Arc Valley) for its own use, is produced by two large electro-chemical and electro-metallurgical companies, between which exists close association: the *Compagnie de produits chimiques et électro-métallurgiques Alais, Froges et Camargue* (usually known as *Péchiney* after a former director) and the *Société d'Electro-Chimie, d'Electro-Métallurgie et des Acieries Electriques d'Ugine*. Sales are transacted through *L'Aluminium Français*, which was originally founded in 1911 as central sales organisation: in this *Péchiney* is understood to hold a 92 per cent. interest and *Ugine* 8 per cent., proportions deemed to correspond to their respective output. It deals with both internal and external sales; and it has holdings in the *Société Norvégienne des Nitrures* and in *Sociedad d'Aluminio Español*. *Péchiney*, whose capital was increased in May, 1929, from 208 to 262½ millions, has 16 works all situated in the Alps or the Pyrenees and 24 hydro-electric power stations, which in 1930 had an installed capacity of 300,000 C.V. and produced over one milliard kilowatt-hours. Six of these works are occupied with the production of chemicals (see chapter relating to that industry), and 10 produce aluminium, light alloys and chlorates. As the company has its own lignite, bauxite, pyrites, and fluor-spar deposits, it is independent of outside suppliers for any raw material except for copper (for copper sulphate manufacture). An eleventh electro-metallurgical works at Chambon, which, however, was not engaged in aluminium production but in that of special steels, was closed in July, 1930, as redundant.

Ugine, whose capital of 88 millions was increased in 1930 and 1931 to 122.4 millions (in addition to an issue of 120 millions of 5½ per cent. debentures in 1930), has 16 works, of which only four are concerned with aluminium production, and 27 hydro-electric

power stations, whose 127 turbines have a generating capacity of 250,000 C.V. and produced 700 million kilowatt-hours in 1930. Most of these works are situated in Savoy. The company has also followed a continuous policy of expansion : and among its recent absorptions was the acquisition in 1931 of the *Société Française des Electrodes*, at Venissieux, near Lyons. Aluminium production constitutes a relatively minor branch of the company's activities, which are mainly concerned with electric power development and chemical manufacture. In its works are made about 50 primary and a host of secondary products.

Productive Capacity and Development.—France possesses a productive capacity far in excess of the national consumption. As the total demand has tended to diminish in recent years through the general slackened demand, as well as through reduced demand from the motor vehicle and aircraft industries as a result of the competition of the lighter metal magnesium, and from the electrical industries through the fall in copper prices, the producing companies have had little inducement to make additions to their manufacturing equipment. They are, however, paying considerable attention to the utilisation for power purposes of new water-falls and the adjustment of their resources of electric power, in order to make good the failure of certain water power stations to provide their full capacity except during a brief portion of the year. The most modern of the power stations in the Pêcheiney group is that at Sabart in the Pyreæes (Ariège), belonging to the subsidiary company, the *Société des Forces Motrices du Vicdessos*, which was put into operation in July, 1929. This station serves as a link for connecting the various Pêcheiney works in the Pyreæes with the high tension systems of the hydraulic stations of the Midi or Southern Railway and of the *Union des Producteurs d'Electricité des Pyrénées-Occidentales*. The works in the French Alps at St. Jean-de-Maurienne are similarly to be linked with the high tension system of the *Union pour l'Industrie et l'Electricité*, and arrangements were made with the *Energie Electrique du Littoral Méditerranéen* to supply power for operating the Le Poët and St. Auban works. In September, 1931, another of the Pêcheiney subsidiaries, the *Société Hydro-Electrique de Bissorte*, started the harnessing of the fall of that name—a task expected to occupy three or four years : this undertaking includes the construction of a large storage dam for the turbines to draw upon when the flow in the river falls below normal requirements. The Rioupéroux power station in the Isère, held on lease, was definitely acquired by the Pêcheiney in 1929. The subsidiary company, *Duralumin*, in 1930 acquired the works of Arbel, at Rive de Gier, in the Loire.

International Connections.—The aluminium industry has been highly internationalised for many years. It has been seen that the *Aluminium Français* has holdings in Norwegian and

Spanish concerns and that French interests possess large holdings in Italian bauxite deposits. Swiss and United Kingdom interests have likewise participations in the French bauxite mines. German firms are believed to have interests in Hungarian deposits and in Italian manufactures. In 1926, European producers, representing over 90 per cent. of the total European output, but apparently excluding American-Norwegian interests, made an agreement, whereby national markets were reserved to national producers, prices were regulated, exchange of technical knowledge was arranged, and propaganda for the extension of the uses of aluminium was set on foot. In 1931 was formed at Basle the *Alliance Aluminium Company* with a capital of 35 million Swiss francs, which comprised United Kingdom, French, German, Swiss, and Canadian makers, as well as Norwegian interests outside the United States group. Its purpose was announced to be large-scale propaganda, general financing, and the continuation of the international regulation of prices.

In 1930, the principal French aluminium company made a contract with the Soviet authorities which provided for technical collaboration in the construction of aluminium works in the U.S.S.R., as well as for the exchange of patents and processes of manufacture. It was reported in July, 1933, that the first works of Kitchkas on the Dnieper was being operated, and that the whole group of works with an annual capacity of 200,000 tons of aluminium would be ready by the end of the year, but that the actual initial output would be confined to 40,000 tons a year.

Foreign Trade.—Foreign trade has been subject to considerable fluctuation. It will be observed in the attached table that exports of ingots and waste in 1927 were, with 6,750 tons, of which three-quarters went to Germany, eight-fold those of 1926, and that, after an average of 2,800 tons for 1928-30, they fell to less than one-tenth in 1931. The large imports of finished wares in 1929, which were mainly due to the German exports (2,330 tons) of aluminium cables and wire as deliveries in kind, were thirteen times greater than the average for the years 1924-28.

[TABLE]

FRENCH FOREIGN TRADE IN ALUMINIUM AND ALUMINIUM WARES.
(Metric tons, net weight).

Year	Ingots and waste		Rolled, drawn, wire, etc.		Finished products*	
	Imports	Exports	Imports	Exports	Imports	Exports
1913	1	2,938	93	1,577	237	255
1924	1,048	244	260	682	144	522
1925	115	2,138	142	1,159	182	486
1926	1,250	868	70	567	215	717
1927	390	6,747	48	1,490	185	564
1928	153	3,080	107	2,516	265	851
1929	246	2,190	414	2,046	2,713	721
1930	335	3,066	301	2,064	1,093	1,356
1931	177	249	578	2,284	737	525
1932	283	838	600	470	816	400
1933	214	1,722	1,020	874	738	519

* Not including jewellery

Magnesium Production.—Within the last few years magnesium has come much to the fore, particularly for aeroplane parts, on account of its extreme lightness, its tensile resistance (over 14 kilogrammes) and its small coefficient of longitudinal expansion (about 5 per cent.). It is also being employed in increasing quantities by motor-vehicle manufacturers, and in many connections where reduction of weight is an important consideration. At the suggestion of the French Air Ministry, producers of light metals investigated the possibilities of manufacturing magnesium on a large scale; and as a result the Pechiney and Ugine companies have entered jointly upon the production of metallic magnesium by electrolysis of magnesium chloride obtained from Pechiney's salt-beds in the Camargue on the Mediterranean coast. In 1930 they formed a company, the *Société Générale du Magnésium*, which in its domain is expected to become a counterpart to *L'Aluminium Français*. Plans were forthwith prepared, for the setting up of installations capable of an immediate production of 1,000 tons of magnesium yearly, with provision for a large increase of output when the demand should warrant it.

III.—TIN-PLATE INDUSTRY

1. PRODUCTION

Increased Production and Self-Sufficiency.—Like the other French metal-working branches, the tin-plate industry has largely augmented its pre-war output. From 37,700 tons the yearly production rose to 67,600 tons in 1925: and after a setback

in 1926 and 1927, again advanced to 79,600, 85,500 and 89,600 tons in 1928-30. In 1931 and 1932, the output declined to 82,800 and 71,850 tons respectively, but a marked increase occurred in 1933, production attaining 113,000 tons. Doubtless an appreciable further reduction has ensued in 1932 and 1933. Compared with the United States and the United Kingdom, which respectively make about sixteen and eight-fold more, France is still a small producer. A leading French manufacturer informed the writer in August, 1933, that the output capacity of France, including the Saar (which since 1925 has been within the French Customs area), was from 180 to 200,000 tons. The country has become more self-sufficient since the war, thanks to the higher output within the former frontiers and to the contribution both of Lorraine and of the Saar.

Concentration of Industry.—A high degree of concentration exists in the industry, tin-plate being produced by only half a dozen concerns, which are possessed or controlled mainly by the two great groups of *de Wendel* and of *Marine et Homécourt*. About 60 per cent. of the output (over 50,000 out of 82,800 tons in 1931) is the product of *Les Etablissements J. J. Carnaud et Forges de Basse Indre*, which has 21 works and 8 branches or depots in France, Algeria, Tunisia and Morocco: in this company, the second producer, the *de Wendel* group of Lorraine possesses large interests. The *Marine et Homécourt* group controls *Les Etablissements Métallurgiques de la Gironde*, with works at Bordeaux, probably the third largest producer in France with a capacity of about 20,000 tons a year: the same groups has large interests in the *Redange Dilling* works in the Saar (output 12,000 tons), 60 per cent. of whose capital is held by French interests. On the French border the ARBED concern in Luxemburg, in which the Schneider interests secured control after the war, took up the manufacture of tinplate six or seven years ago. Other producers in France are: the *Châtillon Commentry et Neuves Maisons* steel company with works at Montluçon; the *Lion Noir* boot polish company at Hennebont (2,400 workers in 1931): the Gueugnon company at Gueugnon, and two or three others in Paris suburbs.

The leading producer, Carnaud et Basse Indre, owns lime quarries, refractory ore deposits, iron-mines (the output of which, for the time being, is not reduced in the company's own steel-works, but is exported to the United Kingdom and to Germany). The company makes its own steel at Basse-Indre, with pig-iron as point of departure. Interests are held in a packing-case factory, a large consumer of tin-plate, an electro-metallurgical company which takes the waste tin-plate cuttings from which to manufacture tin salts (employed in the artificial silk industry), tin and wolfram mines in the Far East, and in a shipping company. The finished products of the company's own mills include all kinds of metallic boxes, tins and other forms of packing for shoe-polish,

biscuits, soap, petrol, toilet preparations, and so on. The factory sites themselves are chosen with special reference to the markets for their output: e.g., four works in important fish-canning centres in Brittany, others in Paris, Billancourt, Bordeaux, Lyons, Marseilles, Périgueux (the great centre for pâté de foie gras and truffles), and depots at Brive, Villeneuve-sur-Lot. A new mill was opened at Algiers in 1927 and another at Casablanca in 1930, and in the middle of 1931 the company leased an existing factory at Lorient where tinning and printing on metal are performed. The *Société Générale des Cirages Français*, which owns the Hennebont works, has in recent years greatly extended the tin-plate side of its activities. In its four mills at Saint-Ouen (a suburb of Paris), Lyons, Brussels and Santander it manufactures a wide range of boxes or tins for polishes and for foodstuffs, as well as petrol cans, pails, funnels, and so on. At Lochrist and at Nantes are separate workshops for printing on the metal. The company also formerly owned works at Odessa and at Moscow, which were seized by the Soviets at the time of the Russian revolution and continue to be operated by them.

II. INTERNAL AND INTERNATIONAL ORGANISATION

In February, 1932, tin-plate producers agreed to establish a control office (*comptoir*) for the regulation of production and the fixation of prices: the member firms retaining their own selling organisations. This *comptoir* corresponds in principle to the other metallurgical *comptoirs*, nine or ten in number, which have been established under the ægis of the *Comptoir Siderurgique* in Paris for the better regulation of production in main branches. The chairmen of the *comptoirs* and members of the central committee, itself presided over by the head of one of the great metallurgical groups. In the same year was founded the *Contrôle des Transformateurs de Fers-Blancs ou Noirs*, the capital of which (84,500 francs) was subscribed by about ten concerns engaged in tin-plate manufacture, including the *J. J. Carnaud* and *Cirages Français* companies, and having as president the head of the *Forges de Gueugnon*. It has as its general purpose the better organisation of the industry making tins and metal packing, and aims in particular at opposing a united front to imports from the United Kingdom. A year later, producers entrusted to the *Office Technique pour l'utilisation de l'acier* the task of conducting a propaganda campaign with a view to developing the use of tin cans and boxes. At the same time efforts were directed towards a greater standardisation of shapes and sizes, in order to reap the benefits of a wider application of mass production.

Efforts have been made also to establish an international cartel, to which the world's four leading suppliers, the United States, the United Kingdom, Germany and France, would be parties. Discussions took place in the first half of 1931, when French and German producers showed themselves more or less in agreement

on the one hand, and British and American producers on the other hand. It was suggested that the United States should cease to sell in the European market, that France and her colonies should be regarded as an exclusive territory for French producers, that the United Kingdom should be accorded a quota for exportation to Germany, and that Germany should be accorded a quota for exportation to European markets in general. The negotiations apparently broke down over a question of the volume of German exports. Had the cartel been formed, it was stated in the trade press at the time, French producers would have been entitled to increase their output to 120,000 tons, as compared with their actual output of 87,000 tons in 1930.

III. IMPORTS AND EXPORTS

The years 1928-30 saw an interruption of the general decline in imports which had manifested itself in the preceding years. In 1925-27 imports had averaged 16,060 tons, or 23 per cent. less than in 1909-13, when their average was 20,756 tons; but in 1929-30 they advanced to 27,379 and 24,819 tons, giving an average of 22,455 tons for the three years 1928-30, or 8 per cent. more than in pre-war days. Very large declines occurred in 1931-33, when the figures fell to only 9,834, 4,284 and 4,116 tons. Up to 1929, as well as in 1931, the United Kingdom supplied from 90 to 96 per cent. of the total imports; in 1930 her share fell to 84.7 per cent. owing to exceptionally heavy imports from Germany (3,455 tons, as compared with 390 and 1,237 in the two previous years and 444 and 344 tons in the two subsequent years); and in 1933 it was only 71 per cent. (2,920 out of 4,116 tons). The high figure for imports from Germany in 1930 was due to large consignments received on reparations account.

Exports, which had attained by 1924 three times their pre-war level of 1,767 tons (average of 1909-13), advanced to 14,952 tons in 1925, when the Saar production became merged in French figures, and doubled themselves in the next two years, to attain 28,931 tons, or about 2½ times as much as imports. In the next four years, 1928-31, they were 23,576, 30,317, 25,361 and 34,307 tons respectively, and in 1932 there was a decline (relatively small, when compared with that of the generality of products) to 30,266 tons. Germany, by far the largest individual customer, took 33 per cent. of all tin-plate exports in 1929 and from 40 to 45 per cent in 1930-32. The proportion taken by the French colonies and protectorates appears to be decreasing; from 47 per cent. of total exports in 1929, it has fallen successively to 38, 21 and 23 per cent. in 1930-32. By reason of the inclusion of the Saar within the French Customs boundaries as from the 1st January, 1925, affecting both import and export returns, the figures

for the years from 1925 onwards fail to provide any reliable basis of comparison for purely French tin-plate goods with those of earlier years.

In 1933, French exports (38,166 tons) showed considerable development as compared with 1932, being greater by 7,899 tons, or 26 per cent. The increase attained similar proportions as regards the exports to foreign countries and those to French colonies. Germany took 13,409 tons, or 35 per cent., and the French colonies 12,398 tons, or 32 per cent. Belgium-Luxemburg took 4,715 and Switzerland 3,059 tons, or respectively 3,040 and 818 tons more than in 1932, while exports to countries other than these three, Germany and the Soviet Union (exports to the last-named were nil) advanced by 2,024 tons. Imports during the same period (3,308 tons) showed a decrease of 168 tons, or 4 per cent.; but, whereas imports from the United Kingdom (2,920 tons) declined by 736 tons, or 21 per cent., those from other countries (628 tons) advanced by 564 tons, or 90 per cent.

Trade with Great Britain.—The United Kingdom has hitherto enjoyed a virtual monopoly as a supplier of tin-plate to France. That position, however, shows some signs of being assailed by continental producers, the Germans being the principal competitors, followed at some distance by the Belgians. The United Kingdom percentages of total imports from 1927 onwards were 91.9, 89.9, 96.0, 84.7, 92.4, 85.4, and 70.9, so that only in one year (1929) has the pre-war proportion of 95.7 per cent. been attained. In point of tonnage there has been (except for the two bumper years 1929 and 1930 when figures of 26,289 and 21,004 tons were recorded) a very substantial shrinkage from the 19,690 tons of 1926; the returns for 1928 and 1931-33 showing declines of 30.8, 53.8, 81.4 and 85.1 per cent. as compared with that year (13,633, 9,088, 3,656 and 2,920 tons, respectively). Tin-plates do not at present come within the scope of the quota restrictions, but it is evident from the very large decrease in the imports from the United Kingdom in 1932, far exceeding the reduction shown by the figures for other countries, that the exchange compensation surtax has acted seriously to the detriment of United Kingdom exporters of these goods.

IV. CONSUMPTION

Pre-war consumption attained its maximum (70,335 tons) in 1912, receding to 54,844 tons in 1913; in 1924 it attained 102,019 tons, or 2½ times the level of 1900 (43,274 tons). As far as may be judged by striking a balance between production, imports and exports, consumption in 1928-30 appears to have been approximately 71,600, 83,000 and 89,500 tons; but these figures entirely omit the unknown quantity of the imports from the Saar (they

amounted to 11,335 and 12,717 tons in 1923 and 1924, prior to the incorporation of this region in the French Customs area). Consumption has undoubtedly been considerably prejudiced in recent years by the more general use of aluminium for kitchen and other domestic utensils, formerly made largely of tin-plate, by the development in the use of glass and earthenware as containers for preserved foods, and by the fall in the demand for petrol cans since the springing into existence of the nation-wide network of roadside petrol pumps. In November, 1932, demand had so far declined that important producers were working from 35 to 40 hours a week, and output was about 70 to 80 per cent. of normal. Plant extension or the construction of new buildings was being restricted to the work already in course of execution.

V. CUSTOMS DUTIES

In January, 1928, the French customs duties on tin-plate were Fcs. 66.30 per 100 kilogrammes (net weight) for sheets of 0.6 millimetre thickness or less and Fcs. 61.20 for those of more than 0.6 mm., these rates being 5.1 times the pre-war duties of Fcs. 13 and 12 respectively. In August, 1928, the duties were ostensibly reduced to Fcs. 52 and Fcs. 50 respectively or by 18-22 per cent., but as the new rates of duty are levied upon the gross weight, *i.e.* including packing, instead of upon the net as formerly, it would not appear that there was any real lowering of the incidence of the duty. At the prices now prevailing (in the Paris region, Fcs. 232 per 100 kilogrammes for sheets of 0.3 mm.), the protection apparently corresponds to rather more than 20 per cent. of the internal prices. In practice the extent of the protection is much greater, however, for in the case of imports from the United Kingdom (which, as shown elsewhere, form about nine-tenths of the total imports from all countries), the cumulative effect of the exchange compensation surtax of 15 per cent.* and the 4 per cent. importation tax was such as to result in total charges of practically 65 per cent. on prices quoted *f.o.b.* South Wales.

IV.—ENGINEERING AND ELECTRICAL INDUSTRIES

I. GENERAL POSITION

The absence of precise dividing lines makes difficult the establishment of precise statistics respecting the magnitude of the French engineering industry and the number of workers employed therein, but the 1926 census returns recorded a total of 1,183,500 persons occupied in all branches of the metal-transforming industries as distinct from metallurgy (which occupied 154,490, of whom 132,069 were in establishments of over 500 wor-

* Withdrawn on 1st January, 1934.

kers compared with respective figures of 73,660 and 58,821 in 1906), and assigned 678,500, or 57.3 per cent., to establishments occupying over 100 persons. Nearly 487,500 were shown as being engaged in engineering proper ("la mécanique"), in which were at that time six firms each employing more than 5,000 workers, fifteen with from 2,001 to 5,000, and 44 with from 1,001 to 2,000 workers. The development of the industry in the ensuing four years may be gauged by comparing with the above figures a statement by the president of the French association of engineering enterprises in March, 1930, according to which the iron-transforming industries alone, excluding motor-car manufacture, then provided occupation for 800,000 workers, and realised a yearly turnover of about 30 milliards of francs. On the basis of the 1929 trade returns, 13 per cent. of the total output was absorbed by export trade.

Reduced Activity since 1930.—The Ministry for Labour in its monthly return respecting employment in establishments occupying over 100 persons, which was instituted as from 1st January, 1930, gave the number of persons working at that date in metal-transforming establishments within the scope of its enquiry, at 714,500, practically all of whom (99.6 per cent.) were working a full week of 48 hours or more. At December, 1933, the number of effectives was reduced to 494,830, or 30.8 per cent. fewer than at 1st January, 1930, and 43.7 per cent. of them were working less than 48 hours a week. One of the leading firms engaged in several engineering branches has recorded in its last four annual reports successive declines in its labour force from 9,000 to 8,300, 7,500 and 6,750. An enquiry conducted by the National Economic Council shows that the number of workers in the engineering industry at the end of 1931 was less by one-third than at December, 1913, and that, allowing for the reduction in the length of the working day from 10 to eight hours, the number of effective hours of work was only 52 per cent. of pre-war. The decline in actual output would be rather less than this, owing to great improvements in machinery and production methods. In the course of 1932 alone the decline in the number of workers in the various branches of the engineering industries was from 10 to 13 per cent. The effective decline in industrial activity, calculated by multiplying the number of workers in each time-group by the number of hours worked, would appear to have been from 33 to 38 per cent. in the course of 1932. An even greater reduction in some branches of the industry is disclosed by an authoritative statement in March, 1933, to the effect that the tonnage of many products delivered, in 1932, was only half that of the preceding year, and the value of the turnover less than 30 per cent. One-fifth of the 310,000 workers now in receipt of unemployment relief are stated to be engineering workers, mainly in the Paris area, the chief engineering centre of France.

ii. FOREIGN TRADE

French foreign trade in engineering products during the period 1928 to 1932 followed the reverse course to that of the years preceding 1927. Exports reached a culminating point in 1927, when the total weight (1,311,223 tons) was 4.2 times that of the last pre-war year; and in the five succeeding years ensued, except for a slight recovery in 1929, a continuous decline. Although the 583,000 tons exported in 1932 were still 86 per cent. greater than the 1913 figures, they represented a decline of 60.3 per cent. as compared with those of 1927 and of 33.3 per cent. in comparison with 1931. Concurrently with this decline *imports*, which in 1927 had fallen to their lowest point, began to expand rapidly; and whereas in 1927 they had been 45 per cent. below the 1913 level (242,500 tons against 439,600), in 1930 they were nearly three times as great as in 1927 and 62 per cent. more than in 1913. The increasing of customs duties and the imposition of import quotas, however, made their influence felt in 1931 and 1932, and from 712,300 tons the weight of imports declined to 543,600 and 277,300 tons.

The value of *exports* in 1928 was more than twice that of imports, but in 1930, 1931 and 1932 the values were substantially equal, with actually a slightly deficit balance in 1931. The decline in exports has affected all classes of engineering products to about the same extent, except in the case of boilers (the least important branch as regards value, forming only 2 per cent. of the total), where there was an increase in weight over 1927 in all five years 1928 to 1932, and a decline of less than 16 per cent. between 1928 and 1932. Tools and metal goods, which are responsible for nearly one-third of the total value, suffered a decline of more than 53 per cent., from 796,100 tons in 1928 to 371,700 tons in 1932; motor-cars fell from 86,100 to 35,400 tons, a reduction of 59 per cent.; and steam and other engines from 125,300 to 64,600 tons, or 49 per cent. Both in the case of ships and in that of vehicles other than motor-cars, the weight of exports declined in 1932 almost to the level of the 1913 figures (ships, 47,600 tons against 46,600; and vehicles 9,230 tons against 9,075).

In 1933 there was a marked improvement in exports of engineering products, their weight advancing to 713,130 tons, or 22.3 per cent. more than in 1932, though the values dropped slightly, from 2,552 to 2,493 millions. Exports of ships (98,955 tons) showed an increase of 110 per cent., while tools and metal goods (437,303 tons), motor vehicles (50,448 tons) and boilers (20,716 tons) were respectively 17.7, 42.5 and 53.5 per cent. higher than in 1932. Relatively small declines occurred in the case of steam and other engines, machinery spare parts, and vehicles other than motor-cars.

Steam and other engines regularly account for 50 per cent. of the total value of *imports*, and though between 1928 and 1932 they

declined from 99,000 to 81,800 tons, they have for the last four years exceeded exports of steam and other engines by 20 to 65 per cent. in weight and 100 to 150 per cent. in value. Imports of tools and metal goods in 1930 were $4\frac{1}{2}$ times as great as in 1928, and in 1932 still exceeded the 1928 figures by over 100 per cent. Machinery spare parts, also, though 56 per cent. less than in 1930, were 3,200 tons more than in 1928. As compared with 1913, motor-car imports in 1932 show an increase of nearly 400 per cent., tools and metal wares a decline of about 12 per cent., ships a decline of 27 per cent., while engines, boilers and machinery spare parts (which were not separately distinguished in the 1913 returns) together show a drop of just under 50 per cent. Imports were reduced still further in 1933, their weight (210,820 tons) being lower by 66,526 tons, and their value (1,805 millions) less by 352 million francs, than in 1932. There were slight increases in the case of machinery spare parts and of boilers. The following tables will enable ready comparison to be made between exports and imports in the six years 1928 to 1933 :—

FRENCH EXPORTS OF ENGINEERING PRODUCTS, 1928 TO 1933.

(Metric tons).

Group	1928	1929	1930	1931	1932	1933
Tools and metal goods	796,119	784,638	702,426	541,682	371,655	437,303
Steam and other engines	125,319	140,933	125,251	103,510	64,640	59,622
Motor vehicles	86,098	92,271	63,579	48,038	35,404	50,448
Machinery spare parts	89,092	95,786	87,201	61,641	39,794	37,769
Ships	104,653	169,362	56,255	82,517	47,599	98,955
Aeroplanes and parts	1,715	2,630	2,161	1,856	816	809
Other vehicles	32,019	29,312	29,664	21,300	9,230	7,508
Boilers	16,427	21,570	20,502	14,148	13,811	20,716
Totals	1,251,442	1,336,502	1,087,039	874,693	582,949	713,130
Total values (million francs)	5,830	6,328	5,522	3,978	2,552	2,493

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FRENCH IMPORTS OF ENGINEERING PRODUCTS, 1928 TO 1933.
(Metric tons).

Group	1928	1929	1930	1931	1932	1933
Tools and metal goods	34,500	114,283	152,913	117,803	70,085	53,155
Steam and other engines	98,986	162,529	215,060	157,796	81,801	68,912
Motor vehicles	17,591	28,540	27,542	15,556	10,166	8,500
Machinery spare parts	23,690	39,320	61,222	58,473	26,865	28,617
Ships	119,481	144,272	212,340	165,830	80,061	43,399
Aeroplanes and parts	—	18.1	12.5	7.7	5.7	5.6
Other vehicles	13,563	6,072	27,788	13,955	2,559	1,522
Boilers	5,900	9,620	15,469	14,208	5,803	6,679
Totals	323,711	504,654	712,346	543,629	277,346	210,820
Total values (million francs)	2,693	4,156	5,286	4,062	2,157	1,805

III. FOREIGN COMPETITION AND INTERNATIONAL AGREEMENTS

Total *imports* of engineering products in 1932 were therefore almost exactly 50 per cent. lower than in 1931, both in weight and in value, and *exports*, though twice the weight of imports, show scarcely any favourable balance as regards value. The value of imports in 1932 of engines, boilers, machinery spare parts, tools and metal goods amounted to 1,862 millions, exceeding by one milliard the value of all exports of similar commodities exclusive of those to French colonies. They included machine tools to a value of 107 millions, sewing machines 80 millions, paper-works machinery 46 millions, textile equipment 45 millions, Diesel engines 42 millions, tractors 37 millions, agricultural machinery 32 millions, to mention but a few prominent articles. The predominance of German products may be seen from the fact that imports from Germany accounted for no less than 50 per cent. of the total value just recorded, Belgium-Luxemburg furnishing 10 per cent., the United Kingdom and the United States 7 per cent. each, and Switzerland 5 per cent. Exports to Germany, on the other hand (barely 90 millions, or 52 per cent. less than in 1931) constitute only 5.2 per cent. of the value of total exports of these commodities (or 10.4 per cent. of exports to foreign countries only). In order to redress the balance and so to palliate the effects of the intense competition with which they were faced, the French Government in the autumn of 1931 initiated a policy of restriction of imports and promoted as far as possible agreements between the French and German national engineering associations concerned for the reduction by arranged percentages (30 to 40 per cent.) of the imports in 1931 (or other basic year). Similar negotiations took place with British, Belgian and American associations. About twenty agreements of this nature were concluded up to the end of 1932. Six of these have already been ratified by the respective parliaments, and ratification of the remaining fifteen was delayed by political developments in Germany. The first group includes cold-rolled products, printing machinery, machine tools, plumbing fittings, small tools and measuring instruments; while those agreements which have yet to be confirmed include iron and steel wire, centrifugal pumps, Diesel and semi-Diesel engines, steam-rollers, locomotives, tractors, pumps, hydraulic engines other than turbines, agricultural machinery, sewing machines, plant for food and confectionery industries, weighing machines, bottling machinery, iron and steel cables.

In 1933 imports again fell by 24 per cent., but exports grew by 22.3 per cent.

IV. SHIPBUILDING

General Output.—The shipbuilding industry has experienced the full effects of the general depression in world trade. In 1927

the tonnage launched from French shipyards fell to 44,335 tons, the lowest figure recorded in any year since 1909, 1915-1919 excepted; subsequently there occurred, in spite of adverse conditions, some measure of revival in French shipbuilding, but this revival has now collapsed. Tonnage launched in the years 1928 to 1933, according to Lloyd's Register, amounted to 81,416, 81,607, 100,917, 103,419, 89,310 and 33,300 tons respectively, the total for 1930 having been surpassed since 1922 (184,509 tons) only in 1926 (121,342). The total tonnage launched in 1931-33 placed France eighth after Great Britain, the United States, Italy, Denmark, Holland, Sweden, and Germany in that order. In both 1928 and 1929 the tonnage of motorships launched, 54,764 and 62,928 tons respectively, was much larger than that of steamers, but in 1930 it fell to only 20,167 tons, rising slightly to 25,688 tons in 1931 and falling to 2,805 tons in 1932. Out of 15 steamers launched in 1931 (77,511 tons), eight (63,114 tons) were fitted for burning oil fuel. During the four years 1928-1931 France launched seven, three, one and one oil tankers representing 53,863, 23,668, 7,880 and 9,500 tons. In 1932 and 1933 no tanker was built in French yards. The most noteworthy ship launched during these years was the ill-fated *Atlantique*, 42,500 tons gross, built by the *Chantier de St. Nazaire (Penhoët)* for the *Compagnie Sud-Atlantique's* South American service. She took the water in April, 1930, and made her maiden voyage in September, 1931.

On the 31st December, 1933, France had building 9 vessels of 90,700 gross tons, namely six steamers totalling 76,100 tons and three motorships with 14,600 tons. These figures include the *Normandie*, (67,500 tons displacement, 75,000 tons gross) which is being built at St. Nazaire for the *Compagnie Générale Transatlantique* for the Atlantic service and was launched on the 29th October, 1932. She is expected to enter into service on the Havre-New York route in 1935. In January, 1933, was launched the *Président Doumer* (12,700 tons gross, 6,630 net) destined for the Indo-China services of the *Messageries Maritimes*. During the whole year 1932 only 21 vessels of 14,726 tons gross in all were laid down in France

Attention was called in a parliamentary paper issued in March, 1932, to the fact that since the 29th March, 1931, the date of the promulgation of an act amending and improving the Maritime Credit system, only two liners and two cargo vessels of 15,500 tons in all had been ordered in France, whereas one liner, four cargo vessels and four trawlers of 25,800 tons in all had been ordered abroad. These foreign orders, which represented more than 70 million francs, would, if they had been placed in France, have kept French yards reasonably busy and enabled them to tide over the year 1932. The following table, taken from the same document, shows the shipping ordered for French shipowners in France and abroad since 1928:

					France (tons)	Abroad (tons)
1928	...	...	...	...	117,000	77,000
1929	...	...	...	...	86,000	76,000
1930	...	...	...	...	40,000	50,000
1931	...	...	...	...	70,000: Normandie	
					34,500	25,800

The higher cost of building in France is alleged to outweigh the advantages obtained through the special rate of interest accorded by the *Crédit Maritime*, and customs-free entry of most requirements for ship equipment. In an official report of 1930 were cited the United Kingdom and the French tender prices for 4 cargo boats given out in 1928-29: the margin ranged from 19.7 to 24.6 per cent. higher. The conversion for the franc contract prices was made at 124 francs to the £: if made at 1932 exchange rates, say 90 to the £, the margin would be still greater by 28 to 30 per cent. These prices related to cargo boats: it is possible that for passenger boats the margin might be still wider, as a consequence of the greater scale of United Kingdom production, its greater specialisation for distinct types, and its more rapid production.

To illustrate the position, it may be mentioned that at the end of 1931 out of 22 slips at St. Nazaire and Nantes, only six were occupied. At a leading yard at the former port submarines were being built on three of its slips and the remaining three were idle, no merchant vessel being on the stocks. In August, 1932, the manager of one of the leading yards declared that in the following spring no vessel of more than 1,500 tons would be building in France and all the slips would be empty, particularly those of the *Chantiers de St. Nazaire (Penhoët)* and the *Chantiers de la Loire*, although the former would be still engaged in completing the *Normandie* and the cruiser *Emile-Bertin* (5,900 tons). The only work in prospect for the two yards was on two 7,700 tons cruisers, which had been voted by Parliament but not yet ordered for financial reasons. Since this statement was made the French Government have sanctioned the laying down of the battle-cruiser *Dunkerque* (26,500 tons), which is to be built at the naval yard at Brest.

The disastrous state of the shipbuilding market during the last five years has been somewhat relieved at some of the principal centres by the employment afforded to the shipbuilding firms in the construction of various types of aircraft. This new occupation appears to have been introduced at St. Nazaire notably, but also at Bordeaux and Marseilles; and it has in fact assisted the realisation of the desire of the State that in the national industry the former almost complete centralisation of the aircraft industry in the Paris suburbs might be dissipated and that decentralisation by distribution to suitable centres of allied engineering trades throughout France might be effected.

Shipbuilding for Foreign Owners.—French shipyards have found it much more difficult since 1928 to obtain orders from abroad than in previous years. It has been pointed out that, out of the 20 vessels launched in 1928, five were for foreign owners but that these orders had been placed in 1926, when the franc was depreciated. Shipbuilders have no longer been securing contracts for the large passenger or mixed passenger and cargo vessels, which they built for foreign owners in 1926 and 1927. There has, however, been a good deal of building for foreign navies, although it is limited to small vessels. Thus, destroyers, submarines and mine-layers are being, or have lately been, built for Greece, Latvia, Poland and Yugoslavia at Blainville near Caen, Havre, Nantes and St. Nazaire.

Rationalisation of the Shipbuilding Industry.—Among the recommendations made by the National Economic Council in a report issued in June, 1930, on measures likely to improve the situation of the shipbuilding industry was that the yards should adopt a policy of rationalisation for the purpose of reducing their manufacturing costs. Some steps have been taken to carry out this programme. Thus, it was decided to close down three yards which were opened towards the end of the war at Harfleur, Havre and Couéron (near St. Nazaire) in the expectation of a ship-building boom, which did not endure. Other items in the programme were the amalgamation of two neighbouring yards at Bordeaux, the financial reorganisation of two other yards at Dunkirk and Caen with the assistance of several shipbuilding companies, the common training of designer apprentices at the school of the *Chantiers de la Loire* at Nantes, enquiries made by the Shipbuilding Association in view of standardising material and even types of trawlers, an agreement for the supply of plates for cargo vessels, the setting up of organisations embracing several yards for the purpose of obtaining foreign orders, etc. A practical forward step was the formation in December, 1930, of a company somewhat on the lines of the National Shipbuilders' Security Ltd. in the United Kingdom under the style of the *Consortium National des Constructions Navales* in which fourteen shipbuilding firms participated. Its purpose, as set forth in the articles of association, was to investigate all measures likely to reduce manufacturing costs and facilitate the sale of ships. It would enquire into the possibility of centralising purchases of material in order, among other things, to avoid delays in the delivery of vessels on order. Further, in order to execute repairs quickly, the *Consortium* would endeavour to form common stocks of certain materials. It would seek to make lasting agreements among its members in order to arrive at a rational distribution of foreign orders among the different yards. At the same time, an attempt was to be made to adapt the possibilities and tendencies of shipbuilders to the needs of shipowners by drawing up common programmes and

selecting the types of vessels to be built. The very delicate problems raised by such questions as the specialisation of yards, a temporary or final reduction in their number, the taking over of yards in difficulties, were to be the subject of methodical study on the part of the *Consortium*, when occasion offered. It would endeavour to propose schemes that might be carried out at the earliest moment compatible with economic and social conditions.

In 1931 the firms belonging to the *Consortium* unanimously agreed to found a pool as the financial basis for operations which would make it possible to effect economies in the whole industry. The resources of the fund were to be provided by levies on the receipts of various yards, fixed at first at low rates on account of the difficulties of the existing situation but to be revised later in proportion to the advantages obtained by shipbuilders, if Parliament voted measures to aid the industry.

New Ships.—The two events of outstanding importance in French shipbuilding since the completion in 1927 of the *Ile-de-France* for the *Compagnie Générale Transatlantique* have been the building by the *Chantier et Ateliers de St. Nazaire (Penhoët)* of the *Atlantique* for the *Compagnie Sud-Atlantique's* South American service and the launch in October, 1932, by the same yards of the great liner *Normandie* for the *Compagnie Générale Transatlantique*. The former vessel, 42,500 gross tons, had a speed of 25 knots and accommodation for 1,217 passengers. The company had long needed a ship of this class in order to enable it to meet on equal terms severe British, German and Italian competition for the South American traffic. The *Normandie*, the largest ship in the world, is 313 m. 75 long and 35 m. 90 broad. The propelling machinery is to be turbo-electric with water-tube boilers of a new design. The power of 160,000 h.p. is calculated to give a speed of about 30 knots. Accommodation is to be provided for more than 2,000 passengers, including 930 first-class. The *Normandie* is expected to be ready for service in 1935.

The *Compagnie Générale Transatlantique* have added to their fleet the motor liner *Lafayette* of 25,600 tons displacement with accommodation for 911 passengers, which was built by the *Chantier et Ateliers de St. Nazaire (Penhoët)*, and the same yards have completed for the company the cabin-class turbine liner *Champlain* of 28,627 tons displacement with accommodation for 999 passengers which was put into service in June, 1932, on the Havre-New York route. Another vessel launched for the same company in July, 1931, and taken over at the end of October, is the *Colombie* of 13,750 tons. She was built by the *Ateliers et Chantiers de France* of Dunkirk for the Havre-Cristobal (Colon) service and has accommodation for 488 passengers.

The *Messageries Maritimes (Services Contractuels)* added to their mail fleet in 1930 and 1931 the motor liners *Eridan* and *Jean Laborde* built at La Ciotat by the *Société Provençale de Constructions Navales*. These yards are at work on a third motor liner for

the same owners, the *Maréchal Joffre*, which was launched in May, 1931, and completed her trials in November, 1932, while a fourth, the *Aramis* (21,400 tons) with accommodation for 1,078 passengers has been built at La Seyne, near Toulon, by the *Chantiers de la Méditerranée* and completed her trials in July, 1932. Two other motor liners have been built for the company by the *Ateliers et Chantiers de la Loire* at St. Nazaire; one, the *Georges Philippart* of 20,945 tons displacement was launched in November, 1930, and delivered in January, 1932, while the other, the *Félix Roussel* entered into service in 1931. The former was unfortunately destroyed by fire off Cape Guardafui on the Somali coast in May, 1932, on her return from her maiden voyage to the Far East. But for this disaster, the *Messageries Maritimes* would have had a fleet of eight modern motorships, including the *Théophile Gautier* built some years ago at Dunkirk, and the new liner, the *Président Doumer*, of the *Maréchal Joffre* type, launched in January, 1933, at La Ciotat.

Other ships recently launched or completed include the *Ville-de-Tamatave* and *Ville-de-Majunga* (7,400 tons each), launched in January and July, 1931, for the Madagascar service of the *Compagnie Havraise Péninsulaire de Navigation à Vapeur* by Worms and Cie., at Le Trait, near Rouen, the *Nicolas Paquet* (9,760), built at La Seyne by the *Chantiers de la Méditerranée* for the *Paquet* line's Morocco service, and the *Djenné* (10,800 tons), built at these yards for the same service of the *Paquet* company. The *Chantiers de la Méditerranée* have also delivered a new turbine cross-Channel boat, the *Côte-d'Azur*, which made her maiden voyage in April, 1931. Another ship launched at the same yards in October, 1932, was the turbine liner *El Mansour* (5,100 tons gross) for the *Compagnie de Navigation Mixte*. She is to enter into service on the company's Marseilles-Oran line in the spring of 1933.

Oil Tankers.—During the four years 1928-1931 French ship-builders launched twelve tankers, four of which were for foreign owners. Two each of 16,000 tons displacement, have been built for the *Compagnie Auxiliaire de Navigation* by the *Ateliers et Chantiers du Sud-Ouest* at Bordeaux and two of 14,700 tons displacement each at the Grand Quévilly yards of the *Chantier et Ateliers de St. Nazaire (Penhoët)* for the *Compagnie Nationale de Navigation*. Other tankers have been completed by Messrs. Worms and Cit., at Le Trait, near Rouen, and the *Chantiers Navals Français* at Blainville, near Caen.

Fishing Trawlers.—Several large motor trawlers have recently been built for the French fishing fleet in France itself as well as in the United Kingdom and other foreign countries. The *Chantier et Ateliers de St. Nazaire (Penhoët)* laid down at their Grand Quévilly yard near Rouen a vessel, which, it is claimed, will

be the largest trawler fitted with Diesel engines in the world. She is about 70 metres long by $10\frac{1}{2}$ metres broad, will displace 2,340 tons and her 1,000 h.p. engines are to give a guaranteed speed of $10\frac{1}{2}$ knots. This branch of shipbuilding presents some special problems, since apart from technical questions price and terms of payment are essential factors, owners being reluctant to pay cash. It was stated on good authority towards the end of 1931 that the fleet of 400 trawlers would have to be replaced during the next ten years, the type chiefly required being a motor vessel of $30\frac{1}{2}$ metres in length by $6\frac{1}{2}$ metres in breadth and $3\frac{1}{2}$ metres in depth with 270/280 h.p. Diesel engines.

V. MOTOR INDUSTRY : PRODUCTION

Remarkable Advance in Number of Motor Vehicles.— Nearly twelve times as many passenger cars are in use to-day in France, as there were in 1913, the number of registered or tax-paying passenger cars having grown from 107,857 in that year to 1,279,142 at the end of 1932: since 1928, when the number was 757,668, the increase has been over half a million. Pre-war figures respecting commercial motor vehicles are not available, but since 1920 their number rose from 79,076 to 331,588 in 1928 and to 433,758 in 1932. The proportion of increase between 1931 and 1932 was 2.2 per cent. in the case of passenger cars, while commercial vehicles were fewer by 4,109, or 0.9 per cent. At the end of 1932 there was a motor vehicle (exclusive of cycle-cars or motor-cycles) for every 24 inhabitants of France, whereas in 1927 there was only one for every 43 inhabitants. In point of density, therefore, France now lays claim to the highest figure save the United States (1 in 4.7), Canada (1 in 8.6) and Australia (1 in 12). The saturation point appears therefore to be not yet reached. Cycle-cars (814 in 1920) have declined continuously in number since 1926, when they attained a total of 27,541; the last three annual returns have given their numbers as 23,536, 21,550 and 18,977 respectively. By July, 1933, passenger cars had increased to 1,385,146 and commercial vehicles to 449,485.

Motor Cycling has gained favour in a remarkable manner in recent years: the number registered more than quintupled between 1924 and 1933 (96,416 and 523,695). In 1913 it was 35,141. The boom that made its appearance in 1927, when the number of motor-cycles paying tax increased by 94,000, or 70 per cent., continued more or less during four years, the increases in 1928, 1929 and 1930-31 being 69,700, 77,400 and 62,200 respectively. Its subsidence coincided with the first appearance of more difficult times, the yearly increment dropping to 46,600 and 12,800 in the two fiscal years 1931-2 and 1932 (9 months).

Despite the immense increase in the number of motor cars and motor cycles, the non-power driven *cycle* has more than held its

own. From 3,552,400 in 1914 and 3,232,000 in 1919, they increased by about one million yearly up to 1926, when their number reached 7,112,818. Coincident with the sudden wave of popularity of the motor-cycle, there was a relative forsaking of its humbler predecessor, which was reflected in an actual decline of 529,090 in the number registered in 1927, followed in 1928-30 by increases averaging less than 79,000 yearly instead of the previous 1,000,000. In the fiscal year 1931-32, however, there was again an advance of over one million registrations. The numbers of cycles on which taxation was paid in the years 1928 to 1931-32 were 6,618,407, 6,767,058, 6,820,027 and 8,117,000, this last figure corresponding to a density of rather less than one cycle to every five inhabitants.

Industrial Activity.—Some indication of the extent to which the French motor-car industry has been affected by the economic depression is provided by the returns relating to the number of cars in service on the roads. The annual growth in the number of registered or tax-paying motor-cars (passenger-carrying and commercial combined) showed a steady progression up to the year 1930-31: from an average of 117,000 cars for the five years 1922-26, it increased to 140,000 between 1927 and 1928, to 210,000 between 1928 and 1929, and to 224,000 between 1929 and 1930-31 (a financial year covering 15 months). From 1930-31 to 1931-32, however, the increase declined to 169,000 cars, and in the financial year 1932 (nine months) it fell as low as 23,500. It would appear, therefore, that a certain slowing-down of momentum began to make its appearance in the course of 1930-31, and developed a much stronger tendency in the following two years.

The available estimates of the output of French motor-car factories tend to confirm this impression. Production advanced from 223,600 cars in 1928 to 245,610 in 1929, thence declining to 230,700, 210,000, and 164,000 in 1930-32 respectively, the output in 1932 showing a fall of 33.2 per cent. as compared with 1929. Thus France, after having in 1928 and 1929 wrested from Great Britain the lead among European manufacturers of motor-cars, has lost it since 1930; the available production figures of the four leading countries in Europe during the period 1928-33 being:—

Year	Great Britain	France	Germany	Italy
1928	204,400	223,600	150,000	55,000
1929	225,526	245,610	131,034	60,000
1930	238,236	230,700	100,000	48,000
1931	226,300	201,600	75,000	30,000
1932	232,700	164,000	50,500	30,000
1933	286,300	191,500	105,800	41,700

Of the French output in 1932, 80 per cent. were passenger and 20 per cent. commercial vehicles.

Improvement in output began to appear towards the close of 1932: in March, 1933, one large concern in the Paris area (probably Citroën) was then working on the principle of three shifts a day, and several other firms were showing signs of growing activity. A strike in April, 1933, in one of the largest motor-car works in the Paris district, over a question of wage reductions, tended to have an adverse effect on the figures of output for 1933.

Predominance of Few Makers.—For a number of years three-fourths of the total motor-car output in France has tended to come from the works of three firms: Citroën, Peugeot and Renault, and another 15 per cent. from half-a-dozen other concerns such as Ford, Berliet, Mathis, Hotchkiss, Talbot. The remaining 10 per cent. of output, corresponding in number to about 20,000 vehicles, is shared by about 35 other manufacturers, included among whom are a few producers of high-grade or luxury cars whose reputation is based upon the excellence of their product rather than upon size of output. The marked preference for the small car is indicated by the fact that in 1932, 80 per cent. of the passenger cars produced in France were of 10 horse-power (French) or less, the percentage having decreased by 9 since 1928. The small Rosengart car, the French edition of the "baby Austin," though launched upon the market only in 1928, has rapidly achieved great popularity, and at the present rate of progress seems likely soon to earn a place among the leaders. The Mathis firm, whose output in 1925-27 was reputed to be about 4,000-5,000 cars yearly, carried out recently large extensions at its Strasbourg works, and is forging ahead with a popular range of smaller cars: it is reported to have greatly reduced the importation of parts, notably engines, from the United States of America.

Concentration and Rationalisation.—The national output has attained a high degree of concentration in that three-quarters of the production is in the hands of three makers. The hundred makers of ten years ago have been reduced to about forty, of whom half a dozen produce 15 per cent. of the total. Among the smaller producers certain fusions or understandings have occurred. Thus, in May, 1932, the Ballot firm was merged in the Hispano-Suiza; and in October, 1928, five prominent makers (Ariès, Chenard and Walcker, Donnet, Delahaye and Rosengart), whose combined capacity then attained some 30,000 cars yearly, entered into a working agreement for pooling technical data, making purchases of raw material in common, limiting the types of cars to be produced so as to reduce competition between the several parties to the agreement. This arrangement appears, however, to have been dissolved by mutual consent some time ago.

Only one of the three chief firms confines itself to motor vehicle production, namely, Citroën, whose capital is 400 million francs. In the various Citroën works in April, 1933, about 19,000 workers were employed, but it is reported that in all about 30,000 persons are on the pay-roll of the firm. Visitors to the Paris works observe that rationalisation has been introduced on a large scale: the chain system is in operation, and mechanisation of processes, with the employment of the most modern machine tools from every good source, is general. Citroën provides indirectly regular work for many more thousands by his purchases of various major requirements (steel, tyres, wheels, patent specialities of divers kinds). The firm has created special companies for its rôle as transporter: it operates about 2,500 taxi-cabs and in October, 1932, 200 motor omnibuses in the Paris region, with another hundred for its regional services in Bordeaux, Nantes, Lyons, Nancy, Strasbourg. It maintains very large garages in Paris, Lyons (with a surface of 57,000 metres square—claimed to be largest in Europe) and elsewhere, as well as repair stations in most important centres. The head stated in October, 1932, that since the creation of the firm in 1919 it had produced 679,978 cars, that in 1932 its sales represented one-third of all the cars sold in France and one-half of all French cars exported. In many foreign countries, *e.g.* England, Spain, Switzerland, Belgium, Italy, Sweden, etc., it maintains assembling works or factories, station service, garages, etc.

The Renault firm, stated to employ over 30,000 at its Billancourt works, makes also engines, tractors, machine tools and other engineering products, and deals in oils. Like other very great firms, it provides indirectly permanent employment for many thousands more for the supply of its raw materials or finished goods of divers sorts, besides that afforded in its agencies and garages throughout the country. Among other things, the firm maintains within the precincts of its works a large and well-equipped technical school for the boys of its employees. It operates a large fleet of taxis in Paris, and numerous garages and service stations throughout the country, and has many establishments in foreign countries. The Peugeot firm, which has several factories near Montbéliard in the Jura as well as one in the capital, has separate legal entities for its cars and cycles and for its other activities (*e.g.* agricultural implements, machine tools, domestic ironware, coffee grinders, etc.), but its main car output takes place at Sochaux (near Montbéliard), where in recent years the works have been completely re-equipped with new machinery and are operated by up-to-date methods. The approximate number of its workers is not available. Like the two preceding firms, it maintains agencies in most parts of France, but its field of operation, outside Paris, seems to lie more particularly in the region of France south of the Loire in all directions. It is probable that the Ford Company (capital said to be entirely in native hands) comes fourth in France for sales.

vi. MOTOR INDUSTRY: STANDARDISATION

In the French motor-car industry noteworthy progress has been made in standardisation during the last seven years. The industry is one in which there was particular scope for the introduction of some form of standardisation, for, owing to the multiplicity of small manufacturers (50 or more of whom produced between them only about 10 per cent. of the total output of the country, each seeking to strike a note of individuality), there was an inevitable tendency towards an unduly large variety of designs and dimensions, even of the most ordinary parts. A normalisation bureau was set up in 1926 by the association of accessory and spare parts manufacturers, and by 1928 standards had been established for 29 parts, resulting in price reductions, in some cases, of 86 to 95 per cent. For instance, the number of different types of caps for radiators and petrol tanks has been reduced from 88 to five, accumulators from 120 to seven, brake linings from 320 to 28, dynamos from 30 to four. As witness to the beneficent effects of this much-needed weeding-out of superfluous varieties, it may be mentioned that, eight months after the reduction of the number of accumulators to seven models, their price had been reduced by 20 per cent. on the average, and it is quite possible that a further reduction of about 10 per cent. may be realised when the old-fashioned cars, for which manufacturers still find it necessary to make accumulators of types other than the seven now adopted as standard, disappear from circulation. By January, 1933, the bureau had established standards for no less than 176 parts. Close contact is maintained with the engineering standards associations of other countries, some 18 or 20 of which have combined themselves into an international committee (*Bureau international de normalisation de l'Automobile*), with headquarters in Paris.

Government departments and public utility concerns, such as the Ministry for War and the motor transport concession holders working in collaboration with the railways, are lending useful support to the normalisation movement by inserting a clause in their specifications requiring suppliers of vehicles to employ only parts conforming to the accepted standards. Promoted by the Normalisation Bureau, the Society of Motor-Car Engineers was formed in 1927; it holds sectional meetings weekly and general meetings monthly, and has 1,200 members.

The tendency towards standardisation was further manifested about 1929 by a fairly general decision of leading French motor-car manufacturers, whereby each firm concentrated its energies on two or three types of cars, instead of trying to cater for the whole range of motor-car users, private and industrial; the Citroën and Peugeot firms, in particular, being prominent protagonists of the new policy. The individualistic French temperament, however,

proved itself too strong for this policy to be followed for long; and at the motor shows of 1931-1933 a reversion to the former practice of putting on the market as many different types of cars as each producer thought he had a chance of selling, was clearly apparent. Thus, Citroën now offers 4-cylinder cars of 9 and 10 French horse-power (the latter in three sizes for carrying from four to seven passengers), a 6-cylinder 15 h.p. car in two sizes, and is credited with the intention of producing shortly a 5 h.p. car to meet the popular demand for a very small vehicle to cope with congested traffic conditions in Paris and other large towns; Renault has cars of 7, 8, 11, 16, 24 and 41 h.p.; Mathis seven models ranging from 5 to 23 h.p.; Bugatti five (from 9 to 31 h.p.); Donnet and Talbot four each, and so on: to say nothing of the innumerable permutations rendered possible by the choice offered between many varied styles of coachwork.

vii. MOTOR INDUSTRY : IMPORTS, EXPORTS AND CUSTOMS DUTIES

Imports.—The value of French imports of motor-cars, chassis, spare parts and accessories in 1933 was 95½ million francs: less by 28.5 per cent. than in 1932 and by 55.4 per cent. than in 1928 (133½ and 214 millions respectively). The number of cars and chassis imported in 1933 was 2,313 (of which, 2,214 for passengers and 99 for goods); exceeded by 11.8 per cent. the 1932 total of 1,961 (1,789 passenger and 172 goods), but fewer by 76 per cent. than in 1928 (9,646 cars and chassis, of which 9,325 for passengers and 321 for goods). The fall in the last three years in American and Italian imports, which is striking, is explained later in this section. Out of the 9,646 cars imported in 1928, the United States supplied 4,327 and Italy 3,926, followed by Belgium with 947, while Germany and Great Britain furnished only 172 and 109 respectively. In 1930, when 7,865 cars were imported, Italy led the United States (3,406 and 3,283), while Belgium had lost ground and Germany and Great Britain had gained appreciably (564, 253 and 135 cars). In 1931-33 imports were considerably lower (2,768, 1,961 and 2,313 cars), and the three formerly largest suppliers lost much ground: the United States supplied 575, 395 and 795 cars, Italy 719, 116 and 18; Belgium 858, 357 and 94; Germany 316, 339 and 1,012; and Great Britain 55, 365 and 237. The total weight of imports of all cars, parts and accessories, which advanced from 17,591 tons in 1928 to 28,267 and 27,542 in 1929 and 1930, dropped to 15,556, 10,166 and 8,500 tons in 1931-33. The figures for the last four years, however, are not strictly comparable, as a completely revised system of classification was adopted as from the 1st May, 1930, and the returns for that year were made partly under the old system and partly under the new. The number of industrial vehicles included in the foregoing yearly totals

was 321, 2,076, 1,869, 344, 172 and 99 respectively, the greater part of this trade being shared between the United States and Germany. In the three years 1930 to 1932, the United States supplied 886, four and nine complete commercial vehicles and 781, 125 and 15 chassis, while Germany supplied 122, 82 and 89 complete cars and 30, 21 and 11 chassis. From 1928 and 1933 there was an increase of 117 per cent. (from 109 to 237) in the number of cars imported from Great Britain, and an advance of 162 per cent. (from 946 to 2,482 tons) in the total weight of cars, parts and accessories.

Exports.—The exports of French motor-cars, in the period 1928-32, decreased in number from 46,014 to 19,206, or 58 per cent., while values (including parts and accessories) shrank from 1,541 to 549 millions, a reduction of 64 per cent. There was an increase both in numbers and in values during 1933; 23,085 complete cars and 2,376 chassis being exported as compared with 16,261 and 2,945 respectively in 1932, while the total value of motor-car exports (including parts and accessories) was 689 millions. The proportion taken by French colonies and protectorates grew from 41.4 per cent. in 1928 to 56.4, 58.1 and 55.4 per cent. in 1931-33, Algeria, Morocco and Tunisia now constituting three out of the five or seven principal markets for French cars; while among foreign customers, Belgium now alternates with Spain as chief buyer. The principal customers in 1932 and 1933 were (figures for 1931 and 1928 being given in parenthesis): Algeria, 6,273 and 8,206 cars (8,732 and 9,910); Belgium 1,860 and 2,048 (2,440 and 4,227); Morocco 1,834 and 2,300 (2,391 and 2,585); Spain 1,485 and 3,441 (1,082 and 6,670); Tunisia 1,501 and 1,539 (1,987 and 1,894); Switzerland 1,358 and 1,643 (1,831 and 1,790). Germany's purchases declined from 1,176 to 138 cars, and those of Denmark from 776 to 90. Great Britain purchased 3,597, 2,198, 1,188, 1,053, 340 and 307 cars in the six years 1928 to 1933. In the total exports of cars from France, the proportion of commercial or industrial cars in the six years 1928 to 1933 was as follows:—5,102 out of 46,014; 9,223 out of 48,483; 5,718 out of 31,112; 2,416 out of 26,318; 1,776 out of 19,206; and 1,484 out of 25,461. In the three years 1928-30, therefore, commercial cars were forming an increasingly large part of exports, growing from about one car in nine to rather more than one in five, but in 1931-33 the decline in exports affected commercial cars to a much greater extent than passenger vehicles, and their proportion fell back to one in 11, one in 10.8 and one in 17.2 respectively.

Anglo-French Trade.—Certain great practical difficulties in selling United Kingdom made cars in France, to which allusion was made in the last edition of the Report, have not diminished in the last five years. Reference is made in this chapter to the customs duty alterations of 1930, which have resulted in that duty being higher than the 45 per cent. *ad valorem* which pre-

viously obtained. From November, 1931, to December, 1933, the 15 per cent. compensation surtax was operative. The additional 6 per cent. *ad valorem* import tax is calculated in the c.i.f. value, plus the customs duty, plus the 15 per cent., so that with the minimum duty of 45 per cent. and the 15 per cent. it became 9.6 per cent. There is a further internal tax (*chiffre d'affaires*) of 6 per cent., which is calculated on the selling price in France and is payable by all cars, home or foreign. In spite of these handicaps it is encouraging to find that the disproportion between French exports and United Kingdom exports has lessened in recent years, and that in 1932 for the first time imports from Great Britain actually exceeded in number and value French exports to the United Kingdom (the latter numbered 340, value 17.6 millions, and the former 365, value 20.5 millions). In earlier years the United Kingdom was a very important market for French makers: the numbers sent in the nine years 1921 to 1930 averaged 6,095, the highest figure having been 15,485 in 1925, when the present United Kingdom *ad valorem* duty of 33½ per cent. was introduced. For the same nine years United Kingdom exports to France averaged 109, the highest having been in 1925, when the number attained 229. United Kingdom makers appear to be showing a greater interest than formerly in the French market, especially as regards small and medium cars, and the action of some in providing service in Paris and on the Riviera should assist greatly in the development of their trade.

Customs Duty Changes in 1930 on Cars and Motor-Cycles.—At the time of the customs re-classification in May, 1930, specific duties took the place of *ad valorem* duties, this change being made in order to combat the practice, alleged to be widely prevalent, of declaring consignments below their true values. The basis of the new duties was stated to be the same as formerly, so that their actual incidence would not be any greater, but in practice they appear to result in an increase by about 50 per cent. Thus, the official returns show that in 1928 duties paid on cars imported from Great Britain were 45.9 per cent. of their value, and those paid on Italian cars 45.2 per cent.; but in 1932 the percentages had risen to 85.9 and 83.2 respectively. For the total imports in 1931 and 1932 the *ad valorem* incidence was 56 and 58.9 per cent.

The new rates of duty applied since May, 1930, vary according to the weight of the vehicle and its type, *i.e.*, as passenger or goods carrying vehicle. In the case of the former, the duty under the minimum tariff ranges from Fcs. 8 per kilogramme (net weight) on cars of less than 1,100 kilogrammes or chassis of less than 850 kilogrammes to Fcs. 15.50 per kilogramme on cars of 2,000 kilogrammes upwards or chassis of 1,750 kilogrammes and over. On vehicles for the transport of goods the rate is Fcs. 6.25 or Fcs. 7, according to whether the weight is below 1,150 kilogrammes, or from 1,150 upwards; and Fcs. 8 in the case of chassis or coachwork imported separately. There is an overriding condition that

the minimum perception in any case shall be 45 per cent. *ad valorem*. The rates of the general tariff are uniformly four times those of the minimum tariff. On parts and accessories the rate per kilogramme ranges in most cases from 4 to 30 francs, but in a few cases it reaches 35, 60, and 70 francs. On motor-cycles the 45 per cent. *ad valorem* customs duty proper has been transformed into a flat rate of 8 francs per kilogramme net weight *i.e.* unpacked. On ordinary cycles the duty is 9 francs per kilogramme.

Certain Foreign-Made Cars almost Disappeared.—

As regards foreign cars in France, the outstanding feature in recent years has been the diminution almost to vanishing point of those from the United States and Italy. In the years 1927-30 were imported from the United States 1,327, 4,327, 5,612 and 3,283 cars, but in 1931-33, only 575, 395 and 795. Many of the palatial showrooms in the Champs-Élysées have accordingly closed down: and at the annual motor show in 1932, the General Motors group, which was wont to occupy large spaces for its separate makes, did not participate. The Ford company continues active: it formerly imported from the United States and assembled at its Asnières works (near Paris) the bulk of the parts of its cars, but it now manufactures more and more in France (reputed at present to be over 50 per cent. of the parts) and imports a large proportion of the balance from the United Kingdom. The imports of Italy, supplier second in importance, have similarly shrunk to almost negligible quantities: the numbers for the years 1927-33 were 3,041, 3,926, 3,043, 3,406, 719, 116 and 18. A principal cause of the fall in imports from Italy in 1931-34 was the tariff difficulties with Italy and the failure to secure agreement as to motor-car imports both into France and into Italy. Of the four chief Italian firms operating in France, namely Fiat, Lancia, Isotta Fraschini, and Italia, the first-named has established assembling works in France, and the Lancia, which already had service stations, was reported in February, 1933, also to be contemplating the erection of works in France. The Rosengart motor-car, which is built by the Rosengart firm, holder of the manufacturing licence for the small Austin car in France, is stated to have acquired recently from the German *Adlerwerke* the licence to manufacture a somewhat larger car with front internal drive (the Supertraction). Of British firms, the Austin Company maintains an agency and service station in France; and the Rolls Royce, Humber and Hillman concerns have organised in common a large repair works in Paris and some service stations there and elsewhere in France. The imports of British cars increased in 1932, the numbers for 1927-32 having been 129, 109, 142, 135, 55, and 365. This improvement was not fully maintained in 1933, the returns for that year showing 237 cars imported from Great Britain.

viii. MOTOR-CYCLES AND CYCLES

(a) MOTOR-CYCLES

Recent Development.—The output of motor-cycles advanced from 35,000 in 1927 to 79,000 in 1928 and 80,000 in 1929. In the succeeding three years output was much lower, having been 65,000, 51,000, and 50,000 machines respectively. Concurrently there has been a marked advance in the number of "vélomoteurs," or cycles with auxiliary engines, not exceeding 30 kilogrammes in weight; so that in 1931 and 1932 machines of this type constituted a much larger proportion (perhaps 50 to 60 per cent.) of the total output than in former years. The particular attraction of the "vélomoteur" lies in its low price (usually between 1,100 and 1,500 francs), the small amount of the tax to be paid (30 francs a year) and the absence of formalities (neither driving licence nor number plate being required). It is less robust than the real motor-cycle, and consequently has a relatively short life; but producers regard purchasers as potential buyers of the heavier motor-cycle in the near future. As already noted in this chapter, motor-cycles in use have grown in number from 232,000 at the end of 1927 to 523,695 in 1933.

Predominance of Few Makers.—The retention of a variety of trade-names or marks for machines which are not only the product of a single manufacturer, but in many cases are for all practical purposes identical in their specifications, is due to a practice of the days prior to the motor-cycle. Thus, Automoto, Griffion and Aiglon are proprietary marks belonging to the Peugeot firm; Magnat-Debon is identified with Terrot; Motoconfort with Motobécane; while Labor, Armor, Olympique, La Française-Diamant and Thomann are all products of the Alcyon concern. Up to about 1931 these four firms, together with Monet-Goyon, together produced about 80 per cent. of the total French output of motor-cycles. Since 1931 there has been a certain modification in the relative importance of the leading manufacturers; and at the present time probably 50 per cent. of the total output is shared between Motobécane, Peugeot and Terrot in fairly equal proportions, and the remainder between about 30 other makers, among whom prominent places are held by Alcyon, Gnome et Rhône, New Map and Monet-Goyon. Both the Terrot and the Alcyon firms, with their satellite makes, are reported to be devoting more attention than formerly to lightweight motor-cycles and particularly to cycles with auxiliary engines. As regards manufacturing capacity, it would not appear that the position is substantially different from that in 1928, when one firm had a production capacity of 500 motor-cycles weekly, another of 300, two more of 200 each, and a fifth firm about 70 or 80 machines; the vogue of the "vélomoteur," however, has led these firms to divert a notable proportion of their capacity to its output. As this

latter production requires fewer and less complicated parts, the actual numerical output of "véloMOTEURS" from the same plant can be almost double that of motor-cycles.

Foreign Machines.—The number of foreign motor-cycles imported into France advanced from 2,852 to 3,282 and 3,192 in the three years 1928 to 1930, subsequently declining to 1,368, 1,231 and 878 in 1931-33 (of which, 398, 592 and 376 from Great Britain). Until recently Belgian machines (Saroléa, F.N. and Gillet d'Herstal) have largely predominated, constituting an average of 67 per cent. of the total imports in 1928 to 1930, the United Kingdom coming second with 20 per cent. and Germany third with 7 per cent. Trade with the United Kingdom is treated in a subsequent graph. The returns of imports in 1931-33 credit Belgium with only 603, 417 and 266 machines, as against 2,208 in 1930; but the apparent decline is largely accounted for by the fact that the "F.N." machine is now assembled in France from parts imported from Belgium, probably about 1,000 machines a year being so constructed. German imports, which numbered 265, 182, 151 and 173 machines in 1930-33, respectively, consist mainly of the B.M.W. and D.K.W. marks. Of the former, it is reported that about 25 machines were imported in 1932, and an average of about 50 in recent years. In the Saar district the D.K.W. machine is stated to enjoy a certain popularity, but it does not appear to have penetrated to other parts of the country. Imports from Switzerland in 1930-32 numbered 128, 108, 19 and 10 machines. The "véloMOTEUR" produced by the Motosacoche firm is seen in fair numbers in the Paris district: this firm, which set up a factory in France in the height of the motorcycle boom period, has since disposed of it to the proprietors of the New Map (French), who continue to manufacture therein machines bearing the Motosacoche transfer, under an agreement with the Swiss firm. Imports from the United States (50 metric quintals, or about 30 machines) in 1931 were practically equal to those of 1928, but less than one-seventh of the level attained in 1930. They are not separately distinguished in the 1932 or 1933 returns. Practically the only American machines seen on the roads are Harley-Davidson or Indian. The former still find a certain limited market, chiefly in the Strasbourg district, but American motor-cycles are to-day rarely seen, at least in the Paris region.

Exports.—In the years 1928 and 1929, exports were highest (6,970 and 6,999 machines, or rather more than twice the level of imports). They have since declined to 5,702, 3,662, 1,893 and 1,651 machines in 1930-33, exports in the latter year being twice as great as imports (in 1932 the ratio was 3:2). The part taken by French colonies has advanced from 35 per cent. in 1928 to 78 and 79.6 per cent. in 1932 and 1933, Algeria and Tunisia to-

gether accounting for three-fourths of the total colonial purchases. As regards exports to foreign countries, the trade returns for the last five years exhibit a certain diversity of tendency. In one case, that of the Netherlands (fourth in importance in 1928 and second in 1931) no appreciable decline occurred until 1932, the weight of exports in the five years 1928 to 1932 being 214, 142, 182, 200 and 54 metric cwt. In 1933 there was a further shrinkage, only 16 motor-cycles being exported to the Netherlands as compared with 60 in 1932. Exports to Switzerland, by far the most important customer, have dropped from about 1,100 machines in 1928 (19 per cent. of total exports) and 1,282 in 1929 to 871, 427, 127 and 68 (4 per cent. of total exports) in 1930 to 1933. Spain, in 1928, the second-best foreign customer, reduced her purchases from about 708 machines (14 per cent.) in that year to 206, 17 and 19 (or only 1 per cent.) in 1930 to 1932. Purchases by Germany grew from 282 metric cwt. in 1928 to 584 metric cwt. (or 814 machines) in 1930, thence dwindling to 135 and 13 machines in 1931 and 1932; those of Belgium have declined by two-thirds from 174 and 172 metric cwt. in 1928 and 1929 to 97, 78 and 60 in 1931 and 1932. No separate figures are available respecting exports in 1933 to foreign countries other than the Netherlands and Switzerland, but their combined purchases declined by one-fourth (from 231 to 180 machines). Greece and Poland also notably increased their purchases in the period 1928-30, the former from 37 to 125 metric cwt. and the latter from 53 to 111 metric cwt., but are not shown separately in the returns for 1931-1933.

Anglo-French Trade.—(a) *United Kingdom exports.*—The high quality of British motor-cycles is widely and thoroughly recognised in France, but the high duty (Fcs. 8 per kilogramme alike on complete machines and on spare parts), together with the exchange compensation levy* and the importation tax in lieu of business turnover tax, combined to make the selling price in France very high. Notwithstanding this handicap, motor-cycles of United Kingdom manufacture continue to enjoy a substantial share of the market so far as foreign machines are concerned. In 1928 to 1930 imports from the United Kingdom amounted to 664, 783 and 683 metric cwt., forming 19.3, 18.4 and 17.3 per cent., respectively, of total imports of motor-cycles. In 1931, when total imports were lower by just over 50 per cent., the United Kingdom supplied 29 per cent. of that total (397 out of 1,368 machines); in 1932 her share grew to 48 per cent. (592 out of 1,231 machines); and in 1933 it was 42.8 per cent. (376 out of 878 machines). Up to about three years ago quite a number of leading French motor-cycle concerns employed in considerable quantities engines, gear-boxes, and sundry other parts of United Kingdom manufacture, but the very high cumulative import

*Withdrawn on 1st January, 1934.

duties of various forms have been detrimental to this trade, and have impelled French makers to adopt home-made parts to a greater extent. In 1931-32 Great Britain supplied 296 and 238 out of totals of 1,590 and 952 metric cwt. of motor-cycle engines imported (as against 2,007 out of 2,742 metric cwt. in 1930), 366 and 295 out of 1,558 and 1,115 metric cwt. of miscellaneous spare parts (405 out of 1,486 metric cwt. in 1930), practically the whole of the 312, 322 and 41 metric cwt of chains, 115 and 64 out of 142 and 109 cwt. of saddles and toolbags (87 out of 147 previously). Under the last three heads are included parts and accessories for non-power driven cycles, which are not separately distinguished in the trade returns. In the case of lamps and headlights the United Kingdom share is very small, only 40 and 20 out of 2,375 and 1,416 metric cwt. in 1931-32, the lion's share being monopolised by Germany (2,179 and 1,354 cwt.).

(b) *French Exports*.—Exports of complete motor-cycles from France to the United Kingdom are negligible in quantity, and no separate figures are given in the French trade returns. There is a certain small export of rims (29 out of 1,043 metric cwt. in 1931) to Great Britain, and a more considerable trade in miscellaneous parts and accessories for cycles and motor-cycles, of which Great Britain took 4,432, 588 and 678 metric cwt., or 22, 5.2 and 3.65 per cent. of total French exports, in 1931-33.

Prices.—On the whole, prices of motor-cycles in France appear to have risen since 1928 by about 15 to 25 per cent., though the present season's prices show slight decreases (ranging from 50 to 250 francs) as compared with 1932. Some typical prices may be quoted: thus the Peugeot range is from Fcs. 1,995 for a 175 c.c. 2-stroke utilitarian machine to Fcs. 3,950 for a 4 horse-power (French) lightweight 350 c.c. 4-stroke; Terrot has a 4 h.p. complete with electric lighting equipment at Fcs. 6,200 and a 5 h.p. at Fcs. 6,700; the Olympique range is from Fcs. 1,745 for a 2 h.p. 175 c.c. lightweight model to Fcs. 6,400 for a 5 h.p. supersports 500 c.c. 4-stroke; and Gnome et Rhône lists models from 4,100 to 8,500 francs (4 and 5 h.p., 300 and 500 c.c.). Few, if any, of the makers appear to list machines of higher than 5 h.p. As compared with these prices, machines of United Kingdom manufacture range from about Fcs. 5,250 to Fcs. 8,900 for 3 to 5 h.p., and Belgian machines from about Fcs. 5,100 to Fcs. 8,900 (though there are also models of lower than 3 h.p. at Fcs. 2,975 and Fcs. 3,250). American machines are offered at about Fcs. 12,000. The foregoing prices omit the "vélomoteur," of which Peugeot offers several models ranging from 1,150 to 1,495 francs, Olympique from 1,375 to 1,490 francs, Génial-Lucifer from 1,200 to 1,990 francs, and other makers' prices are within about the same ranges.

(b) CYCLES

Production Becoming more Centralised.—St. Etienne, a town of 200,000 inhabitants about 40 miles south-west of Lyons,

is the traditional home of cycle manufacture in France, as well as of spare parts, small tools, sporting guns and rifles: a few important manufacturers are to be found near Montbéliard, Dijon and in the suburbs of Paris (notably at Courbevoie and at Pantin). At St. Etienne were produced for the first time in France pedals, hubs and free-wheels. Prominent manufacturers number only ten or twelve, but (until the beginning of the present trade depression) the number of smaller makers seemed to be increasing, for the cycle manufacturers' trade association to-day reports a membership in excess of 250, whereas in 1928 the total number of manufacturers was about 120. Many so-called manufacturers, however, are really assemblers of spare parts purchased from firms who specialise in their manufacture; the machines of the " assembler-manufacturers " often vary only in the name, colour, and slight details. This practice is probably one of the chief causes contributing to the relative lack of standardisation in the cycle industry of France. Even small factories at St. Etienne are stated to have " 20 patterns of bicycles, 40 of pedals 70 of block-nuts." Within the last two years or so a large number of the smaller workshops have been obliged to close their doors, being unable to survive the prolonged bad trade; and this weeding-out of the weaker elements will doubtless contribute not a little towards a more general adoption of standardised methods, the advantages of which are making themselves evident in the allied industries of the motor-car and the motor-cycle.

Output and Prices.—Though precise figures of output are not published, a currently accepted estimate is the round figure of one million machines yearly, two-thirds of these being produced in the factories and workshops of St. Etienne. These figures are about double those of 1928, when demand was lower as a consequence of the motor-cycle boom. In recent months, however, production has been greatly restricted. From about 10,000 workers normally engaged in the industry the number has shrunk to less than 7,000. Some factories, by reducing the number of their personnel to 40 or 50 per cent. of its usual proportions, are able to continue working on a basis of 48 hours weekly: in others, where fewer discharges of workers have been effected, working hours are often below 40 weekly, and in some cases as low as 24 hours. In general, manufacturing activity is stated (February, 1933) to be about 50 per cent. of what it was in 1930, in which year, however, it was already appreciably less than in 1929. Manufacturers are looking to the Government to increase the protection accorded to the home market, chiefly, no doubt, in consequence of the marked increase in imports of low-priced machines, to which allusion is made in the following paragraph.

Foreign Trade.—The number of cycles exported from France in 1928 was 25 times as great as that of imports, and their value

29 times as much, 130,703 machines against 5,261 (values 60.1 and 2.1 million francs). Exports declined by 50 per cent. in 1930 and more rapidly still in 1932, so that in the latter year they were in number only $4\frac{1}{2}$ times as great as imports (7,970 against 1,775 machines) and in value only six times (3,332,000 francs as compared with 554,000). In 1933 exports increased to 9,264 machines, value Fcs. 3,515,000; but were only 3.3 times the imports, which numbered 2,795, value Fcs. 732,000. Purchases by Spain, formerly the best customer by far, have shrunk from 55,000 and 44,000 machines in 1928 and 1929 to only 219 and 99 in 1931 and 1932; and those by Switzerland in the same years from 14,500 and 16,500 to 2,443 and 1,897. Indo-China, which took 12,000 machines in 1928 and 11,600 in 1929, purchased only 1,935 and 307 in 1931 and 1932, and the proportion of total exports taken by the colonies has grown from less than one-fourth in 1928 to 54 and 62 per cent. in 1932 and 1933. Sales to Great Britain (not separately recorded before 1930) amounted to only 81, 44 and 10 cycles in 1930-32, corresponding on the average to about one-third of United Kingdom exports to France. As regards *imports*, a radical change took place between 1927 and 1928. In the former year, when 1,699 machines were imported, their average value (over 1,200 francs apiece) indicated that they must have been all, or nearly all, of the luxury type, and five-sixths of them were supplied either by the United Kingdom or by Belgium-Luxembourg. In 1928 imports were numerically more than three times as great, but their value averaged only 396 francs: Germany supplied over three-fourths of the total, while Belgium's share declined to one-seventh and that of Great Britain to negligible proportions (21 metric cwt. out of a total of 817). In 1929 and 1930, when imports numbered 5,959 and 5,132 machines, the proportions furnished by individual countries were about the same, Germany supplying 737 and 591 metric cwt., and Belgium 104 and 91 metric cwt., out of total imports of 930 and 779 metric cwt. In 1931 imports declined by 50 per cent., Germany supplying rather less than one-half and Belgium over one-fifth. Italy, not separately recorded in the returns prior to 1930, supplied 22 metric cwt. in that year and just double the quantity in 1931, the 44 cwt. in the latter year being equal to imports from Great Britain and Switzerland combined. In 1932 and 1933 the total numbers imported reached 1,772 and 2,795, with average values of only 310 and 262 francs.

ix. AIRCRAFT INDUSTRY

In February, 1930, the French Air Minister stated in the Chamber of Deputies that French aviation had especially suffered from the inadequacy of the conceptions governing the construction of new types, and that, by way of remedy, the credits for researches and tests, which had been 5 per cent. of the expenditure on standardised types, had been raised to 20 per cent. He declared that,

by the side of the industry of light alloys with an aluminium basis, he was aiming at creating in France the industry of light alloys with a magnesium basis, and that the building of works for this output had already been commenced. The construction of engines in France was flourishing, especially both those of 400 to 500 h.p. and of the Diesel class. But the aircraft industry was dispersed, being carried on by 30 to 40 firms, some anaemic, others often in a precarious financial or commercial situation, and they were often, both in the home and foreign markets, engaged in ruinous competition.

"Concentration was imperiously necessary: this concentration should be vertical. We must have works and complete equipment. The constructor of engines must have his castings, his steel, his duralumin, without being at every moment tributary to primary industries. Following my thought to its conclusion, I add that this concentration has inevitably to be accompanied by a policy of geographic decentralisation of the aircraft industries. It is necessary to secure a distribution of risks throughout the country. Our aircraft is in an abnormal situation—for it is gathered together almost exclusively in the suburbs of Paris, and is at the mercy of a sudden armed attack or of the failure of the electric current. There is another reason—it is indispensable to be able to appeal to all possible French activities. Throughout the country is a large number of industrial centres, of engineering centres, with labour suitable for a good rationalisation of the aircraft industry. It is our duty not to hesitate to appeal to all resources of the nation to prepare in time of peace the indispensable centres of industrial mobilisation."

The improvement of the tests services, the delivery of types with spare parts, the reorganisation of supplies service, decentralisation of purchases, standardisation of parts and wholes in common use, limitation and constant betterment of types in service, particularly of the hydro-planes, modern equipment of the wireless, of photography, of instruction, were then cited by the Minister among the results already achieved at that date.

Increased Concentration.—The concentration of manufacturing control and geographical decentralisation have been accomplished to a considerable extent. In 1930 the *Ateliers d'Aviation Louis Bréguet* made a working agreement with the *Société Hispano-Suiza*, *La Société Louis Renault*, and *Les Ateliers Liore et Olivier*: each was to specialise on certain types of motors or of aircraft, whilst a common selling agency was created. About the same period the *Société Lorraine* of Lunéville created the *Société Générale Aéronautique* with initial capital of 400 millions, in which it participated for 220 millions, but this was reduced to 275 millions in December, 1931. By the end of 1930, this company comprised seven subsidiaries:—

- (1) *Chantiers Aéro-Maritimes de la Seine*, civil and military hydroplanes:
- (2) *Lorraine*, air-cooled engines from 100 to 500 h.p. and water-cooled engines from 400 to 1,000 h.p.:
- (3) *Hanriot*, aeroplanes for training purposes:
- (4) *Nieuport*, fighting planes and machines for transport and sport:
- (5) *Société d'Emboutissage et de Constructions Mécaniques*, large civil and military machines:
- (6) *Latham*, hydroplanes:
- (7) *Société Aérienne Bordelaise*, large civil machines.

To this group apparently is also affiliated the *Forges et Ateliers Latécoère*. About 60 per cent. of the aircraft output is alleged to be in the hands of these two groups. Formerly they were interested in various air navigation companies, but the latter having been merged in August, 1933 in the company *Air-France*, the State took 25 per cent. interest therein and its approval of the share holdings of others is required. There are said to be a few other manufacturing firms, which appear to have mutual working arrangements for some purposes, such as *Blériot, Potez, Gnome et Rhône*. The principal air engine makers are probably the *Hispano-Suiza, Lorraine, Renault, Gnome et Rhône, Farman, Salmson*.

Geographical Decentralisation.—The displacement of the aircraft industry from the Paris area could not of course be realised in a day, nor without the expenditure of great capital. Much progress has, however, been made, and production is now taking place on a substantial scale in provincial centres, notably for example at St. Nazaire, Bordeaux, at and near Marseilles, Toulouse, Havre, and near Albert in the Somme county. Plans were formed for production in the Lyons district, especially at the important engineering centre of St. Etienne, but it is not known whether they have been realised. It may be noted in passing that the Universities of Lille, Toulouse and Marseilles have been given grants since 1930 for aerial scientific investigations.

Notable Manufacturing Improvements.—It would appear that advance has been made as regards another item of the programme of the Ministry as indicated in the quotation above, namely in the manufacture of light alloys. Great attention is devoted by French makers to the matter of speed, and much success has been achieved both in fast passenger aircraft and in flying boats. Heavy oil engines of 200-300 h.p. are stated to be under construction. The large sums spent since 1928 on experimenting have yielded their results in many directions within the last year or two. Certain important manufacturing rights for France have also been purchased abroad.

Aircraft Markets.—Commercial transport companies and private users are far, of course, from providing the chief market for aircraft output in France, as elsewhere: it is provided by the various sections of the national defence forces. From the fact that the commercial companies are in receipt of substantial subsidies, it results also that the State, at least indirectly, provides a goodly part of the civil aviation market. Private users are still for many reasons far less numerous than in the United Kingdom, but the recent active promotion of the construction of aerodromes at convenient distances from local towns may develop this class of market. From its nature, the home market as a whole is almost entirely at the disposal of the home producer. In the years 1929-33 the total weights of aircraft imports were respectively 13.1, 12.5, 8.0, 5.7 and 5.6 tons. Foreign buyers likewise were mainly foreign

states. In these years the exports represented respectively 2,540,8 per cent., 2,115.8, 1,808.3, 787 and 800 tons : the chief buyers were Yugo-Slavia, Belgium, Roumania, the U.S.S.R., Brazil, Turkey, Indo-China and French West Africa. Of the total weights the first-named took about 20 per cent. each year, Belgium about 10 per cent., the U.S.S.R. about 6 to 12 per cent.; and in 1933 Roumania took 164 tons, or one-fourth of the total exports to all foreign countries. In addition, the exports of hydroplanes were relatively fairly substantial : 69.2, 39.1, 49, 8.2 and 19.8 tons, whereas imports were nil or one only (*e.g.*, in 1930). In millions of francs the imports and exports were in these years respectively as follows : imports, 3.48, 2.76, 1.47, 0.88 and 1.02; exports, 210.8, 208.1, 162.1, 79.9 and 71.4. The figures of the actual output of France in aircraft are not available, but up to 1931, when foreign trade was good, it was estimated that about half of the national output was sold abroad. The figures just cited denote an immense shrinkage in the foreign markets in 1932 and 1933.

Civil Aviation Prospects.—The new Act of December, 1932, should permit the air transport companies to work more methodically and on fixed programmes, as a consequence of being able to make long-term contracts with the State. The Senate Reporter stated for instance that the *Compagnie Internationale de Navigation Aérienne* (C.I.D.N.A.), which has services to Prague, Warsaw, Belgrade, Constantinople) would now be in a position to raise its definitely insufficient capital of 8½ millions and to renew its equipment, which was too old and of an out-of-date type; that the Air Union, which the very keen competition of the English line on the London-Paris route compelled to renew its fleet, had ordered an excellent machine, the *Wibault*, and was contemplating the purchase of *Bréguet* three-engined planes, whilst on its Mediterranean section it was going to replace its old machines by *Bréguet-Short* and by *Loiré* hydroplanes. The *Compagnie Air-Orient* had hitherto used Fokker machines, which were no longer in keeping with its requirements, but had now ordered some fine French models, namely the *Wibault* and the *Dewoitine*; the complete renewal of its fleet, however, was a matter of urgency. The situation of the *Compagnie Aéropostale*, which was placed in the hands of the Receiver in March, 1931, had to be settled with Government assistance so as to retain the advantages of the great efforts already expended. New lines would also have to be created, such as those for the Congo (in common with Belgium) and for all French possessions in Africa as far as Madagascar. North American services from the Azores to Bermuda should also be established in agreement with all European nations interested and with the United States : the most difficult problem for the long crossing had already been solved : France had four-motor machines with a

sufficient radius of action and giving sufficient security for such a realisation. Large-scale developments in the near future will probably be curtailed by the stringency of the State finances, which will entail the reduction of the State grants: thus in January, 1933, the Boncour Government Budget estimates proposed a reduction of about 26 per cent. in the previous Air allocation, and no doubt civil aviation would have also been affected by the retrenchment. On the other hand, the growing favour of travel by air to and out of Paris, especially to and from London, Northern Europe, and even Central and South Eastern Europe, is undoubted, and has been marked in 1932 and 1933. The services with London were always extensively utilised. Rates were considerably reduced—which stimulated the movement. Within a certain time resources may thus be obtained to replace in part at least what fails to come from the public purse.

X. ELECTRICAL INDUSTRY

Manufacturing Progress.—An expansion from 25,000 to 100,000 workers, from 306 to over 2,500 millions of capital engaged, and from 265 to over 4,000 millions in the value of yearly output—these figures attest French progress in the manufacture of electrical machinery, apparatus and fittings between 1913 and 1930. From 1928 to 1930 there was a period of intense activity, with factories working at full capacity, and the number of workmen grew from 70,000 to 100,000. Then occurred a slackening of demand. In the heavy electrical machinery branch, orders in 1931 were 45 per cent. less than in 1930 (large machinery 55 per cent., turbines 38 per cent., transformers 37 per cent., large fittings 29 per cent.) and 55 per cent. less than in 1929; and in the first quarter of 1932 a further decline of 45 per cent. was recorded, relatively to the quarterly average of 1931. In the case of small and medium-sized equipment, the depression was less severe and did not make itself apparent until later; in 1931 there was a decline of 25 per cent. in output, while the first quarter of 1932 saw a further reduction of 28 per cent. in the case of machines and transformers, and of 15 per cent. in that of small fittings. The number of effectives in 1931 was fewer by 25 per cent. than in 1930, and although the hours of working were reduced to 40 or less in a large proportion of factories, there was a considerable spread of unemployment.

Both internal and external conditions have contributed towards the present position. Prior to the war, one-sixth of the total output was exported, and this proportion was more or less maintained during the period when the declining value of the franc caused French manufacturers' prices to lag behind those of their foreign competitors. By 1929, however, several factors had combined to make export business more difficult, and in that year the proportion of exports to total output fell to about one-tenth. Large imports

from Germany as deliveries in kind (68 millions in 1928 and 132½ in 1929) caused a certain restriction of the internal demand, since home manufacturers were deprived of many lucrative public works contracts : increasing taxation has added considerably to overhead charges ; wages have advanced by about 50 per cent. since 1926, the period from January, 1929, to January, 1930, alone seeing an increase of 16.4 per cent. (index figures 192 and 213, taking 1923 as base) ; and it is alleged by French manufacturing interests that certain countries and Germany in particular, resort to dumping practices. Moreover, until 1930 at least it was still necessary to seek abroad much of the heavy machinery for installation of hydro-electric and thermic power stations, transport services and so forth, and even in the domain of domestic utilisations, many of the most recent inventions and improved types of apparatus are of foreign conception. French manufacturers, in order to combat these adverse factors, are turning their attention to up-to-date machinery for large-scale production, the adoption of latest methods in the routing of materials in the factory and to concentration of interests. The possession of large reserves of aluminium is an advantage, since to an ever-growing extent aluminium is being utilised in the place of copper for electrical purposes : a number of the long-distance transmission lines at high voltage, now being constructed to link up distributing systems and facilitate interchangeability of supplies, will have aluminium conductors, as will also the latest extensions on the electrified portions of the Midi railway company.

External Trade.—Conflicting estimates have been published respecting the exact volume of French exports and imports of electrical material, the divergence being due to differences of opinion as to the inclusion, or exclusion, of certain border-line commodities. According, however, to returns published by the French syndicate of electrical manufacturers, *exports* attained their highest point in 1930, with a tonnage of 35,007 and a value of nearly 521 million francs, declining slightly in 1931 and considerably in 1932. Taking 1927 as a basis, there were increases ranging between 15.5 per cent. in 1929 and 27.4 per cent. in 1930, but in 1932 and 1933 exports fell to 30.3 and 23.6 per cent., respectively, below the 1927 level.

While there was considerable expansion in the case of exports of wires and cables, there was a marked shrinkage in that of the heavier types of electrical machinery and (in 1929, 1931 and 1932) of miscellaneous items though in 1933, in the case of the latter group, there was a recovery to practically the same level as in 1927. The following table shows, for the seven years 1927-1933, the weights and values of electrical goods exported :—

EXPORTS OF ELECTRICAL MANUFACTURES

Group	Tons							Thousand francs						
	1927	1928	1929	1930	1931	1932	1933	1927	1928	1929	1930	1931	1932	1933
Dynamos and transformers...	7,254	8,583	6,674	6,126	6,224	3,665	3,014	86,898	108,226	85,624	83,159	92,946	51,669	39,046
Electrical and electro-technical apparatus ...	6,042	5,816	5,854	7,166	5,826	3,121	2,684	141,046	137,538	148,214	185,039	158,505	91,811	80,553
Electric lamps ...	573	695	778	866	602	433	508	25,185	26,073	33,088	36,520	29,535	19,153	19,517
Insulated wires and cables ...	3,377	5,311	5,726	6,466	6,819	4,104	4,573	31,414	46,832	66,411	69,746	51,744	27,629	28,048
Electrical spare parts ...	1,193	1,692	2,367	2,583	2,105	1,435	909	23,297	31,519	40,666	50,384	42,066	26,623	16,003
Accumulators & parts thereof	1,905	1,882	2,823	3,352	2,757	1,856	2,040	20,919	18,565	31,875	36,595	27,062	15,982	15,906
Insulators (porcelain, glass, etc.) ...	3,123	3,524	4,549	4,584	4,469	2,887	3,308	14,527	14,454	20,347	24,661	20,253	12,171	14,058
Miscellaneous ...	4,007	4,350	2,978	3,864	3,242	1,657	3,957	31,655	37,517	29,260	34,791	25,573	19,457	43,013
Totals ...	27,474	31,853	31,749	35,007	32,044	19,158	20,993	374,941	420,724	455,485	520,895	447,684	264,495	256,144

Percentage increase or decrease compared with 1927 — +16.0 +15.5 +27.4 +16.6 -30.3 -23.6 — +12.2 +21.5 +38.9 +19.4 -29.5 -31.7

French colonies take some 25 per cent. of the total exports, the next best customers being Belgium, Germany, Great Britain, Spain and Italy. The greatest competition in foreign markets has to be met from Germany, whose exports, representing 20 per cent. of her production, grew by 50 per cent. in the two years 1927-1929, and from the United States, whose exports showed an increase of 37 per cent. in the same period.

Imports of all kinds of electrical wares during the period 1927-1933 increased to a much larger degree than exports, this expansion being most pronounced in the case of dynamo-electric machines and electrotechnical apparatus. To a very considerable extent this was due to the heavy imports from Germany under the head of deliveries in kind: in 1929 alone, the total value of this class of merchandise imported from Germany was 316 millions, of which deliveries in kind accounted for 132½ millions. After Germany, the greatest increase was in imports from the United States. The commercial agreements concluded by France with Germany in August, 1927, and with Switzerland in January, 1928, had the effect of reducing the percentage of protection accorded to many branches of the home electrical industry, sometimes to less than 20 per cent., and thus rendered the home market more susceptible to competition from abroad. This is to a certain extent offset, however, by non-competitive arrangements made between some of the powerful French interests and foreign concerns such as the General Electric Company of the United States, Allgemeine Electricitäts Gesellschaft, Siemens und Halske, Osram, and so forth.

As will be seen from the following table, imports more than doubled in weight from 1927 to 1928 and by 1930 they were fourfold, while the increase in value attained only slightly lower proportions. As a result of the limitations imposed by the quota regulations, the years 1931-33 saw reductions of 15.6, 46.5 and 37.9 per cent. by weight, and of 14.6, 40.8 and 43.4 per cent. by value, as compared with the high levels of 1930.

IMPORTS OF ELECTRICAL MANUFACTURES.

Group	Tons							Thousand francs						
	1927	1928	1929	1930	1931	1932	1933	1927	1928	1929	1930	1931	1932	1933
Dynamo-electric machines ...	2,366	2,959	5,914	11,417	10,003	4,191	3,820	52,847	66,077	117,178	205,463	165,877	69,290	63,493
Electrical and electrotechnical apparatus ...	1,331	3,614	5,815	8,432	8,051	6,322	5,079	81,196	172,812	270,718	309,516	300,068	233,008	186,037
Electric lamps ...	293	739	871	907	788	560	517	39,179	83,926	100,891	110,936	93,012	77,961	71,074
Insulated wires and cables ...	1,923	5,457	7,252	3,924	2,179	2,024	5,440	22,557	53,097	74,791	43,178	21,412	18,053	42,346
Electrical spare parts ...	428	728	682	1,327	745	532	544	20,607	22,504	28,136	44,971	25,916	18,975	16,665
Accumulators and their parts	240	546	1,326	1,482	1,170	774	611	2,338	4,509	9,149	9,399	6,736	3,735	3,016
Insulators (porcelain, glass, &c.) ...	155	301	1,106	755	867	275	301	1,572	3,425	9,567	7,214	7,572	3,245	3,577
Miscellaneous ...	743	1,459	1,688	1,842	1,575	1,423	2,378	7,582	15,701	19,037	22,473	14,594	21,315	39,944
Totals ...	7,479	15,803	24,654	30,086	25,378	16,101	18,690	227,878	422,651	629,467	753,150	635,187	445,582	426,152
Percentage increase compared with 1927 ...	—	111	229	302	239	115	+150	—	85½	176	230½	179	95½	+87

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It will be seen that, in point of tonnage, exports in 1927 were nearly four times as great as imports, but the margin has been regularly reduced until in 1933 there was a difference of only 11 per cent.

The value of exports, however, has fallen below that of imports for the last six years. The following table shows the balance of trade for the years 1913, 1920 and 1925 to 1933 :—

ELECTRICAL MANUFACTURES. EXCESS OF EXPORTS OVER IMPORTS.

(Unfavourable balances indicated by the sign —).

Year	Tons	Million francs
1913	2,400	3
1920	486	—22
1925	12,785	208
1926	20,040	462
1927	19,974	153
1928	15,658	—2
1929	7,095	—176
1930	4,921	—232
1931	6,660	—195
1932	3,057	—181
1933	2,307	—170

Domestic Electrical Appliances.—French householders, on the whole, appear, compared with American, Swiss and other Continentals, rather slow to adopt electricity in their homes for purposes other than lighting. Electric irons have been in fairly general use for some time past, but until comparatively recently electric radiators and vacuum cleaners were far from numerous, and other household apparatus such as cookers, refrigerators, water heaters and the innumerable smaller devices were rarely met. One reason for this relative lack of interest in household electrical appliances has been the alleged high price of current, as in many instances current for such purposes was charged at the same price as for lighting. On the other hand, power producing companies claim that only by a much greater consumption resulting from a more general use of electricity in the household can they achieve such a lowering in production costs as will permit of a reduction in the price charged to the consumer for current.

Some idea of the extent to which domestic electrical apparatus is now used in France may be gathered from a return published by the trade association of dealers in electrical heating and domestic electrical apparatus. According to this return the sales, effected in France during 1930 by members of the organisation, of domestic electrical appliances of French manufacture alone, attained 1,297,000 units, with a value of 84½ million francs. They included 801,000 irons, 132,000 portable radiators, 90,000 kettles, 43,000 small heating devices and kitchen utensils. They represented a power consumption equivalent of 547,000 kilowatts, to which may

be added an additional 50,000 kw. to allow for apparatus made by non-members of the trade association or imported from abroad. With a utilisation of 500 hours yearly for each unit, this represents a power consumption of 300 million kilowatt-hours, or one-third of the energy consumed by electric traction on the railways and tramways. Reports from the various parts of the country tend to indicate that it is in the Paris, Lyons, Strasbourg, Bordeaux and Nice areas that applications of electricity in the household are most pronounced. In the smaller towns, and particularly in rural areas, there is much scope for extension; and reports of electrical distribution undertakings, chambers of commerce, and similar bodies concerned mainly with predominantly agricultural districts in the south frequently comment upon the lack of enthusiasm displayed among agricultural communities where electrical apparatus is concerned.

Within the last three or four years both manufacturers and distributing companies have engaged in extensive propaganda with a view to familiarising the public with the advantages of apparatus for domestic uses, and a very considerable part of the space at exhibitions such as the *Foire de Paris*, the *Salon des Arts Ménagers* and so on, is taken up with their displays. In addition, much poster advertising is done and the Paris distributing company (the *Compagnie Parisienne de Distribution d'Electricité*) has elaborated show-rooms in the centre of the city. Gradual payment terms are offered to overcome the deterrent effect of the relatively high cost of installation of refrigerators and similarly expensive apparatus, but the period of credit is in most cases shorter than in England, rarely extending to more than ten or twelve months. Concurrently with this publicity the method of charging for current has been modified. Under a new system introduced in 1931 by the distributing company above mentioned, and since adopted by some other companies, a mixed tariff based on the number of rooms has been introduced. Efforts are also being made to popularise the use of water heaters and other apparatus acting on the accumulation principle, so as to develop the consumption of electricity during the night hours, when the demand for power for other purposes is at its lowest.

xi. RADIO INDUSTRY

Relative Position of France.—In the popularisation and use of radio and in the development of the manufactures in this new industry, France appears to have lagged somewhat behind the United Kingdom, the United States and Germany. In the last five years, however, there has been a considerable expansion in the private use of radio; since 1929, the number of receiving sets in use has advanced from one in 70 to about one in 28 of the population. There is obviously still room for further expansion,

for in the United States, the United Kingdom and Germany, it is reckoned that there is one for every 8, 10 and 15 inhabitants, respectively.

Law of 1933.—The lack of the requisite legislation for the regulation of broadcasting, which, though proposed in 1926, failed to materialise until the Budget Law of June, 1933, no doubt checked the normal developments observed elsewhere. Many factors, technical and economic, were involved. The principle of a State monopoly had been reaffirmed in the 1928 Budget Law under which all stations created since January 1st, 1928, and all not authorised, had to be closed, or those transformed since that date had to be reduced to old conditions within a month, so that broadcasting companies were inhibited since the end of 1927 from building new stations or modernising existing plants without special authorisation (which in the last five years was granted only in two cases). Lacking regular income from licence fees and similar sources, although they have earned goodly sums from the paid publicity, the stations have not had the adequate funds for the production of programmes of the highest quality, and large bodies of French listeners have turned to foreign stations. This circumstance is deemed to account for the large demand in France for multivalve sets capable of picking up distant stations without interference from home high-powered stations.

The new law, *inter alia*, imposes taxes both on receiving sets and on valves whether native or imported, and enjoins the compulsory modification of electrical apparatus causing interference with radio reception. The new taxes, which are expected to yield 45 millions in the first year, are to be applied to the financing of broadcasting, the State adding as subvention an extra three millions. As regards the elimination of parasitic noises, it is worth noting that appreciable progress has been recently secured as a result of the municipal edicts, which have obliged tramway companies, factory owners and other users of industrial or domestic appliances, to fit suitable devices for preventing interference with broadcasting reception. By the end of February, 1933, no fewer than 128 municipal authorities had taken this step. Numerous court decisions in the same sense have likewise helped to reduce this drawback of disturbance. In the Paris area, the proximity of two powerful stations (the Radio-Paris and the Eiffel Tower) renders an expensive super-heterodyne set almost a necessity for those who want other than mere local programmes. When the 1933 legislation has wrought its effect, and when the projected new regional stations are completed, French listeners will have a more varied choice of programme without seeking beyond France. It is considered that as French makers are recognising the possibilities of bandpass filters, screened components, ganged condensers, and other features of the United Kingdom and American

technique, a higher degree of selectivity and purer reception with less expensive sets will become possible. The purchasing public will be correspondingly increased.

Broadcasting Stations.—The excessive number of emitting stations, stated to be 300 in 1928, was reduced as a result of the Budget Law of that year. A decree of July, 1928, authorised thirteen private stations in France. At the present time there appear to be about 10 private stations, of which four are in or near Paris, and others at or near Toulouse, Bordeaux, Montpellier, Juan-les-Pins, Béziers, Fécamp; and 14 State stations, of which three at Paris, and others at or near Lyons, Bordeaux, Montpellier, Toulouse, Strasbourg, Rennes, Lille, Nice and Marseilles (the two latter to commence transmitting in 1934). The Radio-Paris station (taken over by the State 17th December, 1933) has a wavelength of 1,224.1 metres and 85 kilowatt power: the Eiffel Tower (State), 1,445.8 metres wavelength and 15 kilowatt power. The new State broadcasting station, Toulouse-Pyrénées, the construction of which is costing 10 million francs, is nearing completion and should be in service by May, 1934. One of the principal objects in view, in replacing the existing 2-kilowatt station by this powerful one of 120 kilowatts, is to enable the reception of French news, propaganda and concerts in the North African possessions and in the countries of South America. The new station at Lyons-la-Doua is now under construction, and those of Rennes (100 kw.), Marseille-Provence (60 kw.) and Lille (60 kw.) are to be commenced in 1934.

Taxes and Duties.—The Budget of 1933 introduced taxes on receiving sets at the following rates: crystal sets, Fcs. 15; valve sets for private use Fcs. 50; valve sets used for public auditions where no charge is made for admission (such as cafés, restaurants, etc.), Fcs. 100; sets used for public auditions where a fee is charged (concert halls, etc.), Fcs. 200. In each case the payment covers a period of a year from the time of declaring the apparatus. Penalties are imposed in case of non-declaration within the period of one month laid down in the regulations. Manufacturers or importers of valves for use in radio sets are, by the same law, called upon to pay Fcs. 3 per valve sold at a retail price of less than Fcs. 50; Fcs. 4 per valve whose price is from 50 to 70 francs; and Fcs. 5 per valve whose price is in excess of 70 francs.

Customs duties are levied on valves at the rate of 12 per cent. *ad valorem* under the minimum tariff or 48 per cent. under the general tariff, and on complete sets, components and accessories at 22 and 80 per cent., respectively. There is in addition the import tax (levied in lieu of the internal business turnover tax) of 6 per cent.

Licence Fees and Royalties.—The position in France respecting the payment of licence fees and royalties on radio

apparatus appears to be somewhat uncertain at present. The *Compagnie Générale de Télégraphie Sans Fil* and the *Compagnie Française Thomson-Houston* claim to hold, between them, most of the master patents, but the grounds of their claims are contested by many manufacturers and by some holders of individual patents. Royalties on complete sets are understood to amount to about 10 per cent. of the cost. Licences for electro-magnetic loud-speakers are issued by the *Compagnie Générale de Télégraphie Sans Fil*, those for electro-dynamic loud speakers by the *Compagnie Française Thomson-Houston* (the fee in this case being 30 to 35 francs per instrument), and those for other loudspeakers of the cone variety by *Le Matériel Téléphonique*. The *Western Union* concern claims the right to levy a royalty on sets incorporating the push-pull principle, but this claim is resisted. Litigation is proceeding or pending between several of the rival patent-holders, one of the most important cases being that which should decide the ownership of the super-heterodyne principle. Meanwhile, numbers of manufacturers of sets, profiting by the uncertain position, refrain from paying royalties to anybody.

Market Demand and Output Capacity.—The value of the market in France for radio receiving sets and accessories has been estimated at about 400 to 500 million francs yearly. The former sum is probably nearer the reality, judging by calculations based on published statements from official sources respecting the proportion of the demand that is supplied by foreign manufacturers. In trade circles it is currently accepted that the annual turnover is about one-seventh of that of Great Britain. The number of receiving sets in use may be gauged by the fact that, up to August, 1933, the number of licences applied for by owners of wireless receiving sets was just over 1,400,000, and it is estimated that there are at least another 200,000 sets not yet declared. French manufacturers are stated to be capable of meeting 75 per cent. of the demand. There are at present some 20,000 to 25,000 workers and about 600 millions of capital engaged in the industry. Its widely disseminated nature may be seen from the fact that the 1933 radio trade directory shows that there are in Paris and its immediate vicinity 269 manufacturers of radio sets and 156 manufacturers or wholesale dealers in accessories and spare parts; and in the provinces 77 manufacturers of sets, 49 of accessories and parts, and three of valves. The list includes 12 makers of transmitting sets, 123 of receiving sets, 43 of transformers, 36 of fixed condensers, 33 of loud-speakers, 19 of amplifiers, 16 of valves, five of microphones, seven of television apparatus, and so on. Manufacturers are to be found in many provincial towns: Lyons, Lille, Amiens, Strasbourg, Grenoble, Orleans, Nancy, and numerous smaller centres. Although a considerable part of the total turnover is probably shared between a few leading companies, of which several are subsidiaries of the principal concerns in the electrical

industry, the degree of concentration would not appear to be as great as in some other branches of the electrical industry; for out of 363 firms who in May, 1930, were members of the national manufacturers' association (the *Syndicat Professionnel des Industries Radio-électriques*) 255 had fewer than 30 workers each, 64 had fewer than 200 workers, and the remaining 44 firms with over 200 workers each undoubtedly included some whose activities are not confined to the manufacture of radio apparatus alone.

Principal Manufacturers.—No great changes have occurred since 1928 in the general organisation of the industry and in the relative importance of the principal firms. The predominating concern, the *Compagnie Générale de Télégraphie Sans Fil*, both a manufacturer and an operator of stations, increased its capital in September, 1929, by 31½ millions to a total of 100 million francs. It also holds controlling interests in half a dozen concerns with a total capital of 140 millions. It undertook, in 1929, the construction of radio stations for the Turkish and the Persian governments at Angora and Teheran, and, in collaboration with the State department of posts, telegraphs and telephones, established regular services of radio communication with Argentina, with Brazil and with French Indo-China. At the beginning of November, 1932, a radio telephone service was inaugurated between Paris and Cairo. The company's international ramifications extend to holdings in Belgium, Italy, Spain, Czechoslovakia, Austria, Argentina, Brazil, Chile, China and other countries. Three subsidiaries, the *Compagnie Radio-France* (capital 55.5 millions), the *Compagnie Radio-Maritime* (capital 12 millions) and the *Société Radio-Orient* (capital 7.3 millions) are mainly engaged in providing facilities for radio communication with England, Norway, Czechoslovakia, Austria, Roumania, South America, with the Far East, and with vessels on the high seas. The *Compagnie Radio-Maritime* also furnishes vessels with receiving and transmitting apparatus, and with other radio instruments such as radio-goniometers, depth-sounding apparatus and so forth. The *Société Française Radio-Électrique* (capital 20 millions), which has factories at Levallois-Perret and experimental laboratories at Houilles, both in the north-western suburbs of Paris, designs and constructs transmitting stations, and has carried out important contracts both for the French and for foreign governments. The department concerned with the manufacture and sale of receiving sets under the name "Radiola" was in the course of 1928-29 ceded to the new subsidiary company "La Radiotechnique" in return for shares to a value of 10 millions (which have recently been sold to a purchaser whose name has not been disclosed). *La Radiotechnique* (capital 35 millions) has largely developed its output of radio valves, and in order to cope with the growing business, opened a new factory in 1930. Agreement was reached with the Dutch concern, Philips, whereby the latter recognises the French company's patents, and in 1932 the radio section

of Philips dealing with French territory was transferred to *Radiotechnique*. At the end of 1929 was formed a new subsidiary, the *Compagnie Radio-Cinéma* (capital 10 millions), for the manufacture and sale of talking apparatus for the cinema industry. One of the principal French cable companies, the *Compagnie Française des Câbles Télégraphiques*, is also linked with this group through its holdings in the *Compagnie Radio-France*, and was able to obtain material assistance from the latter company for the maintenance of its services during the period from November, 1929, to September, 1932, when its own submarine cables had been put out of action by earthquakes.

Although little information is available respecting the actual turnover of this group in the last few years, some idea of the scale of its operations may be gathered from the fact that the net profits of the seven associated companies (three of which are as yet in their infancy) amounted to 17.6 millions, or 12½ per cent. of the registered capital, during the last financial year for which reports have yet been published, the profits earned by the parent company, the *Compagnie Générale de Télégraphie Sans Fil* alone, in the years 1929, 1930 and 1931 being 15.3, 15.5 and 11.5 millions gross (or 10.8, 10.2 and 8.6 millions net after substantial provision for reserves). The *Compagnie Radio-Maritime* distributed a dividend of 25 per cent. in 1929, and of 20 per cent. in each of the three succeeding years, and the *Société Française Radio-Electrique* has made regular distributions of 15 per cent. for the last five years. The valve-making subsidiary (*Radiotechnique*), which in 1925-27 was distributing dividends of 25 to 30 per cent., has not yet resumed the dividend-paying stage since it embarked upon the manufacture of receiving sets, but a considerable improvement in its position is indicated by the profit in the accounts for 1931-32.

The *Compagnie Française Thomson-Houston* holds a large interest in the *Etablissements Ducretet*, one of the best-known makes (in company with Radiola) among French sets, and the latter's manufacturing plant was in 1929 transferred to one of the Thomson-Houston factories in the vicinity of Paris, which has since doubled its former capacity.

Although there do not appear to be any other instances of groups of firms under one common control, two small groups are known to have interests in common. The first is formed by the three concerns, *Société Indépendante de T. S. F.*, the *Société Indépendante de Constructeurs Radio-Electriques pour Amateurs* (known as the S. I. C. R. A.), and the *Société Indépendante d'Exploitation Radio-Electrique*; and the second by the *Etablissements Radio-L. L.*, *Le Thiolite* and the *Compagnie Nationale de Radio-Diffusion*. Other prominent manufacturers include *Brunet* (accessories, particularly telephones and loud-speakers); *Tudor* (accumulators of all sizes); *Gaumont* (makers of the "Fotos" valves, etc.); *Herbelot and Vorms* (makers of the "Hervor" receiving set), etc.

Trade Organisation.—Trade organisation has rapidly developed in this new industry. The membership of the Radio Electric Industries' Federation (*Syndicat Professionnel des Industries Radio-électriques*), constituted in 1924, on the fusion of two previous trade associations, and which is regarded as thoroughly representative of the entire industry, grew from 61 firms in that year to 363 in 1930: it has since fallen (to 287 in 1932), mainly because hard times had driven numerous firms out of existence (*e.g.*, in March, 1932, three important constructors of sets with annual turnovers of many tens of millions went into liquidation). Member firms in the Paris area alone employed 15,000 workers in 1932, and showed a capital investment of 400 million francs. Its activities have so developed that it maintains a dozen separate departments (customs and fiscal legislation: broadcasting: standardisation: makers of valves: of sets, of accessories, of spare parts, of talking machines, sonorous films, telephotography or television; labour and wages and retail trading). The Federation has recently devoted much time to combating the pernicious custom of abusive trade discounts (not confined to France): the extent of the evil is indicated by its efforts to have them limited to a maximum of 45 per cent.

Many trade exhibitions are held every year in different centres in France. The most important, organised by the Federation in Paris, is now open to countries giving reciprocity to French manufacturers at similar exhibitions. The great Paris Fair held annually in May has an important radio section, which is open to foreign manufacturers. The Lyons radio exhibition (September) accepts foreign exhibits, if they are represented in France by a firm or firms of French nationality. Similar exhibitions are held at Lille, Marseilles (September), Bordeaux (June) and elsewhere. At these various manifestations are usually found prominent displays by American, Dutch and German firms, but British exhibits have not been conspicuous, although many British components are frequently embodied in sets of French manufacture.

Foreign Trade.—Imports of both valves and sets largely exceed exports, both in quantity and in value. From 1929 to 1932, the value of valve imports rose from $3\frac{1}{2}$ times to $6\frac{1}{2}$ times that of exports. In the case of sets, in 1928 the value of exports was 66 per cent. greater than that of imports, but from 1929 onwards the position has been reversed, the value of imports gradually increasing from $1\frac{1}{2}$ times that of exports, to over six times.

The quantities and values of *imports* from 1927 onwards were:

[TABLE]

Year	Weight—tons		Value—million francs	
	Valves	Sets	Valves	Sets
1927	21.6	87.7	3.3	2.2
1928	106.5	492	21.2	20
1929	164.3	1,229.9	30.3	50.2
1930	282.2	2,701.5	47.3	86.6
1931	293.8	2,998.3	46.2	101.1
1932	279.1	2,872.2	50.8	97.1
1933	281.2	1,956.6	45.8	69.1

Holland formerly occupied a predominating position as a supplier of valves, furnishing 84.6 tons (80 per cent. of total imports) in 1928, but her lead has been seriously challenged in the last three years by the United States, Germany and the United Kingdom. The position of the United Kingdom has receded from second in 1928-30 to fourth in 1931, third in 1932, and fourth in 1933 (43.6, 55.6 and 33.7 tons respectively), owing to the greater development of imports from the United States and Germany. United Kingdom goods were making great headway in 1930 and 1931, but they were arrested in their development by the quota system. The following table shows the weight of valves imported from each of the principal supplying countries in 1928-33, and their respective percentage shares in the total imports:—

FRENCH IMPORTS OF RADIO VALVES : PRINCIPAL SUPPLIERS.

From	1928	1929	1930	1931	1932	1933
Quantities in metric cwt.						
Holland	846	1,153	1,411	852	839	1,003
United States	(a)	(a)	182	571	626	729
Germany	41	115	238	641	449	472
United Kingdom	53	163	756	436	556	337
Hungary	47	(a)	(a)	206	(a)	168
Austria	29	98	96	186	207	(a)
Percentage of total imports						
Holland	79.5	70.2	50.0	29.0	30.1	35.7
United States	(a)	(a)	6.4	19.4	22.4	25.9
Germany	3.9	7.0	8.4	21.8	16.1	16.8
United Kingdom	5.0	9.9	26.8	14.8	19.9	12.0
Hungary	4.4	(a)	(a)	7.0	(a)	5.9
Austria	2.7	6.0	3.4	6.3	7.4	(a)

(a) Not separately distinguished in trade returns.

As regards sets, Germany and Holland alternate in the leading position, and together supply from 73 to 88 per cent. of total imports. The quantities furnished by the United States have

made greater advance since 1929 than those furnished by other countries. Imports from the United Kingdom declined by 25 per cent. from 1928 to 1930, while those from other countries were increasing very substantially; and although in 1931 and 1932 imports from the United Kingdom were 56 and 120 per cent., respectively, greater than in 1930, her proportionate share of the total imports is only one-fourth of what it was in 1928. The quantities furnished by the principal suppliers, and their proportionate shares in total imports, are shown in the following table :—

FRENCH IMPORTS OF RADIO SETS : PRINCIPAL SUPPLIERS.

From	1928	1929	1930	1931	1932	1933
Quantities in metric cwt.						
Germany	1,920	4,076	6,612	12,953	11,987	6,599
Holland	1,685	6,259	17,023	9,170	11,526	8,299
United States... ..	(a)	725	1,532	5,693	3,080	3,336
United Kingdom	841	727	635	992	1,399	(a)
Percentage of total imports						
Germany	39.0	33.1	24.5	43.2	40.9	33.7
Holland	34.2	50.9	63.0	30.6	39.6	42.4
United States	(a)	5.9	5.7	19.0	10.6	17.0
United Kingdom	17.1	5.9	2.4	3.3	4.8	(a)

(a) Not separately distinguished in trade returns.

Restriction of Imports by Quota.—From the very rapid growth in imports of radio valves and sets (the former increased over 13-fold and the latter 34-fold between 1927 and 1931, largely owing to heavy consignments from Germany and the United States) it was estimated in 1931 that 75 per cent. of the French home market had been captured by foreign manufacturers; and as from January, 1932, the quota system was applied to this class of manufactures. The sum total of the import quotas set for the four quarters of 1932 amounted to 165.5 tons for valves and 1,624.1 tons for sets, corresponding in each case to a reduction of 43 per cent. on the average of the imports during 1930 and 1931; but it would appear that the actual imports were double the authorised quotas. For the first quarter of 1934, the valve quota was fixed at 68.1 tons, of which Great Britain received 12.9, Holland 24.8, Germany 11.1, and the United States 9.6 tons. For the same quarter the quota for radio sets was 525.4 tons, Great Britain receiving 24.8, Holland 218.6, Germany 169.1, and the United States 85.3 tons. In June, 1933, Press announcements appeared to the effect that fixed condensers are also to be regulated by quota, but the decree fixing the quantities has not yet been issued.

Effects of Imports Quota.—In June, 1932, five months after the first application of the quota system to radio goods, an enquiry of the French manufacturers' association among its members respecting the benefits (if any) derived from the limitation of imports, revealed that, whereas there had been in November and December, 1931, a progressive decline in activity, the months of April and May, 1932, showed a recovery of about 40 per cent. Numerous manufacturers reported an increase of 35 per cent. in turnover as compared with corresponding months of the previous year, lamp makers reported a 60 per cent. increase, and the average number of hours being worked per week had grown from 38 in December and January to 48 in February, while in March, 1932 some firms had resorted to overtime. Technical standards were being improved, and it had been found possible, owing to production on a larger scale, to reduce the wholesale price of many spare parts by 25 to 30 per cent. In September, 1932, it was reported that 3,000 unemployed had been able to resume working, and that the proportion of the market monopolised by foreign makers had become reduced to 55 per cent. Since that time, several manufacturers who had closed their works have resumed production.

Exports of radio valves were not separately distinguished in the trade returns until 1929. In that year their weight was 87.3 tons and their value 7.8 million francs. After increasing to 96.6 and 112.8 tons in 1930 and 1931, they declined in 1932 to 80 tons, but recovered to 104.8 tons in 1933. The United Kingdom was until 1932 by far the largest customer, taking 33, 42, 42 and 39 per cent. of total exports in 1929-32 (29, 40.3, 47.4 and 31.2 tons respectively); but in 1933 she took only 10.8 per cent. (11.3 tons). Belgium takes from one-half to one-fourth of those quantities. The proportion taken by the French colonies as a whole declined from 21 per cent. in 1929 to 14.6 and 12 per cent. in 1930 and 1931; but there was a marked advance in 1932 and 1933, when the colonies as a whole took 18.2 and 68.9 tons, or 22.7 and 65.7 per cent. of total exports; and in the latter year Algeria became the leading customer (47.7 tons, as against only 6.7 in 1932). The remainder, constituting (until 1932) about one-fourth of total exports, is shared mainly among Holland, Switzerland, Spain, Italy, Denmark, Germany and Argentina.

Exports of sets continued to expand until 1930, in which year they attained 852 tons (value 45.2 millions), or 27 per cent. more than the 670½ tons recorded in 1928. In the next two years, however, they declined to 646 and 341 tons (values 32.2 and 16.7 millions), so that in 1932 they were lower by half than in 1928. In 1933 exports advanced by 40 per cent. to 476 tons (value 23 millions), mainly as a result of the large increase in purchases by

the North African colonies. Belgium is the principal foreign customer (48.6 and 36.2 tons in 1932 and 1933), followed by the United Kingdom (28 and 24.9 tons), Holland (15.2 and 23.6 tons), and Switzerland (11.3 and 10.5 tons). The colonies take a large proportion: 29.7, 32.6, 46.4, 38.5, 51.5 and 71.7 per cent., respectively, in 1928 to 1933. Algeria, the principal customer, increased her purchases from 117 tons in 1932 to 241½ in 1933, those of Morocco advanced from 16.7 to 43.4 tons, and those of Tunisia from 18.4 to 30.5 tons.

xii. THE CINEMA INDUSTRY

General and Financial.—It is estimated that the cinema industry in France provides employment for eighteen or twenty thousand persons. The French Cinema Trade Year Book for 1928 gave as 11,000 to 12,000 the number of persons employed in the operation of cinemas, in addition to 1,000 artistes, 4,200 supernumeraries and 1,000 machine operators.

Up to 1931 cinema companies in France were prospering, and little difficulty was experienced in securing money for purposes of extending old or establishing new companies. The French cinema trade organisation states that during 1930 and 1931 new capital issues amounted to 145 and 108 millions, respectively (69 and 83 millions for new companies and 76 and 25 millions for capital increases), and that at the end of 1931 it was estimated that 738 millions were invested in film-producing concerns, 51 millions in the manufacture of apparatus, 55 millions in the developing and printing of films, 59 millions in their distribution, and 76 millions in cinema theatres, making a total of 979 millions. The tide turned in 1932, when seven companies reduced their capital by an aggregate of 35 millions and 49 others, representing 74 millions of capital, either failed or were voluntarily wound up; so that although 53 millions were subscribed for new companies and 13 millions for capital increases, there was on balance a net reduction of 53 millions in the capital employed in the manufacture and exhibition of films. In 1933, according to the trade journal *La Cinématographie Française*, 228 new companies were formed, with an aggregate capital of 70.3 millions, 19 others increased their capital by 3.4 millions, and 58 firms (capital 23.1 millions) failed or were voluntarily wound up; so that there was on balance a net increase of Fcs. 50,564,000 in the capital invested in the industry.

Failures in 1931 and 1932 of three banks connected in a special manner with leading cinema firms seriously affected the financial fortunes of several of the latter, one concern having had 100 millions on deposit with one bank, and another, having been suddenly faced with the prospect of perhaps having to repay over 200 millions to the State as receiver for another bank. Two or three other firms of good standing had either to wind up, or narrowly escaped failure. Suggestions were made in 1931-32 for the constitution of one large State organisation that would embrace the four principal cinema companies, but the reasons advanced against this proposal were too powerful to allow of its being carried into effect. Meanwhile the largest companies were getting their finances into better shape, and they now appear fairly launched on the way towards regaining their former prosperity.

Cinema Receipts and Taxation.—There are no published returns respecting the total receipts of all cinemas in France, but figures relating to the takings of cinemas in Paris and its vicinity

show a large advance since the coming of the spoken film. In 1925 Paris cinema takings amounted to 118 millions; by 1929 they were 228 millions, and in the next three years they advanced to 308, 361 and 359.3 millions respectively, constituting more than half the total takings of all forms of amusement undertakings in Paris. The progression is striking when contrasted with theatre receipts, which have declined from 206½ millions in 1929 to 204, 181 and 135 millions in 1930, 1931 and 1932, or with those of music-halls, which in the same period have fallen from 133.7 to 68 millions. Moreover, cinemas bear a greater proportion of taxation than do other amusement establishments. The former paid 81.2 and 79.9 millions, or 22.53 and 22.25 per cent. of total receipts, in amusement taxes (*taxe d'Etat* and *droit des pauvres*) in 1931 and 1932, while the non State-subsidised theatres paid in the same years 18.1 and 11.8 millions, or 13.1 and 11.5 per cent. of total takings. It is stated that, apart from the foregoing taxes, cinemas pay 30 per cent. of their receipts in the form of sumptuary taxes, besides royalties of 3.3 per cent. to authors and composers.

The amusement tax is on a scale graduated according to the takings of the cinemas. The latest returns (year 1932) show that the total receipts of 220 cinemas in Paris, with seating accommodation for 210,000 persons were 359 millions: in the same period the Paris theatres took 102 millions. The twelve largest cinemas in Paris aggregate 40 per cent. of the total takings. Two of these, the *Gaumont Palace* and the *Rex*, have 5,000 and 3,800 seats, respectively, the former being (it is claimed by the proprietors) the largest cinema in the world. With the exception of some five or six of the largest cinemas in Paris, which are sumptuously decorated, cinemas in and around Paris, on the whole, are far from being as luxuriously equipped as those in London and its suburbs, although the prices of admission are considerably higher. Indeed, this relative lack of comfort was adduced by an authoritative writer in June, 1930, as one of the reasons for the small proportion of French persons who habitually visit the cinemas (only about 10 per cent.). Other evidence that the population of France is as yet far less cinema-minded than that of England, is furnished by the fact that in the outlying quarters and the suburbs of Paris, cinemas are open only for two or three days a week (usually Saturday, Sunday and Monday).

Capacity of French Market for Films.—The national association of the French cinema industry estimates at from 400 to 500 the number of long films required each year to meet the needs of cinemas in France. There were actually shown in France, during the years 1929 to 1933, 437, 478, 451, 496 and 572 long films respectively, of which one-half in each of the first three years, two-fifths in the fourth year, and one-fifth in the fifth year, were of American origin. The following table indicates the numbers furnished by the producers of different countries:—

LONG FILMS SHOWN IN FRANCE, 1929-33

Producers	1929	1930	1931	1932	1933
American ...	211	237	220	208	230
French...	52	94	138	157	158
German ...	130	111	60	99	113
English ...	23	16	8	7	34
Soviet Union ...	9	3	8	6	2
Italian ...	3	2	7	4	17
Czechoslovak ...	1	3	1	2	2
Polish ...	1	—	—	4	6
Belgian ...	—	—	—	4	4
Other nationalities	7	12	9	5	6
Totals ...	437	478	451	496	572

Included in the 1932 total were 254 speaking or singing films in the French language, 132 in English, 59 in German, 15 sound and 23 mute films. In 1933 there were 317 films in the French language (of which, 143 "dubbed"), 127 in English, 19 in German.

The usual programme comprises one principal film, supported by a short film of the "Mickey Mouse" or the "Silly Symphony" type, a newsreel item and (sometimes in addition to, and sometimes in place of, the above-mentioned short film) a travel or educational film. Some cinema theatres have made a feature of two long films, but this practice is becoming gradually less prevalent, and seems likely to be abandoned before very long. Several of the more palatial establishments regularly include imposing orchestral arrangements, and dancing or other variety turns. Many minor cinemas both in the city and its suburbs include one or more 'variety' turns.

In the matter of news items, French and American news greatly predominate, and English events shown are very few in number. Both from the commercial and the propaganda points of view, this seems to be a field to which more attention might with advantage be given. In Paris itself there are five small cinemas (only two of which appear to attract large audiences) whose programmes are devoted entirely to news films; the fact that news items are included in the programmes of nearly all ordinary cinemas evidently militating against the growth of a demand for the more specialised theatre.

International Position in Days of Mute Film.—Prior to the coming of the sound film, France ranked third in the world as a producer of films, the first and second places being occupied respectively by the United States and Japan. American production is estimated to have been about 2,000 films annually (of which one-sixth, or about 330 to 350, were full-length films), while that of Japan is stated to have reached 980 in 1927. European countries came far short of these figures: of full-length films, France produced 55 in 1926, Germany 33, Italy 14, Great Britain 2. In

contrast with other countries, the records of film production in France displayed no very decided tendency from 1924 to 1929, the number of full-length films produced during those years being 68, 73, 55, 74, 94 and 53, respectively. In the same period American output was steadily declining (from 589 to 211 films), while those of Germany and of Great Britain were advancing (the former from 20 to 130 and the latter from zero to 23).

French Film Production, 1929 to 1933.—In the absence of precise details respecting actual output, the following returns of French films *displayed* during the last few years will serve to illustrate both the growth in output and the rapid decline of the non-spoken film. In 1929, 1930, 1931 and 1932 were shown respectively 52, 94, 138 and 157 full-length films (i.e., minimum 900 metres), of which, 45, 18, 5 and 2 were mute films, 2, 6, 10 and 0 were sonorous, and 5, 66, 127 and 155 were speaking films. French output in 1933 was 149 films, besides six turned abroad by French producers.

A high degree of concentration is found in the French film-producing industry. Although 38 concerns contributed towards the actual output of 119 full-length films in 1932, over half the output was the product of four firms: *Paramount Française* 25, *Pathé-Natan* 16, *Gaumont Franco-Film Aubert* 11, and *Jacques Haïk* 9; while 23 firms produced only one film each and seven others two each. In 1933, out of 43 producers, the four named firms turned respectively 11, 24, 17 and 2 films.

Concentration.—The intensive competition of American film interests, already very pronounced in the days of the mute film and still further accentuated since the sonorous or talking film reached the stage of commercial practicability, has led in France to a degree of concentration that is quite unusual in so young an industry. As the result of a series of combinations or absorptions during the period from 1919 to 1929, there remained in the latter year two outstanding concerns of approximately equal importance, overshadowing all others in the French cinematographic industry: *Pathé Cinéma* (capital 136 millions) and *Gaumont Franco-Film Aubert* (capital 100 millions). Next in order come the French subsidiary of *Paramount* (*Société Paramount Française*), with a capital of 10 millions, followed by the *Haïk* (15 millions) and *Oso* concerns which are about equal in importance.

The *Pathé* firm, now operating under the name of "*Pathé-Cinéma*," was formed in 1897, and originally occupied itself only with the manufacture of gramophones and cinematographic apparatus; but at an early date its activities were extended to include all branches of the cinema industry from the manufacture of films and apparatus to the distribution and exhibition of the finished product. Numerous subsidiaries were formed, to deal with the diverse branches of the industry. In the middle of 1929 the company came under new control, and a period of particularly

the *Gaumont* embarked upon a policy of wide extension. It had active extension was embarked upon. At the same time the *Pathé* company came to an arrangement with *Eastman-Kodak*, one of the two most important manufacturers of cinematograph films in the world (the other being the German concern, *Agfa*), whereby a new company was formed, entitled *Pathé-Kodak*, to acquire the *Pathé* company's film-manufacturing plant at Vincennes, a suburb of Paris, and there to make for the European markets general films and other kindred supplies that had previously been imported, in the main, from the *Eastman-Kodak* company's works at Rochester, United States. About the same time occurred the acquisition by the *Columbia Graphophone Company* of a large block of shares in *Pathé's* gramophone-making subsidiary, *Machines Parlantes Pathé Frères*, a step which was followed by the latter's absorption of *Pathé-Orient* and the elimination of *Pathé* competition with *Columbia* in the Chinese market. In the same year *Rapid-Film* was absorbed, *Ciné-Romans*, a separate film-producing company in which *Pathé* held a preponderating share, was purchased, and the company's studios at Joinville were transformed and equipped for the production of spoken films. Several of the larger cinemas in Paris and the provinces were acquired and the building of others undertaken. Already by the end of 1928 the *Pathé* group owned or controlled 45 cinemas, and this number has gradually been extended until at the end of 1933 the company controls, either directly or through its subsidiary *Pathé-Consortium-Cinéma*, 62 cinemas, with audiences averaging 500,000 weekly. In recent years there has been a certain lopping off of some of the group's less profitable branches, so that the present activities are reduced to: *Pathé-Cinéma*, production of films; *Pathé-Consortium-Cinéma*, exploitation of cinemas; *Pathé-Baby*, manufacture of small-sized cinema cameras mainly for amateurs' use; and *Pathé-Rural*, concerned with the hiring out of apparatus and films of less than standard size, and the development of displays with this type of apparatus in rural districts. In 1932 the *Pathé* concern ranked second in the list of French film-producers, with 16 full-length films, being preceded by *Paramount Française* (25) and followed by *Gaumont* (11).

The *Gaumont* group may be regarded as the doyen of the French cinematographic industry, being able to trace its origin back to 1885, though the company in its present form (*Gaumont Franco-Film Aubert*) dates only from February, 1930, when the *Etablissements Gaumont* amalgamated with the *Société Aubert Franco-Film*. Both firms had previously absorbed quite a number of smaller concerns. The combine now has 16 studios, ten of which are equipped for the production of talking films. The development and printing of the films is in the hands of a subsidiary concern, *G.M. Film (Etablissements Gaumont-Maurice)*. As in the case of *Pathé*, with the advent of the sound film in 1929

already, in 1925, joined with the American company *Metro-Goldwyn-Mayer* in the formation of a new company *Gaumont-Metro-Goldwyn*, whose activities as an exploiter of cinemas ensured a large market for the films produced by both participating companies. Although a number of these halls remain under the control of the new company until 1935, the majority of them reverted to *Gaumont* control in 1928 or 1929. In 1930 the *Gaumont* circuit included 46 cinemas, with a seating capacity of 60,000, but since 1931 the less profitable halls have been disposed of, so that the number has now been reduced to 13 in Paris and 10 in the provinces. Among the acquisitions of the *Gaumont* groups was (in February, 1930) that of the *Etablissements Continsouza* which, since its formation in 1909, had developed quite a considerable business as manufacturers of typewriters, motor-car accessories and cinematograph apparatus. This placed the *Gaumont* company in possession of the largest and best-equipped factory in France, at that time, for the manufacture of sound equipment for the cinema industry. Subsequent to the termination of the contract between *Gaumont* and *Tobis*, the former *Continsouza* works were transferred to *Radio-Cinéma*, an associated company which now turns out the apparatus for the equipment of the group's cinemas and studios.

In addition to its main offices in Paris, the *Gaumont-Franco-Film Aubert* group has eleven principal agencies in France and a number of foreign branches, ensuring effective representation in Germany, Spain, Belgium, Poland, Roumania, Egypt, and South American countries. It has two cinemas in Belgium.

Among other prominent concerns in the industry may be mentioned the *Société Paramount Française* (leading film producer in 1932, with 25 films; owns one of the best cinemas in Paris, nine others in the provinces and two in Belgium); *Jacques Haik* (fourth in list of film-producers in 1932, with 9 films; has five cinemas, of which the three situated in Paris include the *Rex*); *Ossso* (produced 8 films in 1932; has arrangements with *Pathé* for the showing of its films in the latter's cinemas); *Braunberger-Richebé* (film production not numerous, but usually of high artistic merit; has a circuit of 11 cinemas, all in the South of France).

Proportion of Foreign Films Displayed.—In the six years 1928 to 1933 American films represented just under half the long-film programmes: out of an average of 527 films shown yearly, 250 were American, 119 French, 106 German and 18 the product of the United Kingdom. In 1931, out of 220 American films shown, 80 were in the English and 39 in the French tongue; in 1932, out of 208, 127 were in English and 62 in French; the corresponding figures for 1933 being 230, 116 and 105. In the same three years German films numbered 60 (of which, 16 in German and 27 in French), 99 (of which, 57 in German and 29 in French)

and 113 (of which, 18 in German, 18 in French and 24 produced in German but with French speaking parts superimposed). The contribution of the United Kingdom was 8 in 1931 (of which, 4 in English and 2 in French), 7 in 1932 (of which, 5 in English and one each in French and German) and 34 in 1933 (of which, 11 in English and 11 in French). The following table shows, for the years 1928 to 1933, the total number of long films displayed in France and the proportions thereof furnished by the four principal supplying countries:—

Year	Grand Total	Producing country			
		America	France	Germany	United Kingdom
1928	726	395	116	126	21
1929	437	211	52	130	23
1930	478	237	94	111	16
1931	451	220	138	60	8
1932	496	208	157	99	7
1933	572	230	158	113	34

The Quota System.—In the immediate after-war years, the French cinema industry was rapidly outpaced by those of the United States and Germany; and by 1927 French production was being swamped by the invasion of foreign films. Limitation of imports of foreign films was recognised as essential not only from commercial, but also from cultural considerations. Accordingly, in February, 1928, regulations were drawn up (with retroactive effect from the 1st October, 1927) applying severe restrictions upon the importation of foreign films. Experience of these regulations for nearly a year disclosed that the protection of the home industry required still more severe limitation of imports. The proposed drastic quota evoked a threatened boycott of the French market by American producers, who could have menaced the life of French cinemas, as French films were totally inadequate to make up the resulting deficiency. Two-thirds of the French cinemas would have been deprived of films, it was estimated, had the boycott become effective, for at that time French output amounted only to 70 or 80 full-length films annually. Negotiations between representatives of French and American interests resulted finally in the waiving of the proposed modifications. During the next four years there was a progressive relaxation of the restrictions, in consequence of the inability of French producers to deliver sufficient films for the country's requirements.

For the year ending 30th June, 1934, limitations on the importation and showing of foreign films in France are reduced to the following:—

(a) Original films in foreign languages may each only be shown publicly in five cinemas in the Paris area (county of the Seine) and in ten cinemas

in the rest of France. The Minister for the Interior has power to waive this rule at his discretion.

(b) Imports of "dubbed" films of more than 900 metres length are restricted to 70 per half-year. The synchronisation must have been effected in studios situated on French territory, and the films must at the time of their showing be clearly presented as "dubbed" films, with the name of the country of origin and names of the artistes interpreting both the visual and the spoken parts.

(c) The displaying of films originating in countries in which French films are subject to restrictions will be subject to such conditions as may be determined by negotiation between the French Government and the governments of the countries concerned.

Under provision (c), an agreement has quite recently been reached with Germany, incorporating a reciprocal treatment more liberal than the terms indicated above. There may be imported into Germany and displayed in that country 20 long films (*i.e.*, exceeding 900 metres) spoken or sung in the German language, produced in France by French firms with or without the collaboration of German firms, without "dubbing," by the simultaneous recording of views and sounds. These films will be assimilated to German films from the commercial point of view and will benefit by all privileges to which German films are entitled. There may also be shown in Germany 15 long French films post-synchronised in the German language, provided that the dubbing shall have been effected in studios on German territory. Corresponding treatment is accorded to the same number of films produced in Germany, as regards their importation and display in France. No restriction of any kind is imposed upon: (a) short films of 900 metres or less; (b) mute films; (c) news films; (d) films composed entirely of advertising matter; or (e) films which have no spoken or sung text, but which have a musical accompaniment, whether recorded directly on the films or synchronised on gramophone records.

Cinemas Equipped for Talking Films.—From July, 1929 to the end of 1933, the number of cinemas in France increased from about 3,000 to 4,585 (of which, however, 340 were closed). At the former date 1,029, or one-third of the total, were considered to be suitable for the showing of spoken films. Proprietors were at first rather reluctant to engage upon the expenditure involved for the installation of the necessary equipment, which about 1929-30 was approximately 200,000 francs in the case of films with the sounds recorded on a band at the side and 45,000 francs in that of the synchronised gramophone record system; so that, by the end of June, 1930, only 70 cinemas in Paris, 24 in the suburbs and 123 in the rest of France, or 217 in all, had been equipped. Quite a considerable body of cinema proprietors were also at first inclined to regard the vogue of the talking film as but a passing craze. Proof of the insistent demand for the talking film, as evidenced by the largely increased takings of the converted cinemas and the corresponding

decline of the others, soon obliged the more conservative proprietors to fall into line, and many cinemas which were not structurally suitable for the display of talking films were rebuilt; so that, by the beginning of May, 1932, there were 1,719 cinemas in France already equipped for talking films, and by the end of 1932 and 1933 the number had grown to 2,246 and 2,537 respectively. The foregoing figures do not include private installations or those in educational establishments (as far back as 1928 it was estimated that there were at least 4,000 halls connected with churches and other social institutions, possessing a complete cinema installation and giving displays either weekly or twice a week).

At first the sonorous equipment adopted was nearly all American or German (*Western Electric, R.C.A.-Photophone and Tobis-Klangfilm*). Many other systems sprang up in 1930-31, and at the end of 1932 there were no fewer than 27 different types of apparatus in use. Six firms (four French and two American) each had between 200 and 250 installations to their credit, two other French concerns had installed 148 and 97 respectively, and thirteen manufacturers (including one German and one Italian) could each lay claim to anything from 22 to 53. Within the last year half-a-dozen or more suppliers, including at least two among the leading firms, have gone out of business.

There exists an arrangement between the *Pathé-Natan* group and *R.C.A.-Photophone* whereby the latter provide the talking apparatus required for the studios and cinemas of the former. A similar arrangement was made in 1930 between the *Gaumont* group and the Hollando-German group *Siemens und Halske-Allgemeine Electricitäts Gesellschaft-Tobis-Klangfilm* for the exclusive supply of apparatus of the *Tonbild* type for cinemas of the *Gaumont* and associated circuits; but the agreement, originally concluded for a period of six years, was terminated after only a few months, and *Gaumont* cinemas are now being chiefly equipped with apparatus of a type made by one of their own subsidiary companies, known as *Gaumont-Radio-Cinéma*.

The synchronised gramophone record system enjoyed a certain degree of popularity in the early days of the talking film, chiefly because its lower initial cost brought it more easily within the reach of the small cinema-owner; and in the middle of 1930 this type of apparatus was to be found in one-fifth of the total number of cinemas equipped for talking films. It has now dropped from favour, however, and to-day the film-band system is almost universally employed.

Films in Colour.—None of the numerous attempts to produce films in natural colours appear to have succeeded until the appearance of the *Keller-Dorian* process, for the development of which a French company was formed. The original system, placed on the market in 1926, was based upon an oscillating mirror prin-

ciple, but this was abandoned in 1928 in favour of another system which permitted the reproduction of an almost unlimited number of originals. Contracts were arranged with the *Eastman-Kodak* company in America and with the *Ludwig Blattner Corporation* in England for the allocation between these two concerns of world rights outside France. Various financial difficulties have arisen, and at the end of 1933 there still appears to be no immediate prospect of films produced by this process becoming available in commercial quantity.

Arrangements between the *Pathé-Natan* group and the proprietors of an English patent also appear to have come to nought.

A very few films in colour (believed to be all of American origin) have been included in some Paris cinema programmes during the last three years.

Foreign Penetration.—Much progress has been made in France both by American and by German interests in all the varied branches of the cinematographic industry. The *Eastman-Kodak* company, through their acquisition of the *Pathé* works at Vincennes (a Paris suburb), and the *Agfa* concern, through their highly-organised sales office in Paris, share between them the greater part of the business in raw film. The import returns for 1929-31 show that six-sevenths of the unexposed film imported came from America and Germany, in approximately equal proportions; and it is to be anticipated that, as the natural outcome of the decision of the *Kodak* company to manufacture in France, American interests will secure a still greater share of the available business. Reference has been made elsewhere in this chapter to the powerful hold gained by the American and German owners of the master patents in respect of sound-film apparatus. In the middle of 1930, at conferences in Paris between representatives of the *R.C.A.-Photophone*, the *Western Electric*, the *Tombild* and other foreign interests, agreement was reached for the partition of world markets between the rival concerns. It was agreed that the United States, Canadian, Australian, New Zealand, Indian and Soviet Union markets should be allocated to American manufacturers, and that Germany, Austria, Czechoslovakia, Holland and her colonies, Denmark, Sweden, Finland, Yugoslavia, Roumania and Bulgaria should be regarded as the territory of German manufacturers. Great Britain and Latin Europe were left as markets for open competition. *R.C.A.-Photophone* has close ties with the *Pathé-Natan* interests as regards the exclusive use of American sound-producing apparatus in the many cinemas of the *Pathé* circuit, now the most important in France. An agreement of a similar character, made in July, 1930, between the *Gaumont-Franco-Film-Aubert* group and the Hollando-German group comprising *Siemens und Halske*, the *Allgemeine Elektrizitäts Gesellschaft* and *Tobis-Klangfilm*, and intended to continue for six years, was terminated after it had been working

for only a few months. The acquisition by the *Columbia Graphophone Company* of the gramophone department of the *Pathé* business is believed in some quarters to portend a decision on the part of *Western Electric* (whose connection with *Columbia* is no secret) to embark upon the manufacture of sound-film apparatus in France.

As regards film production, the acquisition by *Paramount*, over four years ago, of studios at Joinville (Paris suburb) was the initial step towards an intensive programme of production in France of both long and short films in five or six languages: already versions in French, Spanish, Italian, Swedish, have been made, and in 1932 the *Paramount* company's French subsidiary headed the list of French producers, with 25 long films out of the total of 119. *Paramount* and *Metro-Goldwyn-Mayer* control, or controlled, some of the largest and most luxurious cinemas in France, and although the close relationship between *Metro* and *Gaumont* has been dissolved, there is still a certain amount of reciprocity in the showing of their films. The *Fox Film* company is also very active, and its new films are included in the programmes of large numbers of cinemas. The two largest German producers, *Ufa* and *Emelka*, maintain active organisations for the distribution of their films in France, the former having its own office, operating under the name of *Alliance Cinématographique Européenne*.

Foreign Trade: Apparatus.—Imports of cinematographic apparatus almost doubled in value from 1929 to 1930 (from 7.7 to 14.7 million francs), and have since declined to 12.4, 4.4 and 4.6 millions in 1931, 1932 and 1933. The relative proportions borne by view-taking and projection apparatus in this total vary widely from year to year. The value of exports is roughly twice that of imports, the figures for 1929-33 being 30.3, 30.4, 25.5, 11.9 and 9.7 million francs.

Germany is the leading supplier to France of optical apparatus for cinematographic purposes, and tends to secure an increasing share of the total business. Out of 5.6, 25.4, 15.7 and 6.0 tons of view-taking apparatus imported in 1929-32, German makers furnished 1.8, 7.6, 8.8 and 3.8 tons, or 32, 30, 56 and 63 per cent. The United States supplied 2.5, 16.5, 4.1 and 0.7 tons, or 44.6, 65, 26 and 11.7 per cent. Italy supplied 14.3 per cent. in 1929, but no imports from that country were separately recorded in either of the next two years, while Great Britain was recorded separately for the first time in 1931 with 1.5 tons, or 9.6 per cent. of total imports, and in 1932 supplied 1.4 tons, or 23.3 per cent. In the case of apparatus for the projection of pictures, the same order is observed. Out of total imports of 72.4, 153.2, 190.6 and 70.6 tons in these years, Germany supplied 23.1, 72.5, 125.3 and 48.6 tons (= 32, 47, 66 and 69 per cent.), the United States 29.9, 51, 40 and 13.1 tons (= 41, 33, 21 and 18.6 per cent.), and Great Britain 14.8, 24.9, 21.4 and 3.4 tons (= 20.5, 16, 11 and 4.8 per cent.).

Exports of apparatus in 1929-33 attained 515, 512, 418, 189 and 120 tons, Great Britain was the most important individual customer (save in 1933) taking 18, 19, 17.7, 15 and 4.6 per cent. of total exports; while the French colonies collectively took 6.9, 11.5, 18.6, 25.9 and 27.5 per cent., and Belgium, Spain and Germany were fairly equal in importance as customers, taking proportions that individually averaged 10.3, 8.3 and 7.4 per cent. over the five years.

Separate figures for imports and exports of cinematographic sound apparatus are not available, as this class of equipment is blended with wireless apparatus and gramophones in the official trade returns.

Foreign Trade : Films.—The last few years have witnessed a marked change in the direction and amount of French foreign trade in cinematograph films. In 1924 the value of exports was 12½ times that of imports (232.4 million francs against 18.8 million); but since that time imports were constantly on the up-grade while exports were diminishing at a greater rate, until in 1929 and 1930 exports were less than half the value of imports (26.3 and 30.9 millions against 52.7 and 75.9 millions, respectively). Since the latter year imports have declined in value by one-fifth while exports, after a further advance in 1931, have fallen back to about the same level as in 1930, the values for 1931-1933 being : imports, 66.5, 53.7 and 59.6 millions; exports, 41.1, 30.9 and 31.7 millions. Imports of unexposed film tend to increase, and in 1933 constituted six-sevenths of total film imports (30 out of 35.4 million metres). Imports of developed film, after having attained in 1930 one million metres of negatives and 7.7 million metres of positives, have since steadily declined, the former by 55 per cent. and the latter by about 35 per cent.

Exports of developed positives show an increasing tendency (7.8, 9.1, 12.1, 11.1 and 13.4 million metres in 1929-33), and constitute from two thirds to three-fourths of total exports. The other three categories (raw film for negatives and for positives, and developed negatives) all show considerable fluctuation, but on the whole the quantities exported have declined by nearly 50 per cent. since 1930. In the following tables are indicated the imports and exports from 1929 onwards. Prior to 1929 the quantities were shown by weight instead of by length, and therefore do not admit of comparison with the returns for recent years :—

[TABLE]

FRENCH FILM IMPORTS.

(Million metres).

	1929	1930	1931	1932	1933
<i>Raw film :</i>					
For negatives	2.21	6.54	7.95	8.27	17.0
„ positives	19.01	27.51	28.11	20.55	12.9
<i>Developed film :</i>					
Negatives	0.60	1.02	0.66	0.52	0.45
Positives	6.20	7.67	5.58	4.54	5.0
Totals (million metres)	28.0	42.7	42.3	33.9	35.4
Values (million francs) ...	52.7	75.9	66.5	53.7	59.6

FRENCH FILM EXPORTS.

(Million metres).

	1929	1930	1931	1932	1933
<i>Raw film :</i>					
For negatives	0.64	1.24	1.06	1.39	1.01
„ positives	1.83	3.81	0.90	1.32	2.22
<i>Developed film :</i>					
Negatives	2.12	1.58	0.83	1.03	0.77
Positives	7.83	9.11	12.07	11.05	13.36
Totals (million metres)	12.4	15.7	14.9	14.8	17.4
Values (million francs) ...	26.3	30.9	41.1	30.9	31.7

Of the raw film imports, 98½ per cent. are furnished by the United States, Germany and Belgium-Luxemburg, who supplied 75.2, 56.6 and 16.6 million metres respectively out of an aggregate total of 150 million metres imported in 1929-33; Great Britain coming fifth with 633,000. Four countries together account for 93.7 per cent. of the total imports of developed film, namely: the United States 9.64 million metres (44 per cent. of total imports), Germany 6.07 (28 per cent.), Great Britain 2.97 (13.7 per cent.), and Belgium-Luxemburg 1.71 million metres (7.8 per cent.). The returns for 1932 and 1933 show, for both the United States and Germany, little change as regards positives (United States 1.90

and 2.56 million metres; Germany 1.89 and 1.50 million metres), but a marked shrinkage as regards negatives (United States 99.6 and 61.4 thousand metres; Germany 177 and 159 thousand metres). Imports from Great Britain show a substantial drop as regards positives in 1932, followed by a recovery in 1933 amounting to 300 and 500 thousand metres, as compared with 570 in 1931; and Belgium-Luxemburg supplied 191 and 149 thousand metres, as compared with 556; but in the case of negatives, although Belgium maintained her position with 36.4 and 32.3 thousand metres as against 33.5 in 1931, Great Britain's consignments dropped from 59.6 thousand metres in 1931 to 58.4 in 1932 and to 34.8 in 1933.

Trade with the United Kingdom.—The balance of trade in cinema films between Great Britain and France lies in favour of the former, though there are signs of a tendency towards a reduction of the margin. In the case of raw film, France received from Great Britain in the three years 1929-31 an aggregate of 502,596 metres, or 0.55 per cent. of her total imports of that commodity, and sent to Great Britain 148,107 metres, or 1.6 per cent. of her total exports. As regards developed film, Great Britain supplied in the three years 1929-31 a total of 2.97 million metres, or 13.7 per cent. of total French imports, and purchased 1.78 million metres, or 5.3 per cent. of exports. In 1932 and 1933 imports of raw film from Great Britain were 57 and 74 thousand metres (1.98 and 2.47 per cent. of total imports); and those of developed film 359 and 535 thousand metres (7.1 and 9.8 per cent.): Great Britain is not shown separately in the export returns for those years. As a supplier of France, Great Britain ranks third for developed and fifth for unexposed film, while as a customer she ranks sixth and tenth, respectively.

Scope for British Films in France.—United Kingdom film manufacturers and producers do not appear to have made the most of their opportunities, as far as the French market is concerned. It has been seen that Great Britain supplies very little raw film for use by French producers; and although, as a supplier of developed films, she occupies the third rank, she comes far behind the United States and Germany (in 1929-31 imports from the former were three times, and from the latter twice, as great as those from Great Britain). Up to 1929 only two British film-producing concerns appeared to maintain a regular agency in France, and the majority of the 23 full-length films imported from Great Britain in that year were placed through the one company (since wound up) that represented these two concerns. At the present time there are practically no signs of activity on behalf of United Kingdom producers in France, save for the arrangement recently made by one of the leading concerns with the French lessees of a former *Gaumont* cinema to feature their productions.

During the first two or three years of the speaking film the marked superiority, on the whole, of American films over French, coupled with the inability of French producers to turn out films in sufficient numbers (even in 1932 and 1933 their output as only 119 and 149 films with which to meet a demand for about 500 or 600), resulted in the development of a definite market for English-speaking films, which has been supplied so far very largely by films of American origin. In Paris alone there are now over a dozen cinemas whose programmes consist wholly or mainly of English-speaking films, and in many other cinemas the same films, with captions added in French, find a ready welcome.

American and German producers were quick to recognise the advantage to be derived from using French artistes to produce, for relatively little extra expenditure, editions in the French language of their principal talking films.

Existing legislation allows any given foreign film to be shown only in five halls in the Paris region and in ten halls throughout the rest of France; but subject to this restriction (which, moreover, does not apply to films of less than 900 metres) there would appear to be plenty of scope for a more active distribution policy in France so far as United Kingdom films are concerned.

CHAPTER V.—TEXTILE AND CHEMICAL INDUSTRIES

I.—NATIONAL IMPORTANCE OF TEXTILE GROUP OF INDUSTRIES

The textile industries as a whole occupy the predominant position both in the French internal economy and in French foreign trade. The most recent industrial census figures (1926) show that, out of a total 'occupied' population of 20,919,000, the textiles working trades properly so called, employed 933,000 persons, whilst those engaged in transforming textile materials (tailoring, dressmaking, ready-made clothing, underclothing, millinery and others) employed the even larger total of 1,066,000 persons. Nearly one-tenth of the total occupied population belongs therefore to these two groups. Within the former, first place is taken by cotton spinning and weaving with 196,300, followed by woollen (171,600), lace, net, and embroidery (114,200), silk and rayon (112,900), linen, hemp, jute, etc. (104,800), and hosiery (97,800). Save for silk, these spinning and weaving trades are located in overwhelming measure to the north, north-east, and east of Paris. In the single county of the Nord, in which Lille-Roubaix-Tourcoing form practically a single agglomeration, were 199,000 of these textile workers; and in four other adjacent counties, three of them touching the English Channel, having Calais, Amiens, Rouen and St. Quentin as their respective leading towns, there were 111,000 more. In the East, the Vosges county (Epinal) returned 58,000, and the Haut-Rhin (Alsace, with Mulhouse as main centre) 62,000: in both cases predominantly cotton workers. Also East of Paris is the great hosiery county of the Aube, with nearly 32,000 textile workers (Troyes is the chief centre). Silk spinning and weaving, rayon spinning and weaving, and much cotton working, are carried out in the Lyons zone: three counties in its immediate area, the Rhône, the Loire and the Isère, returned respectively 71,000, 55,000, 36,000 in 1926. Nearly 430,000 textile workers are accordingly found on the northern and eastern borders, and over 160,000 in the Lyons area.

Although in this chapter it will not be possible to deal with the textiles transforming group, occupying over one million people, it is of interest to note that the largest employing sections are dressmaking (440,000), underclothing (147,000), ready-to-wear clothing (116,000), laundry (104,000), tailors (75,000) and millinery (64,000). Paris is the principal centre (its immediate area accounting for 275,000 workers), followed by the Nord county 42,000, and the Rhone (Lyons) 41,000.

Outstanding Position in French Export Trade.—The outstanding position of textiles in the export trade is not recent: in 1913 they represented 39 per cent. of the value of all exports of manufactured goods. The attached table shows that for the years 1928-33 the percentages were 44.5, 41.4, 39.8, 30.8 and 30.6, but in 1924 it was 50, and in the years 1925-27, it was respectively 45.1, 42.0, and 45 per cent. A great advance had also occurred in the weight. The highest quantities were reached in 1927 with 242,400 tons, compared with 163,200 in 1913; but in 1931 the latter figure was not attained, and in 1932 and 1933 it was 30 and 26 per cent. less. And it will be borne in mind that the 1932-33 figures include the important contribution of Alsace, which alone in cottons has since 1918 added about one-fifth to the French productive capacity. Fabrics exported are noticed to be many times more important in both weight and value than yarns, but the exports of yarns, especially of cotton and woollen yarns, had increased to a remarkable extent, in weight. Woollen fabrics did not even in 1928 greatly exceed pre-war figures, but cotton fabrics were 78,400 tons in 1927 and 73,200 tons in 1928 compared with 55,400 tons in 1913. Natural silk exports, which reached 9,100, 9,200 and 7,200 tons in 1925-1927, have declined in weight regularly in 1928-33: (in this last year to 23.3 per cent. of 1925 and 1926). Exports of silk yarns and piece goods always much exceeded in value those of any other textile, but in the last five or six years cotton exports have been considerably greater (in 1931-33 more than double), and woollen exports have also surpassed them in value in the same period. Rayon competition no doubt largely explains the decline: its exports have risen from 2,700 in 1928 to 5,600, 5,500 and 4,800 tons in 1931-33. The valuable French export trade in made-up underwear and ready-made clothing has greatly declined both in weight and value since 1930. In 1913 these exports amounted to 7,844 tons worth 253 millions: in 1931-33 to 6,775, 4,627 and 5,919 tons worth, respectively, 691, 192 and 181 millions. In value the fall is striking: for the 181 millions of 1933, at the legal stabilisation rate of one-fifth of that of 1913, represents 36 millions, and even the 691 millions of 1931 represents only 138 millions, as against the 253 millions of 1913.

French Textile Imports.—French imports of the chief textiles represent but a fraction of their exports: thus, in 1928 and 1929 exports of cotton fabrics were respectively forty-three and thirty times, and those of woollen fabrics seventeen and fourteen times greater. A similar but less accentuated position holds as regards silks and linen. France is said to buy abroad only 1 to 1½ per cent. of her production of cotton manufactures: the percentage represented by the woollen, linen and silk manufactures can hardly be much greater. This almost complete self sufficiency is due not only to the highly developed state of the individual French textile industries, but also to the efficient pro-

tection afforded by Customs duties and other levies on imports. Over the period 1928-32, compared with 1911-13 or with 1924-27, France progressively reduced both in weight and in value her purchases of foreign yarns and piece goods whether cotton, wool, linen or silk, but increased those of rayon yarns and of jute fabrics. In 1931, and especially in 1932, the fall in imports of the more valuable textiles was striking. In cotton goods, which were subjected to the quota system in April, 1932, the yarn imports in 1932 and 1933 fell to 703 and 646 tons, against 3,128 in 1913, and an average of 4,024 tons for 1924-31: piece-goods, which were 4,820 tons in 1913, and averaged 2,661 tons for 1924-31, fell to 1,488 and 1,501 tons in 1932 and 1933 respectively.

Woollen yarns, whose imports averaged 607 tons from 1924-27, had improved to an average of 988 tons for 1928-31, but fell to 653 and 728 in 1932-33. Woollen fabrics, which had fallen in 1924-27 to one-fourth of the average pre-war figure of 4,300 tons, but had improved to half that figure in 1930 and 1931, fell in 1933 to two-fifths. Reductions on a marked scale have occurred in linen yarns and piece goods, and in silk piece goods. Silk has been affected by the competition of rayon, both yarns and fabrics, which pursue an ascending course. Were it not for the increase in the imports of rayon and of jute, the fall in weight of textile imports would have been far greater. The most striking feature of the attached table is perhaps the movement in the upward direction, especially in the bad years 1931 and 1932, of the imports both of underwear and ready-made garments and of hats and caps. The former class moved from 709 tons in 1913 to 4,036 and 3,152 in 1931; and 1932, whilst hats and caps increased nearly fourfold. The chief suppliers of the former had been Great Britain, Germany and Holland, but Poland, which sent less than five cwt. in 1930, sent 420 tons in 1932. Italy was the predominant supplier of hats and caps (about half in 1932), followed by Germany and Czechoslovakia.

The fall in value is seen in the table to be considerable; and in a strict reckoning of the old and new gold value of the franc at the ratio of 1 to 5, the total 1933 value would be about two-fifths (111 against 263 million in 1913).

FRENCH IMPORTS OF TEXTILES.
(Values in million francs).

Date	Total	Yarns only (cotton, wool, silk and rayon)	Fabrics only (cotton, wool, silk and rayon)	Percentage of total manufactured imports		
				Total	Yarns	Fabrics
1913	263.1	44.2	156.5	15.9	2.7	9.4
1928	1,018.0	240.6	446.3	12.76	3.03	5.63
1929	1,252.1	245.6	578.5	12.61	2.47	5.83
1930	1,513.6	243.4	834.8	13.32	2.14	7.35
1931	1,125.2	143.6	605.1	12.27	1.57	6.0
1932	629.0	87.2	290.8	11.12	1.55	5.16
1933	554.7	84.6	274.3	10.36	1.70	5.51

FRENCH EXPORTS OF TEXTILES.

Year	Total	Yarns only (Cotton, wool, silk and rayon)	Fabrics only (Cotton, wool, silk and rayon)	Percentage of total manufactured exports		
				Total	Yarns	Fabrics
1913	1,607.6	157.5	1,035.0	39.0	3.8	25.0
1928	14,551.0	2,618.6	9,121.0	44.5	8.01	27.9
1929	13,037.0	2,322.3	8,197.0	41.4	7.37	26.0
1930	10,721.5	1,998.5	6,582.6	39.77	7.41	24.42
1931	7,007.0	1,513.5	4,501.6	36.96	7.98	23.75
1932	3,763.0	925.8	2,474.0	30.77	4.88	13.05
1933	3,416.6	897.7	2,185.0	30.56	8.03	19.55

Values in "Total" column include all varieties of yarns (except twine and ropes); all fabrics; underclothing and ready-made garments; and silk and felt hats, caps, etc.

A. Weight in metric tons.

B. Value in millions of francs.

	1913†		1928		1929		1930		1931		1932		1933	
	A.	B.	A.	B.	A.	B.	A.	B.	A.	B.	A.	B.	A.	B.
Yarns:														
Cotton	3,128	32.9	2,541	101.7	3,448	122.9	4,013	105.7	2,162	48.6	703	13.4	646	11.7
Woolen	956	6.3	837	41.5	1,009	48.0	1,050	45.2	1,015	37.9	653	21.7	728	22.9
Silk, natural	277	5.0	318	60.0	264	48.7	220	36.7	122	16.4	53	6.7	59	6.3
Rayon	3	§	1,034	43.3	594	26.0	1,096	55.8	1,259	40.7	2,088	46.8	1,964	43.7
Linen, hemp and ramie	646	7.1	452	20.6	576	23.0	615	18.3	395	10.4	226	5.3	181	4.2
Jute, phorium tenax &c.	5,074	—	2,878	18.2	5,886	33.9	7,900	44.6	6,278	25.0	4,146	11.6	7,721	16.4
Alpaca, horsehair, &c.	640	4.6	477	26.8	469	25.8	390	19.3	497	16.2	458	9.1	521	8.9
Fabrics:														
Cotton	4,820	56.5	1,690	113.4	2,335	162.0	4,190	253.3	3,160	168.7	1,488	70.0	1,501	66.4
Woolen	4,318	50.6	1,493	185.4	1,845	229.0	2,360	255.9	2,147	200.1	1,528	112.9	1,733	114.5
Silk, natural	828	48.2	230	93.1	350	103.7	695	195.3	675	135.0	385	69.7	420	63.4
Rayon	43	1.2	174	54.4	289	83.8	666	130.3	635	101.3	344	39.4	279	30.0
Linen, hemp and ramie*	5,106	10.2	4,443	39.3	4,449	37.8	3,900	34.8	2,672	25.2	2,011	14.4	1,465	11.2
Jute, phorium tenax &c. †	28,470	14.7	35,442	122.3	43,773	168.2	40,419	153.6	33,820	109.4	30,835	67.5	25,591	48.5
Alpaca, horsehair, &c.	462	3.8	167	7.0	240	12.0	303	14.8	360	12.2	330	7.8	310	7.0
Underwear and ready-made garments	709	10.9	567	50.0	2,191	76.0	2,146	91.2	4,036	124.4	3,152	95.4	2,571	74.6
Felt and silk hats, caps, &c.	429	3.5	445	40.5	621	51.3	1,158	58.8	1,528	53.7	1,479	37.2	1,000	25.1
Totals	55,909	263	53,188	1,018	68,339	1,252	71,121	1,514	60,761	1,125	49,879	629	46,690	555
Percentage of all textiles to total imports of manufactured goods		15.9		12.8		12.6		13.3		12.3		11.1		10.4
Percentage of yarns (cotton, woollen, silk, and rayon) to total imports of manufactured goods		2.7		3.0		2.5		2.1		1.6		1.5		1.7
Do. fabrics do. do.		9.4		5.6		5.8		7.3		6.6		5.2		5.5

† Excluding Alsace-Lorraine.

§ Less than 50,000 francs.

* Over 90 per cent. by weight consists of waxed cloth and linoleum.

† Includes a large proportion (often exceeding 90 per cent.) of sacks imported full.

FRENCH EXPORTS OF TEXTILES.

A. Weight in metric tons

B. Value in millions of francs.

	1913*		1928		1929		1930		1931		1932		1933	
	A.	B.	A.	B.	A.	B.	A.	B.	A.	B.	A.	B.	A.	B.
Yarns:														
Cotton	8,448	23.6	23,648	669	16,202	559	11,519	453	8,662	348	7,430	284	6,531	229
Woolen	14,843	102	27,959	1,456	26,242	1,275	24,744	1,010	22,757	746	13,162	351	15,588	385
Silk, natural	1,384	24	1,876	271	1,573	251	1,579	203	1,444	128	1,118	64	1,015	50
Rayon	497	8.2	5,206	223	6,688	237	8,130	332	8,947	291	8,656	227	10,360	234
Linen, hemp and ramie	11,541	46.3	13,792	202	13,431	245	8,287	142	7,977	94	6,336	58.6	5,173	49
Jute, phorium tenax &c.	6,857	8	6,979	42	4,890	32.5	2,697	18.8	4,693	19	2,908	9.7	3,424	10.6
Alpaca, horsehair, &c.	6	†	98	5.3	80	4.8	45	5.8	51	4.7	36	2.9	33	2.9
Fabrics:														
Cotton	55,355	386	73,212	2,963	67,224	2,713	53,598	2,145	43,140	1,414	38,945	971	42,826	966
Woolen	23,408	220	27,417	2,339	25,209	2,045	22,499	1,572	18,452	1,099	8,888	419	8,225	347
Silk, natural	6,637	428	7,445	3,224	6,353	2,541	4,768	1,873	4,202	1,113	2,569	495	2,134	394
Rayon	31	0.9	2,681	595	3,904	898	4,566	993	5,577	876	5,542	588	4,769	478
Linen, hemp and ramie	5,008	27.4	3,120	107	3,203	96	2,883	80	2,170	55	1,782	31.5	1,476	26.2
Jute, phorium tenax &c.	18,739	17.4	23,848	162	18,523	144	19,127	120	13,626	79	10,668	48.5	13,022	47
Alpaca, horsehair &c.	214	2.8	237	6.7	197	5.7	157	4.3	220	4.6	116	2.8	104	2.4
Underwear and ready-made garments	7,844	253	9,611	2,097	9,591	1,844	8,263	1,662	6,775	691	4,627	192	5,919	181
Felt and silk hats, caps, &c.	2,429	60.6	3,859	130	6,079	146	4,789	107	1,783	45.3	949	17.5	769	12.7
Totals	163,247	1,608	230,988	14,551	209,389	13,037	177,681	10,722	150,476	7,007	113,732	3,763	121,368	3,145
Percentage of all textiles to total exports of manufactured goods		39.0		44.5		41.40		39.8		37.0		30.8		30.6
Percentage of yarns (cotton, woollen, silk, and rayon) to total exports of manufactured goods		3.8		8.0		7.4		7.4		8.0		4.9		8.0
Do. fabrics do. do.		25.0		27.9		26.0		24.4		23.7		13.1		19.6

* Excluding Alsace-Lorraine.

II.—THE COTTON INDUSTRY

1. CAPACITY OF THE INDUSTRY

World Position.—In 1931 France possessed 10,254,000 spinning spindles, 1,500,500 twisting or doubling spindles, 200,100 power looms, 8,100 hand looms, and 290 printing machines: an equipment far superior to that of 1913, when spindles numbered 7,600,000 and 1,160,000 respectively; looms 141,000, and printing machines, 120. The recovery in 1918 of the important and highly developed Alsatian cotton industry brought the major part of the increase, adding about one quarter to the spinning and weaving, and more than doubling the printing equipment. Since 1919 and the subsequent replacement of loss through the events of war, the French industry appears, moreover, to have been strengthened to a greater extent than other European cotton industries, spindles having increased approximately 10 per cent. and looms and machines by 14 or 15 per cent. The German industry also within this period has no doubt acquired $1\frac{1}{2}$ to 2 million spindles and additional looms and printing machinery, for the purpose of redressing the loss, in 1918, of the Alsatian quota of similar consequence. At the close of the war the French cotton industry found that 39 per cent. of its spindles, 79 per cent. of its doubling spindles and 15 per cent. of its looms had been put out of action or destroyed. In the Northern (Lille-Roubaix-Tourcoing-Armentières) area, where only 20 per cent. of the former machinery had been left intact in 1918, nearly 2 million new spindles were subsequently installed; and between the years 1925 and 1931 (the textiles industries had completed war reconstruction by 1923) 800,000 more spindles were added. As to modernity, 60 per cent. of the French spindles are continuous, which appears to be a much higher percentage than in the United Kingdom and on a par with Germany, though lower than Belgium and Italy (both 80 per cent.), or than the United States (nearly 100 per cent.): about 10 per cent. of the looms are automatic, as in Germany, compared with 80 per cent. in the United States, and 20 per cent. in Italy.

In point of mere number of units, France ranks after Great Britain (54.5 million spindles, 704,000 looms, 1,100 printing machines), and the United States (35 million spindles, 730,000 looms, 386 printing machines), but she is practically on equal terms with Germany (11 million spindles, 250,000 looms, 210 machines). Japan, who in the last fifteen years has rapidly augmented her equipment—she had in 1914 $2\frac{3}{4}$ million spindles and 25,000 power looms, but now has 8 million spindles and 100,000 looms—has over two-thirds of French capacity; and India with over 9 million spindles and 180,000 looms, compared with

The average of the years 1926-30 gave a total of 86 per cent. from these three sources. In 1931-33 the Indian imports (29.7, 13.8 and 47 thousand), which were inferior to the Egyptian (39.5, 34.3 and 49.4), represented 12.8, 5.6 and 13.5 per cent., whilst the Egyptian percentages were 17, 14 and 14.2.

Supplies from the French colonies and protectorates are inconsiderable: the president of the Colonial Cotton Association stated in 1931 that they supplied barely 2 per cent. of the requirements of the home industry. The Association, created in 1904 by a group of cotton spinners, received financial assistance after the war from the Ministry of Colonies out of the funds of the wartime Cotton Consortium, which enabled the establishment of ginning stations in French West Africa for the purpose of securing that the raw cotton was delivered in classified and pressed bales. Since March, 1927, it has been supported by the special state levy of one franc per 100 kilogrammes on imported raw cotton. French West Africa is the chief supplier. In 1926 it exported to France 3,680 tons (or nearly eight times more than in 1922) out of total imports of 6,054 tons: in the years 1927-31 it sent respectively 3,260, 3,220, 3,970, 4,470, and 2,190 tons out of the respective total Colonial and protectorate imports into France of 5,378, 4,761, 5,553, 6,457 and 3,504 tons. In 1932 and 1933 French West Africa sent 1,270 and 1,428 tons, out of totals of 3,324 and 3,550 tons from the colonies. Algeria and Togoland, Syria, New Caledonia, are other contributors: in 1926-33 Algeria sent 1,244, 1,288, 930, 1,345, 1,248, 615, 145 and 248 tons; Togoland sent 1,143 tons in 1927, 1,037 tons in 1928, 729 tons in 1931. It is perceived, however, that the total contributions are still small: their average for the years 1926-31, viz., 5,285 tons, represented 1½ per cent. of the average total imports, viz., 339,000 tons, and in 1932-33, 3,437 tons, or 1.16 per cent. of total imports averaging 296,500 tons.

II. ORGANISATION OF THE INDUSTRY

Number Employed.—More persons are employed than in any other French textile industry. The Census of 1926 returned a total of 196,000 persons as occupied in cotton spinning and weaving, *i.e.*, without reckoning those in the bleaching, dyeing, finishing and printing processes, as compared with 171,000, 113,000, and 105,000 respectively in the same branches of the woollen, silk, and linen with jute-hemp, etc., industries. A total of 203,310 persons was given as occupied in 1930 in cotton spinning and weaving, of which 71,700 on spinning spindles, 3,750 on twisting spindles, 120,000 on power looms and 8,000 on hand looms: in addition 25,000 were assigned to cotton bleaching, dyeing and finishing establishments, and 8,580 to printing works. Female labour in 1926 represented 63 per cent. of the total in spinning mills, 60 per cent. in the weaving, and about 30 per cent. in the printing. In

contrast with the situation in so many French large-scale industries, foreigners are few (perhaps 2 to 3 per cent.): they are practically all Belgians working in the Northern textile area (especially at Roubaix-Tourcoing) close to the Belgian frontier. In normal times, in fact between 1923 and 1930, a constant shortage of labour has, however, manifested itself, leading to 4 or 5 per cent. of the spindles and to 12 per cent. of the looms being idle.

Relatively Small-Scale Industry.—The individual French cotton factory employs a relatively low number of persons. The 335 spinning mills with 70,450 employed, as recorded in the 1926 industrial census, show an average of 210; and the 989 weaving establishments, with 126,602 employed, an average of only 128. In the spinning group 123 mills occupied not more than 50 persons, 45 from 51 to 100, 61 from 101 to 200, 71 from 201 to 500, only 27 from 501 to 1,000, and only 8 (of which two were doubling mills) above 1,000: in other words 36 per cent. of the units employed not more than 50, nearly 14 per cent. more between 51 and 100, and another 18 per cent. between 101 and 200, leaving just one-third with over 200 workers. The weaving group gives even lower figures. Out of the 989 works 150 employed no outside wage-earners, 381 less than 50, 147 between 51 and 100, 218 between 101 and 200, 214 between 201 and 500, 71 between 501 and 1,000 and 12 over 1,000. Subtracting the 150 establishments with no outside workers from the 989, and calculating percentages on the remaining 839, we find that over 45 per cent. of the units with wage earners have under 50 employed persons, 17.5 per cent. more between 51 and 100, and 26 per cent. more between 101 and 200. The criterion of the average numbers of spindles and looms per factory also shows the relatively small scale of equipment compared with similar English, German, American or Belgian undertakings. The average number of spindles in all French establishments is under 33,000, whereas in the countries just mentioned they average 70,000 to 100,000 spindles or more: the average number of power looms per undertaking in France (again excluding those without outside workers) is only 240. The same low average of workers is found for the bleaching, dyeing and finishing establishments, of which there are 716: of these 519 occupy under 50 people and another 157 from 51 to 200. A few concerns, one or two with a dozen or more affiliated works in various important cotton centres, dominate the bleaching and dyeing, as well as the printing industries: the last is concentrated at Mulhouse, Rouen, and Epinal.

Geographical Distribution.—The industry, though widely distributed, has its main area of production in the North and East of France. Cotton spinning and twisting have long been strongly represented in the Lille area, which at the last (1926) Census had 1,637,000 spindles, plus 787,000 twisting spindles, as well as in the immediately adjoining Roubaix - Tourcoing - Armentières area,

which in the same year returned 1,372,000, plus 210,000 twisting spindles: this practically compact Northern area showed therefore over 3 out of the 10½ million spindles and one out of the 1½ million twisting or doubling spindles. On the other hand, the same district had only 6,300 out of 200,000 power looms. The second in importance of equipment is the Eastern region (3,233,000, plus 127,000 doubling spindles), which embraces the Vosges, Epinal, Belfort, and Besançon areas; and the third is Alsace (1,863,000, plus 174,800 doubling) with Mulhouse as its chief centre. These two regions, which are geographically in close contact, may be regarded as one whole from the cotton industry standpoint, and were in fact one till 1871: together they now contain 44 per cent. of French cotton spinners and weavers, 46 per cent. of all spindles, 60 per cent. of all looms, 67 per cent. of all printing machines. The fourth is known as the Normandy and West region (1,640,000, plus 109,000 doubling), of which the greatest centre is Rouen, minor centres being Laval and Cholet. The spinning mills of the St. Quentin, Amiens and Lyons areas had a total of 509,000 spinning and 63,000 doubling spindles.

Cotton weaving, which, as just noted, is hardly carried on in the chief spinning area of the North, occupies 80,600 looms in the Vosges, Epinal, Belfort, districts and 38,200 in Alsace (Mulhouse area), 36,900 mainly in Rouen but also in Cholet and Laval areas, and 21,900 in the Lyons area (Roanne, Thizy, Amplepuis, Tarare, etc.). The balance of 19,500 power looms are thus distributed: 3,700 to St. Quentin region, 6,500 to Amiens region, 6,300 to the North, and 3,000 to various other places. Hand looms appear most abundant (3,000) in the St. Quentin area, where they are employed in the embroidery, guipure, and kindred manufactures: in the Tarare and Cours-Amplepuis districts of the Lyons area, 2,000, and in the West (notably Laval and Cholet), 1,800.

Bleaching, dyeing, and finishing are carried out in the respective producing localities, but printing has two main centres—Mulhouse with 160 machines, and Rouen with sixty-two. The balance are found principally in the Vosges region (35 machines) with Epinal as headquarters.

Local Variation of Output.—Certain marked distinctions have developed in the nature of the output of different localities or regions. Lille, for instance, produces the lower counts, but is noted for its high counts both of simple and twisted yarns required for the manufacture of fine quality fabrics, whether lawns, cambrics, laces, nets, silk mixtures, fine hosiery, whilst the immediately adjacent Roubaix-Tourcoing-Armentières spinners produce mainly low and medium counts for ordinary fabrics and ordinary hosiery. Lille also produces sewing threads to a considerable extent, but the greatest centre is Mulhouse. The chief producing area for materials in popular demand is the East, *i.e.* the adjoining Vosges and Alsatian regions, the former of which is noted for the ordinary zephyrs, calicoes, muslins, twills, sponges, flannels, and fancy

goods generally, whilst Alsace produces a more considerable range of superior goods. In the Northern area near Lille are produced large quantities of cotton sheets: Amiens is the seat of manufacture of corduroys and of fustians. St. Quentin makes gauzes, guipures, embroidered goods, curtains: Calais and Caudry produce perhaps 90 per cent. of French output of the St. Gall and Nottingham types of tulles and nets and embroidered cottons: Roubaix, and especially Troyes (south-east of Paris) are the most important centres of cotton hosiery manufacture. Normandy in its Rouen industry weaves the goods of heavier type, cretonnes, drills, quilted goods, twills, zephyrs, handkerchiefs and prints (the term *rouenneries* has long indicated in French, printed, checked or striped cotton goods, also termed *indienneries*). Cholet (near Nantes) specialises in the making of cotton handkerchiefs. The Roanne area is noted for fancy goods for dresses, linings and shirtings, table-cloths, pure or mixed with other yarns, and for the weaving of fabrics from dyed yarns. Hard by, in the adjoining county of the Rhone (of which Lyons is the chief town), Thizy makes similar goods and transforms shirtings into shirts: close to Thizy are Cours (about 3,000 engaged in making blankets and bedspreads) and Amplepuis (teaseled or carded goods and bedspreads or blankets and *articles de Tarare*). Tarare (closer to Lyons), whose production is mostly scattered in the rural areas in small workshops, has ancient fame for its muslins, tarlatanes, embroidered muslins, gauzes, surgical dressings, and the like.

Technical Equipment.—The Northern and Alsatian areas are deemed to possess the most modern equipment. The Lille spinning industry (which in 1930 had 27 per cent. more spindles, and 47 per cent. greater labour force, than in 1914) has a very high proportion of up-to-date plant, 70 per cent. of the spindles now being continuous; and its factory units, though less numerous, are larger than in 1914 and larger in general than those in other areas. The Alsatian industry, where already before the war the continuous spindles exceeded the winding spindles, has always been advanced in its methods: its units are smaller than Lille, but larger than those of the Vosges area. Hardly 10 per cent. of the French looms are of the automatic or Northrop type. Several considerations, it is contended, militate against the more general adoption of the automatic loom in France: that their price, double that of the ordinary looms, is too high for the bulk of the master weavers who have small undertakings; that they are more adapted for large-scale output of simple articles in ordinary demand than for more complicated or fancy goods; that mass output of very numerous kinds of textiles was not profitable on account of the rapid changes in fashion, which had become a feature of after-war popular taste; and that the adoption of looms, 12, 18, and even 24 of which can be tended by one operative (instead of 3 or 4 looms of the ordinary kind), might cause difficulties with the workers.

France has obtained the bulk of its textile spinning machinery in foreign countries, especially in the United Kingdom (and more recently to a substantial extent in Germany), but now manufactures a large proportion of her needs in looms. Two or three Alsatian firms, already known before 1914 as makers of textile machinery, have developed these manufactures. French exports of textile machinery rose from 2,591 tons for the years 1910-13 to 13,089 tons for 1928-31, her imports averages having been 20,585 and 17,180 tons for the same periods. It would appear that the finer counts and other spinning machinery come mainly from the United Kingdom, certain dyeing and finishing machinery mainly from Germany, and knitting machines from Switzerland.

Ratio of Operatives to 'Machinery.—The 1932 report of the National Economic Council on the French cotton industry estimates that the number of spinning operatives per 1,000 spindles may be taken as seven, of the twistors as five per 2,000 spindles, of weavers as six per 10 looms, and of the printers as thirty per printing machine.

Business Organisation.—The relatively small size of the cotton factories has been noted. The essentially family character of the industry, as indicated in previous Reports, remains very marked despite the continuous transformation, for fiscal purposes, of the legal status of firms into public or private companies. Of all textile manufacturing firms before the war only 3 per cent. possessed company status, and in 1923 only 15 to 20 per cent. : a recent (1932) official report states that 82 per cent. of the cotton undertakings have now that legal form. But this legal transformation has not altered the essentially family or personal direction of the undertakings. The great majority are independent producing entities without external affiliation, although here and there, notably in the Vosges, a few companies may conduct 3 or 4 or even 6 rather modest undertakings in rural areas. Few amalgamations have occurred since the termination of the reconstruction of war-damaged works (in the greatly devastated areas generally there had occurred comparatively often the pooling of the war compensation payments receivable by works in the same vicinity and the consequent fusion of perhaps two or three local firms for the erection of a single large unit). Specialisation of output to a very few counts, or to a very restricted range of fabrics, continues to be rare save for the very small undertakings, although the growing reliance on Colonial markets has somewhat stimulated certain weavers, notably in Alsace, to more standardised output on a greater scale. The non-specialising habit of the bulk of the industry is also testified by the fact that spinners and weavers, despite their habitual propensity to unduly varied output in their separate lines, conduct to a large extent both industries : an official document of 1932 reiterated the same percentages as cited in the

1928 Report relative to 1923, *vis.* 40 per cent. of the total spindles as held by the operators of 46 per cent. of the total looms. In Alsace about thirty-five of the bigger concerns both spin and weave, and not half that number among the bigger producers produce only yarns.

Close large-scale co-operation and rationalisation, in its interpretation as maximum industrial concentration for the production of maximum quantities of standardised goods at minimum cost, are not in fact easily realisable in the cotton or other textile industries, especially in the weaving branches where the tastes and needs of the markets run almost into infinity. Not only therefore are the kinds and the ranges of products within separate classes extremely numerous, but also changes in taste and vogue ensue too rapidly and are too frequent to justify much large-scale output of single types of fabrics for markets far from illimitable. In any event, highly centralised rationalisation for piece goods output must inevitably fail to cater successfully for widespread consumption of the most dynamic and wayward quality, when in so many branches of the market success depends upon seasonal vogues and upon catching the taste of the public within a given time. French taste in fabrics, unusually individualistic, eager for variety and averse from accepting the standardised or normalised, is less easily guided than that of most other countries into accepting momentary popular verdicts, or standard recurrent products. Agreements among producers to limit varieties in classes of products are unusually difficult to compass, when the key to success is happy novelty in some form; and save in cases where varieties are rather restricted by the nature of the article or of its use, the multiplicity of small weavers among the total of nearly 1,000 in France would almost preclude it. Some groups have been formed for marketing in foreign countries part of the output of numerous factories, but the statement of the French Cotton Federation in 1928 remains true that "as regards spinning and weaving, generally speaking, no important working agreements have been made, save for certain classes of threads not falling into the ordinary classes, for the purpose either of the distribution of the production of different counts, or of different varieties of fabrics, or for the apportionment of markets or for the regulation of prices. It is possible that under the pressure of rather severe industrial crises cotton manufacturers may be gradually obliged to give up an individualism which is occasionally anarchic, and which does not always serve their interests. But the progress to be secured in this direction is bound to be rather slow, and must probably, if the occasion arises, be precluded by regional solutions covering certain well defined articles."

The period of severe crisis since 1930 was not calculated to stimulate combination or concentration. French cotton spinners and weavers, who normally sell nine-tenths and two-thirds of their yarns and piece goods respectively in the home market, have

accordingly made little or no headway in the modern cult of rationalisation. Their home population of forty millions with firmly rooted individualistic tastes, mainly inhabiting relatively small urban or rural areas, does not offer the same scope in market possibilities as the large populations of other States who are organised in larger and more highly industrialised urban areas where tastes have become uniform over considerable strata. The home market reduced its purchases to a very marked extent, and the foreign markets in Europe and South America have immensely shrunk in the same period; Germany (to which Alsace alone sent perhaps nine-tenths of its output in pre-war days) took in weight in 1932 about 30 per cent. of its yarn and fabric purchases of 1930: and Great Britain bought only about one-sixth of her 1930 purchases of fabrics. The Colonial and Eastern markets, where standardised goods find favour, have also bought far less. Immediate inducements towards the organisation of large-scale or mass production in the industry even for foreign markets were accordingly lacking in the last few years.

Organisation for Common Purposes.—Large concentration, absent from the spinning and weaving industries, is found, however, in the finishing sections; and progress has also been made in organisation for common purposes. The General Federation of the Cotton Industry (*Syndicat Général de l'Industrie Cotonnaire*), which was established in its modern form in 1921, embraces the vast majority of the producers. It is managed by a committee which has power to create special governing committees, of which three now exist, the spinning, the weaving, and the finishing. Affiliated are a number of general organisations, for several whole branches, *e.g.* of bleachers, of dyers and finishers, and of separate regional groups (Norman, Picard, Northern, Eastern and Alsatian) which may be for single sections or for all in the region. Besides being instrumental in bringing about the threads agreement just mentioned, it has created at Havre, the leading cotton port (Marseilles has importance for Egyptian cotton, and Dunkirk, closer than Havre to the main consuming areas, has much increased its cotton imports since it greatly improved its handling and storing facilities) a raw cotton conditioning office. It has likewise established at Havre the Central Cotton Receiving Co., composed only of spinners, which, with a branch at Dunkirk, carries out certain selection and storing operations formerly undertaken by intermediaries: it handles about a quarter of the raw cotton imports. Under its auspices was also created in 1924 the *Comptoir Cotonnier Français*, which grouped 154 producers in the spinning, weaving, bleaching, dyeing and printing branches for the purpose of their foreign trade, each participant undertaking to earmark, if required, a portion of his output for sale by the Comptoir: Algeria, Tunis and other French territory with the same tariffs as France were excluded from its trading sphere.

The State made a loan of 5 million to the Comptoir, which was to operate offices at the chief cotton centres. The measure of success that it has reaped has not transpired. The Federation maintains also a general law office for its adherents.

International Organisation.—The Federation is affiliated to the International Federation of Cotton Spinners' and Manufacturers' Associations founded in Manchester in 1904, which has 24 countries as members (but not the U.S.A.). Its action is mainly concerned with questions of statistics, of the standardisation of contracts, of arbitration, of technical matters relating to the sale of raw cotton, to cotton machinery, and so forth. It has not attempted major questions such as the fixation of national outputs, of the delimitation of markets, of the fixation of prices. As Professor Qualid, in his remarkable report on the French cotton industry for the French National Economic Council (*Journal Officiel*, 26th April, 1932) remarks respecting international agreements of this scope :—

“ The cotton industry is far from the point of evolution that would permit of these agreements. Difficult as it is already, as we have seen, to organise it nationally, it lends itself with still more difficulty, for the same constitutional reasons already set out, to international agreements. Apart from the considerable diversity of the articles produced, and for which agreement could hardly be reached save for some that are specialised or localised, the industry nowhere attains a degree of concentration that has made its leaders men ready to accept the idea of an agreement to the second and third degree.”

Labour Organisation.—Trade union organisation in the French textile industries appears weak in comparison with that in Great Britain : the French trade union effectives, in the sense of members paying subscriptions, do not reach even one-seventh of the total workers. The precise strength of the trade union in the cotton industry is not ascertainable, because, unlike the United Kingdom unions, the basis is not the single trade group (e.g. cotton spinners, cotton weavers, wool spinners, wool weavers) but the textile industry as a whole, all textile workers being enrolled in one single organisation, whether local, regional, or central. In 1926 there were 317 textile unions of this type with a total of 118,250 members : as the 1926 census returned a total of 883,850 textile workers, it is perceived that the membership is not one-seventh of that total. In some regions, notably in some where the cotton industry is quite predominant, e.g., in the Rouen, and the Alsatian, the percentage of members of textile unions does not reach even 8 per cent. of the total employed in these areas ; and in the Vosges region only 776, out of 50,047 textile workers, are trade-unionists. In the greatest region in the North, with cotton, woollen, linen, and jute industries, out of 190,450 textile workers, 42,091 were members. In allied trades such as the making up trades the percentage is still lower : 4 per cent. of the total were organised. The explanation probably lies

in several facts in the French situation, such as the small scale of the industry in many regions, the rural and isolated site of a high proportion of the undertakings, the ready return to agricultural occupations of very many workers who are imbued with a strong sense of property, as being often themselves small peasant proprietors, the discouragement of such organisations by the employers. The preponderance of the female element in the labour force also tends perhaps to reduce the possibilities of recruiting, but the similar preponderance in the United Kingdom textile industries has not proved a decisive factor against trade-union development among the textile operatives.

Wages in the Cotton Industry in 1932.—Operatives are mainly paid piece rates, but no national rates for similar work appear to be established, and as earnings tend to show wide variations as between different regions, average earnings are not easy to come by. In the Northern region (Lille-Roubaix-Tourcoing), where the general industrial conditions most nearly correspond with those in Lancashire as being most developed and as having local competition from the coal, iron and steel and engineering trades, the piece rates are subject to a sliding scale based on the movements in the cost-of-living index figures of the region. The 1932 report of the National Economic Council gives the following as normal hourly earnings in the Roubaix-Tourcoing region (these include some woollen workers' earnings):—unskilled, fcs. 3.28; carding spinners, fcs. 4.25; cotton spinners, fcs. 4.45; spinners of tops, fcs. 5.25; bobbin spoolers (women) fcs. 3.45; women warpers, fcs. 4; men warpers, fcs. 4.45; waste hands, fcs. 4.50; sizers, fcs. 4.30; men weavers, dress goods, fcs. 3.70; cloths, fcs. 3.90; women, dress goods, fcs. 3.50; cloths, fcs. 3.30; roughers (women) fcs. 3.60. It is explained that the above earnings were obtained by dividing the total earnings of each class by the number of workers, multiplied by the number of hours worked, and that they were accepted as correct by the workers. To be added are family allowances, which were 60 francs per month for a single child and reached 450 francs in the case of five children. The wages earned and the family allowances in the Mulhouse area are lower (the latter being fcs. 32.75 for one child and reaching fcs. 258.75 for five).

In September 1930 hourly earnings for the following classes in a cotton spinning mill in the same Roubaix-Tourcoing area were: carders, fcs. 3.35; drawers, fcs. 3.35; rovers, fcs. 3.10; spinners, fcs. 4.45; doffers, fcs. 2.15; reelers, fcs. 3.25; weavers of coloured cotton goods, fcs. 1.75 per 48-hour week. Since 1930 textile wages appear to have fallen generally by 7 to 10 per cent. in the Northern area. At that date an enquiry in the Lille region revealed that the coefficient of the hourly wage compared with 1914 ranged from a minimum of 7 to a maximum of 10 for men and from 9 to 11 for women.

III. OUTPUT AND FOREIGN TRADE

Industrial Production and Sales, 1924-1933.—The course of output and of sales of yarns and piece goods in recent years is best illustrated by the following table, taken from the *Cotton Trade Quarterly Bulletin*, which gives the French average production and deliveries per spindle and per loom in the years 1924-32, with the quarterly averages for 1931-33.

Year	Monthly Average Output			
	in lbs. per spindle		in yards per loom	
	Output	Deliveries	Output	Deliveries
1924	4.24	4.26	584	604
1925	4.41	4.37	604	607
1926	4.55	4.44	620	604
1927	4.33	4.19	581	559
1928	4.66	4.64	586	622
1929	4.66	4.72	589	594
1930	4.36	4.33	570	532
1931 1st Quarter ...	4.16	3.71	519	474
2nd " "	3.24	3.19	485	454
3rd " "	3.16	3.05	451	462
4th " "	3.13	3.07	425	431
1932 1st " "	2.80	2.74	400	427
2nd " "	3.01	3.15	446	490
3rd " "	3.12	3.19	449	476
4th " "	3.81	3.88	534	572
1933 1st " "	3.96	3.92	547	557
2nd " "	3.99	4.05	569	595
3rd " "	4.13	4.11	580	619

The period of prosperity enjoyed by the French cotton trade for many years was interrupted in the autumn of 1930; and depression became acute in 1931, when not only the home market, consumer of two-thirds of the output, but also the colonial markets, which had come to consume one-quarter, and the foreign markets, were seriously affected for various reasons. At home, cotton as a textile had to face both the great fall in prices of several competing materials, such as wool, silk, rayon, jute, as well as a shrinkage in its own price and in the purchasing power of the public. The sale of the finer yarns and piece goods fell heavily to the detriment of the Northern producers. Depression was general and severe in the Colonies through the fall in prices of staples like rice in Indo-China, of ground nuts in West Africa, of wheat, wine, phosphates in North Africa, of vanilla, coffee, graphite, etc., in Madagascar, of rum in the Antilles, the combined effect of which caused particular damage to the Vosges and Alsatian areas as especially producing for the Colonial markets. The situation in the principal foreign markets for French cotton yarns and fabrics, notably in Germany, Holland, and North and

South America, caused a reduction by half in that year in the average purchases of the previous five years, and consequent great loss to the Northern area in the matter of yarn, and to Alsace in that of printed and other piece goods.

The colonial and foreign markets were still worse in 1932. A glance at the above table reveals that for the six quarters beginning April, 1931 and ending September, 1932, the output per spindle averaged 3.07 lbs. against an average of 4.60 lbs. for the seven years 1924-30, or a drop of one-third, and that the output per loom averaged 443 against 591 yards (a drop of 25 per cent.). In that period of six quarters the mills were working only 60 per cent. of their capacity, and in the quarters October to March, 1931-32, only 55 per cent. In the last quarter of 1932 improvement set in, which brought that percentage to eighty, and in the first three quarters of 1933 production was maintained at about the same level. In view of the fact that even in prosperous times 10 or 12 per cent. of the looms and half that percentage of the spindles have been regularly idle, owing to shortage of labour, it would appear that since the late autumn of 1932, the under-utilisation of equipment is by about one-ninth.

As regards outlets, the French cotton producers seem to have made up their minds that reliance must be ever more resolutely placed upon the home and colonial markets. The total French output of fabrics, even in the good years 1926-30, averaged less by over one-quarter that of 1913, despite an equipment in spindles and in looms superior by 34 per cent. and by 42 per cent. respectively; and total exports of fabrics to all markets, which for the years 1926-30 averaged 52,200 tons against 55,300 in 1913, would have been much lower, had it not been for the growth in the colonial trade. The vision of the recent progress in mechanical equipment in Europe and in America, and especially of that phenomenal and unceasing progress in Japan, India and China, where labour is abundant, costs low, and the large demand is standardised, as well as the concurrent but vastly reinforced economic nationalism, inspire them with little hope in any considerable possibilities of expansion outside their own territories.

Great Fall in Cotton Exports, 1927-33.—The French cotton export trade has heavily dropped since its record year in 1927, when yarn exports weighed 30,500 tons and fabric exports 78,400 tons: in the six succeeding years (1928-33) the former declined respectively to 23.6, 16.2, 11.5, 8.7, 7.4 and 6.5 thousand tons, that is, by over 78½ per cent., whilst fabric exports successively fell to 73.2, 67.2, 53.6, 43.1, 38.9 and 42.8 thousand tons respectively, or by 45½ per cent. Far the most important external markets for fabrics are found in the Colonies: in the five good years 1926-30, prior to the general crisis, the Colonial purchases averaged 37,000 tons out of total average exports for the period of 66,760 tons, or 55 per cent.; and in the bad years 1931-33, when the latter totalled

43,140, 38,945 and 42,826 tons, they were 24,801, 29,293 and 35,990 tons (*i.e.*, 57½, 75 and 82½ per cent.). The outstanding purchasers are Algeria, Indo-China, Tunis, Madagascar and French West Africa. On the other hand, colonial purchases of yarn are small, having averaged in 1926-30 only 1,240 tons, compared with average total yarn exports of 17,800 tons: in 1931-33 these figures were 1,003, 1,282 and 1,568 tons, respective totals being 8,660, 7,430 and 6,531 tons. The mother country since 1892 has maintained a definite policy of securing as far as possible to the home industry the colonial cotton markets, and in 1931-1932 further protective measures, *e.g.*, the automatic extension to Algeria of the 15 per cent. exchange surtax and of the 4 per cent. and 6 per cent. (instead of the former 2 per cent.) import tax, the considerable increase in the duties in French West Africa, were taken.

The foreign markets which took substantial quantities both of yarn and of fabrics, have reduced their purchases of both, notably in 1931-33. For the five good trade years 1926-30 *yarn* exports to all foreign (excluding colonial) markets averaged 16,560 tons (compared with the average of only 1,240 tons to the Colonies), but in 1931-33 they fell to 7,800, 6,150 and 4,960 tons. The chief buyer was Germany: her purchases fell, however, from 14,900 tons in 1927 to 3,300, 1,830, 940, 720 and 485 tons in 1929-33. Dutch purchases fell from 4,400 in 1927 to 1,600, 600, 240, 440 and 190 tons in 1929-33: Belgian from 4,290 to 3,700, 1,900, 1,200, 760 and 660 tons in 1929-33.

Exports of *fabrics* to foreign countries (excluding Colonies) in 1926-30 averaged 29,550 tons (as against average to Colonies of 37,000): in 1931-33 the tonnages to foreign countries sank to 18,300, 9,650 and 7,450. Germany, also the chief buyer of fabrics, who took 12,900 tons in 1927, reduced her purchases in 1929-33 to 2,030, 1,440, 1,420, 538 and 137 tons respectively. Other chief buyers were Switzerland, Great Britain, Belgium, Argentine, and the United States. In all cases the reductions are very marked since 1929: thus for Switzerland, whose imports were 4,100 tons in 1927, the 1929-33 figures were 2,900, 1,850, 2,100, 1,020 and 490 tons; Belgium with 3,700 tons in 1927, showed 3,590, 2,350, 1,430, 960 and 700 tons in 1929-33; and Argentine, with 2,000 tons in 1927, imported 2,000, 1,540, 780, 470 and 510 tons in 1929-33.

As regards the nature of piece goods purchased from France, the chief alteration since 1913 has occurred in printed goods as a result of the re-embodiment of the great Alsace printing industry in the French economy: exports had risen up to 1930 six or seven-fold compared with 1913. Two-thirds go to the Colonies. Hosiery goods, with the nearly universal abandonment by women of cotton stockings and their replacement by artificial silk or other mixture, have fallen to one-eighth.

French Cotton Exports to the United Kingdom.—The United Kingdom, which was never a considerable purchaser of

foreign yarns, normally imported from France 200 to 300 tons a year : but in 1932-33 only 115 and 215 tons. Piece-goods imports from France were about ten times greater than those of yarns till 1931 : from 1926-1930 they averaged 2,500 tons; in 1931-33 they were 1,835, 535 and 524 tons. In view of the importance of the English cotton trade it is worth setting out the figures of French exports to the United Kingdom in 1931 and for the years 1922-33.

FRENCH EXPORTS OF COTTON YARNS AND PIECE GOODS, 1913 AND 1922 TO 1933.
(Weight in metric tons).

Year	Exports of Yarns		Exports of Fabrics	
	Total	To United Kingdom	Total	To United Kingdom
1913	8,477	*	55,354	4,321
1922-26 (average) ...	15,409	101	54,410	2,283
1927	30,477	282	78,419	3,627
1928	23,648	318	73,212	3,272
1929	16,202	221	67,224	3,036
1930	11,519	212	53,598	2,636
1931	8,662	207	43,140	1,835
1932	7,430	115	38,945	535
1933	6,531	215	42,826	524

* Not separately distinguished in trade returns.

French Cotton Imports.—French imports of cotton textiles are inconsiderable in relation to the home production : it has been calculated that yarn imports represented in normal times 1.6 per cent., and piece goods imports, barely 1 per cent., of the home output. Neglecting the years 1919 and 1920, during which the Northern war-damaged mills were being reconstructed, and taking the ten years 1921-30, one finds that yarn imports averaged 4,236 tons, but for the four years 1927-30, the average was 2,220 tons, and that for piece goods these averages were 2,790 and 2,370 tons respectively. In 1932, however, yarn and fabrics imports fell respectively to 708 and 1,488 tons : in 1933 to 646 and to 1,501. The United Kingdom has been the predominant supplier of yarns, and also the principal supplier of piece-goods at least until 1930 (in the last three years Switzerland, Czechoslovakia, Germany have been among the more important suppliers), as may be seen in the following table :

FRENCH IMPORTS OF COTTON YARNS AND PIECE GOODS, 1913 AND 1922-1933.
(Weight in Metric Tons).

Year	Yarns		Piece Goods	
	Total	From United Kingdom	Total	From United Kingdom
1913	3,122	2,147	4,820	2,375
1922-26 (average) ...	5,350	3,474	3,017	1,909
1927	2,448	2,044	1,288	936
1928	2,541	2,295	1,690	968
1929	3,448	2,837	2,335	957
1930	4,013	2,580	4,190	1,047
1931	2,162	1,450	3,160	865
1932	703	506	1,488	408
1933	646	443	1,501	504

Quota System for Cotton Imports.—The importation of cotton yarns and piece goods was subjected to the quota system by a decree in April, 1932, by which, pending the holding of negotiations between the French and the respective national cotton organisations with a view to mutual agreement regarding the reduction to be effected, imports from the countries concerned were limited on a monthly basis to one-twelfth of their respective imports in 1931. As a result of subsequent negotiations with representatives of the United Kingdom, German and Czechoslovakian industries, imports were reduced by percentages, according to the class of the goods, of the average of the imports in each class in the years 1929-31: in general it may be said that the reduction amounted to one-fifth. As from January 1st, 1934, these quotas were for several classes of goods reduced by 75 per cent., but in certain cases were shortly afterwards restored to the 1932 basis.

III.—THE WOOLLEN INDUSTRY

I. SCALE OF OPERATION

French Position in the World.—In respect of machinery equipment France ranks third in Europe and fourth in the world, having 2,800 combing machines, 3,300,000 spindles and 65,000 looms. The corresponding figures for Great Britain are 3,000, 6,700,000, and 121,000; for Germany 4,300, 5,500,000 and 95,000; for the United States 2,700, 5,900,000 and 77,000; for Belgium 350, 860,000, and 21,000; for Czechoslovakia, 1.1 million spindles and 37,000 looms. Among the countries that in recent years have made the most notable progress in equipment are Italy (700, 1,200,000, and 21,000); Japan (600, 1,200,000 and 20,000); Spain (400,000 spindles and 7,000 looms). The recovery of Alsace in 1918 has signified an increase in the French productive power by 600,000 spindles and 6,600 power looms. French wool textile

equipment is extremely modern as a consequence of the replacement in 1919-25 of the war-destroyed machinery which affected the greater part of the combing machines, two-thirds of the worsted spindles, four-sevenths of the carding spindles and three-fifths of the looms: modern machinery was also installed in many places in non-war areas, where 1914-19 factories had been extended or newly-established either during the enemy occupation of the main producing area or during the boom years after the war. A few years ago France possessed about 13 per cent. of the total wool spindles and looms, and about 18 per cent. of the combing machines, in the world; at the present time owing to the development of spinning and weaving in the United States, Italy, Japan and elsewhere, the figure is probably about 10 per cent. of the looms and spindles.

Wool Supplies.—France, which produces at home 6 or 7 per cent. of her wool consumption, imported in 1913, and in the years 1923-33, in wool and wool waste, respectively 285, 270, 232, 253, 300, 320, 290, 324, 322, 266, 261 and 319 thousand tons. The largest supplier is Australia, which in the five years 1926-30 sent an average of 108,000 tons out of total imports averaging 311 thousand; and in 1931-33, 96,000, 80,000 and 118,000 tons respectively. The Union of South Africa sent in the same five years an average of 38,200 tons, and 40,800, 41,500 and 54,500 tons in 1931-33; and from the United Kingdom came an average of 32,500 tons, with 14,400, 27,100 and 22,900 tons in 1931-33. The combined imports from these three British States in 1926-30 averaged therefore nearly 179,000 tons or 56½ per cent. of the total. Argentina supplied an average of 49,300 tons (15.6 per cent.) with 37,000, 35,300 and 61,850 in 1931-33; and Uruguay one of 8,600 tons (2.8 per cent.) with 9,300, 11,100 and 13,500 in 1931-33. Considerable imports arrive from Belgium: an average of nearly 14,000 tons or 4.5 per cent. in 1925-30, and 35,300, 42,700 and 11,400 tons in 1931-33.

Home and colonial supplies are relatively small. Flocks in Continental France have decreased from 33.3, 20.2 and 16.1 in 1850, 1900 and 1913, to 9.9, 10.7, 10.2, 9.84 and 9.76 million respectively in 1923, 1927 and 1930-32. The output of native wool decreased from 30,000 tons in 1913 to 19,000 tons in 1929. French overseas territories possess about 25 million sheep, of which 20 million produce suitable wool: but the number may fluctuate in large percentages, due to the occasionally very serious lack of water, the winds and the dryness in North Africa. Algeria, which possessed 7 million sheep in 1930 and 1931, produced in 1925-30 an average of 13,400 tons, of which the average exports to France amounted to 11,100. Tunis, with about 2 million sheep, exported to France in 1925-30 an average of only about 600 tons. In Morocco, in which in 1925-30 the number of taxpaying sheep averaged 8,494,300 (but the actual flocks are said to have been

about 12 millions) the wool production is estimated at 19,000 tons: exports of wool and wool waste to France are small and are seriously decreasing, having been in 1925-33, 6,800, 10,200, 7,900, 6,100, 3,500, 1,900, 755, 408 and 915 tons. It is asserted that the flocks were diminishing yearly, and that every couple of years from 50 to 70 per cent. of the animals are carried off in certain regions (*e.g.* in 1926-27 nearly 2.8 million died from lack of food, and in 1929-30 over one million). In French West Africa between 5 and 6 million sheep are taxpaying, but the total is estimated at 8 or 10 millions; the wool exports to France are, however, quite insignificant, having averaged for 1925-30 only 450 tons: in the six years 1928-33, the actual weights were 420, 590, 530, 75, 39 and 130 tons. Madagascar and other territories yield insignificant amounts.

The total colonial supplies, which averaged accordingly about one-twentieth of the average total imports in 1925-30, are seen to have decreased considerably in the last six years; and the home output has dwindled to about 6 per cent. of the total imports. The woollen industry, with the aid of the State, which since 1928 levies an import duty of 10 centimes *ad valorem* on wool and sheep-skin imports, is endeavouring to develop both the home and overseas flocks; of the total yield of 9 millions of this special tax for the period 1929-32, nearly two were devoted to home and the balance to colonial efforts in this direction. The home problem is to a large extent governed by the serious shortage of shepherds, whose recruitment has been most difficult since the war. The French Sheep Union (*Union Ovine*), which directs the movement in France, is forming centres (*e.g.* at Rambouillet) for training shepherds. The North African Wool Union and the Colonial Sheep Union, which have undertaken extensive programmes, have brought about many general improvements towards regularising the breeding and tending of sheep, checking the large-scale disasters to millions of animals in a season through periodic lack of fodder and water, standardising wool selection and wool exports. Thus, in Algeria have been created wool co-operative societies and breeding societies; selective methods are being applied, works for crushing alpha have been established, water collecting and supply stations have been improved or created, large land concessions have been granted to enterprising Europeans. In Morocco, where the sheep fell in number from 9.3 millions in 1925 to 5.5 millions in 1930, similar measures have been adopted; and in West Africa and Madagascar the wool traders, with the State, have also endeavoured to stimulate the production of suitable wool. Great success has not attended these efforts in recent years. The general and marked fall in raw wool prices since 1928 has withdrawn an essential stimulus, especially in face of the condition of the great organised supply markets of Australia, South America, and South Africa during the last few years.

ii. ORGANISATION

Numbers Employed.—In the preparation, combing, spinning and weaving of wool 171,600 people were employed in 1926 (129,100 in 1921): of these 41,100 and 111,200 respectively were employed in spinning and in weaving. In bleaching, finishing, and dyeing there were 65,600 (in 1921, 48,700). The percentage of female workers is much lower than in the cotton industry: 49 per cent., 50 per cent. and 27 per cent. in the spinning, weaving, and bleaching-finishing-dyeing processes. The percentage in the combing mills is 28. Compared with twenty years earlier there has been an increase in the female percentage of 9 in the weaving, 4 in the spinning, 10 in the combing, and 11 in the bleaching-finishing-dyeing processes. The proportion of foreigners was greater than in the cotton industry, being 15,000 in 1926: as Roubaix and Tourcoing are a couple of miles from the Belgian frontier, they mainly consist of Belgians who cross the frontier daily or only weekly but are in fact resident in Belgium (in 1926, no fewer than 14,000 of the foreigners were *frontaliers* i.e. from the Belgian frontier area).

Preponderance of Small-Scale Industry.—Like the cotton, silk, and other textile industries in France, the woollen industry is organised on a relatively small scale in comparison with its sister industry in the United Kingdom, Germany, or the United States. The 1926 occupational census return showed that, out of 798 establishments in the fellmongering, washing and other preparatory work, carding, combing, and spinning sections, only 18 employed between 501 and 1,000 persons and only 12 over 1,000 persons, whilst 397 (50 per cent.) employed one to 20, 155 (19 per cent.) between 21 and 50, 94 (11.7 per cent.), 51 to 100, 69 (8.6 per cent.) between 101 and 200, and 43 (5.4 per cent.) from 201 to 500. Of the total of 73 establishments in these sections with 201 and over, thirty-one *worsted spinning* mills have between 201 and 500, thirteen between 501 and 1,000, and five over 1,000; of the remaining 24 (73-49) establishments there are engaged in *wool combing* five with over 1,000, six with 501 to 1,000, and two with 201 to 500. It is seen that 69 per cent. of the total employ less than 50 persons apiece, an additional 11.7 per cent. having between 51 and 100 apiece.

Of the 1,481 undertakings in the *weaving* section, 183 are returned as having no paid workers, being family affairs; of the remaining 1,298, there were 574 (44 per cent.) with from one to ten employed persons; 150 (11.7 per cent.) with 11 to 20, 179 (13 per cent.) with 21 to 50; 134 (10.3 per cent.) with 51 to 100; 120 (9.2 per cent.) with 101 to 200; 99 (7.6 per cent.) with 201 to 500; only 20 with 501 to 1,000, and only 22 with over 1,000. Of these twenty-two exactly half make dress goods, as do five of the 20

in the last group 201 to 500. In wool weaving, therefore, 68.7 or the same percentage of establishments (omitting the 183 'family' establishments) as in the preparatory and spinning sections occupy not more than 50 persons, with 10.3 per cent. more having from 51 to 100 apiece.

The relatively small scale of the industry is also illustrated by the low average machinery quotas per establishment: that for spindles is about 4,100, and that for looms (always neglecting the 183 'family' establishments without paid workers) is fifty. The largest *spinning* mill, which is at Tourcoing, has over 100,000 spindles; and there is at Fourmies a company which controls 272,000 worsted spindles in twelve mills in seven different localities. The modern and substantial Elbeuf industry has 24 or 25 mills with a total of 160,000 spindles, but only two have over 20,000 apiece, four more have 10,000 to 20,000, and the others mostly 2,000 to 4,000. Of the two score Rheims spinners with a total of 80,000, two appear to have 7,000 and 10,000 respectively, the rest having fewer. Large-scale worsted spinning has been considerably developed in Alsace by two firms. At the same period in the main *weaving* area (Roubaix-Tourcoing), out of 70 mills engaged in making cloths, dress goods, flannels, etc., 28 had not more than 100 looms apiece, 15 had from 101 to 300, 12 from 301 to 500, 8 from 501 to 800, 4 from 801 to 1,000, and one over 1,000. In 1926, the 37 weaving undertakings at Fourmies had a total of 9,372 looms, *i.e.* an average of 253 apiece. The Elbeuf area with 30 cloth weaving firms had 3,000 looms, but two have over 500, and two over 150; and Rheims with about 20 firms had 2,500 looms: the two biggest had about 200 apiece. In the carpet and tapestry branch, fifteen firms in the Roubaix-Tourcoing-Halluin-Launoy area had a total of 1,200 looms, whilst the single Beauvais and Persan undertakings, and the Gobelins and two other Paris undertakings, have about 400 in all, whilst those at Aubusson have about one-quarter of that number. Furnishing fabrics are made by over 50 firms mainly in the Northern area, with a total of 3,200 looms, plus 600 double piece looms, but eleven have over 100 apiece (one has 700 single and nearly 300 double piece looms).

In the *combing* branch, however, the operations are on a large scale. In the Northern area, which is responsible for four-fifths of the national output, the average for 23 combing mills a few years ago was 92 machines.

The combination of the various stages of production—for example, combing, spinning and weaving—by the same undertaking is not common. It is found principally in the case of the carded fabrics, where the undertakings are of moderate importance: and the total output of these goods is also only one-third of the total French output. The National Economic Council Report (1932) on the woollen industry states that "in

the industry of worsted wool, a tendency towards vertical concentration took form already before the war and has since been clearly accentuated; but one is still far from seeing all the transforming industries grouped in a few trusts. At Roubaix-Tourcoing, principal centres of the worsteds, the consolidated undertakings (combing, spinning, weaving), which are few and powerful concerns, hardly represent more than 20 to 25 per cent. of the looms of the region. In Alsace there are only two large concerns comprising combing, spinning and weaving; and they represent only about the sixth part of the looms of the Alsatian weaving industry, and sell, moreover, not only piece-goods but also yarns. It is very difficult to judge whether the consolidating movement is tending to progress: for the North, the reply is doubtful, for Alsace it is negative. Without failing to recognise the importance of the consolidated undertakings, it may be said generally that the wool industry as a whole remains an industry divided and specialised, of which the different branches are the more concentrated the more they are removed from the finished product."

Geographical Distribution of Woollen Industry.—The great bulk of the combing, spinning, and weaving of wool is carried on to the north and east of Paris, the chief centres being Roubaix-Croix-Tourcoing, Fourmies, Avesnes and various small towns or villages in the Picardy and Cambrai areas, Elbeuf and Louviers, both not far to the west of Rouen, Sedan, Rheims. The national wool and woollen centre is the North, at Roubaix-Croix-Tourcoing: wool combing to the extent of 80 per cent. is concentrated in the Roubaix-Croix-Tourcoing-Fourmies area, in which are also situated over half of both the total spindles and looms. Most kinds of yarns (and the vast bulk of French worsted yarns) and piece goods are manufactured in this Northern district; and it is especially noted for carpets, woollen and mixed underwear, and ladies' dress goods. The last-named and the yarns therefore are rather a speciality of the Picardy-Cambrai mills. Alsace, which possesses 400 combing machines, 530,000 spindles and 6,600 power looms, the vast majority of all of which are found at Mulhouse, Colmar, Sainte-Marie-aux-Mines, and Bischwiller, is known for its yarns, muslins and kindred light woollen fabrics. Elbeuf, having 160,000 spindles and 3,000 looms, specialises in the heavier cloths; Sedan (100,000 spindles and 1,200 looms) in woollen cloths, overcoatings, velvets; Rheims (150 combing machines, 80,000 spindles, 2,500 looms) in flannels; Vienne (70,000 spindles, 2,100 looms), 20 miles south of Lyons, as well as Castres and Lavelanet, both in the Languedoc or Pyrenean region, in woollen or Saxony cloths, in which rewoven stuffs, known as 'Renaissance,' form an important constituent; Orléans in blankets and travelling rugs; Chateauroux in military uniform cloths.

Mazamet, a small rather isolated town of 23,469 inhabitants (1931) in the Languedoc, 12 miles from Castres (just mentioned),

about 60 miles north-east of Toulouse midway between Montpeilier and Montauban, occupies an unique position in the world wool trade as the greatest centre of all for fell-mongered or plucked wool: its work is the pulling of wool (*délainage*) from sheepskins imported, mainly through Marseilles, but also through Bordeaux and Sète, from Australia, South America, South Africa, Spain and elsewhere. In 1913 and in 1927-32 it imported respectively 56, 53, 49.6, 50.5, 56, 53, 56 and 59.1 thousand tons of sheepskins, as well as 2,000—3,000 tons of wool in the yolk: in 1932 Australia, the River Plate and South Africa supplied 22,300, 21,000 and 8,430 tons respectively. In 1931-33 Mazamet despatched 23.5, 21.1 and 24.2 thousand tons of wool and 2,700, 2,500 and 2,700 tons of hides. A relatively considerable market is found in the United Kingdom. Mazamet owes its prosperity largely to the several local streams giving motive power to the 'pulling' factories and to the exceptional quality of their waters as a solvent of soap and as thus facilitating the washing and the 'pulling' process. It has near-by the tanning town of Graulhet as a market for the 'pulled' sheepskins.

The centres of weaving of woollen hosiery, carpets, furnishing fabrics, felts and other articles are fairly numerous, but woollen and mixed woollen hosiery of all kinds has its principal seat in Roubaix-Tourcoing, where the output of hosiery yarns and knitting wools is very great. Elbeuf has since the war become a considerable producer of woollen hosiery. The greatest centre in France for hosiery of all kinds (cotton, wool, silk or mixtures thereof) is Troyes (100 miles south-east of Paris) and its county. Carpets and tapestries are made mainly in the North (Roubaix-Tourcoing, Halluin, Launoy); but the old and famous centre of Aubusson and Felletin in the Central Plateau and the Gobelins (in Paris) remain important producers in their kinds. Furnishing fabrics are likewise mainly made in the North (Roubaix, Tourcoing, Amiens, etc.). Felts manufacture is widely spread, but felts for hats, which are blended with rabbit hairs, are mainly made in Languedoc (in the counties of the Aude and Tarn).

Business Organisation.—Like other French textile trades, the woollen industry retains an essential family character, although the majority of the larger undertakings have adopted in the last fifteen years the legal form of limited companies, mainly on fiscal grounds. Concentration on a large scale and specialisation of output are uncommon, especially in the weaving section. The opinion of the Chairman of the French Central Woollen Committee in 1928, as cited in the previous Report, is worth repeating. "Indeed, by the very nature of our industries, which are subject to the variation in quality of the raw material, to the change of fashion, and to the special processes, a large part of the so-called methods of rationalisation present to them only a very limited interest, whether it be standardisation, mass-production or industrial concentration. Neither women nor even men wish to wear

standardised fabrics: all require fancy and variety. Fashion has an increasing evolution and changes unexpectedly. Under these conditions how can the standardised production be practised? It is the sole method that allows the American manufacturer to defend himself against foreign imports, even with customs duties of over 100 per cent."

The Central Wool Committee, which further elaborates the point, finds only very limited possibilities of standardisation in the weaving branch. "The necessities of fashion are also in opposition to the reduction in the number of designs, although this has been often advocated owing to the extreme costliness of the realisation of numerous samples. It would be utopian to claim the repression of the fertile imagination of the creators of models, and moreover it would be impossible to foretell which out of a thousand samples will meet with the favour of the customers. The French industry, in practising artistic Malthusianism, would risk playing the game of competitors less gifted, whose work of initiative would be so much the more facilitated. Are we to conclude that there is no place in the textile industry for standardisation? We would not go so far, as it is possible that for certain products (standard materials, uniform cloths, felts, blankets) it would be advantageous to limit the production to a small number of current types. But it is important not to exaggerate the importance of the saving that would be realised."

Larger-scale and more specialised production has been realised to a greater extent in the spinning branch. Mention has already been made of the single Tourcoing mill with over 100,000 spindles, and of the Fourmies company with 272,000 in a dozen works, and with one combing mill: the latter company, set up in 1918 by 23 worsted spinners with their mills in about 10 different places, who pooled their war indemnities, directs the production of 12 mills in seven separate localities. It is also indicated by the fact that in the spinning group the number of undertakings with over 500 workers is proportionately far larger than in the weaving.

Organisation for General Purposes.—The French woollen industry is highly organised for general purposes. In 1922 was created the *Comité Central de la Laine* as the central organisation of the various groups, whether district federations of combers, spinners or weavers, or special sections such as manufacturers of worsted or woollen yarns, carpets, felts, blankets. This central body deals with all matters affecting the trade, economical, statistical, fiscal, technical, vocational; it takes in hand the settlement of controversies between affiliated committees or their members. It represents the trade or its branches with the public authorities, and undertakes the formation or execution of new services of general interest to the industry. It has taken part in the discussion of nearly 50 commercial agreements with foreign countries, in the elaboration of the customs nomenclature, has represented the industry in discussing with foreign industrials questions of limitation of

credits, arbitration in cases between French woollen traders and those in other countries. It took an active part in the creation in 1930 of the International Wool Federation, which includes nine countries (Great Britain, France, Belgium, Germany, Italy, etc.).

Hours of Work : Double and Triple Shift System.

—The Administrative Order of December, 1919, respecting the application of the Eight Hours Law, established for the spinning and weaving operatives in textile mills the principle of the eight-hour day or the 48-hour week, or an uneven distribution of hours with a maximum of 9 hours a day : in the bleaching, dyeing, finishing and printing branches, the 48 hours may be confined to five days with a maximum of 10 hours a day. An annual credit of 150 hours a year, distributed over 150 days, was authorised for urgent work, and in the bleaching and other finishing branches 100 extra hours might be worked to make up for time lost during dead seasons. In order to secure a more adequate yield from expensive new machinery than would be obtainable in the normal day, or a more rational organisation of output, as well as to make good the acute shortage of labour in the years 1922-30, many French textile manufacturers introduced the system of double and even triple shifts. It is now generally employed in wool combing, and also but in a lesser degree, in spinning : to a slight extent only in weaving. The only statistical investigation of the practice was carried out in 1931, which as a year of marked depression in the wool industry did not find the system in its fullest operation. It showed, however, that, out of a total of 29 *combing* mills with 15,750 workers, five with 1,889 worked the double shift, and that twenty with 13,825 worked the triple shift. Of the 493 *spinning and doubling* mills with 65,645 workers, 169 with 17,175 had double, and 35 with 1,259 had triple shift. In the 439 *weaving* mills with 46,108 workers, only 13 with 517 had two shifts and 50 with 253 workers had triple shifts.

Productive Capacity of French Wool Weavers.—No complete investigation of the production capacity of the French wool workers has been made. The mere mathematical averages respecting all workers engaged in spinning operations and of all workers in the weaving operations give 80 spindles and half a loom per head. The United States Bureau of Labour Statistics, which made in 1927 an enquiry on cost of production in weaving in the United States, the United Kingdom, Germany, and France, reported that whilst American undertakings were able to give very precise costings with the share of the labour element, most European countries were not in a position to calculate the costings for each unit of output. The Bureau was able, however, to obtain certain comparative figures of interest respecting the number of looms per weaver, number of movements a minute of looms, and the output in yards from 48 hours' work per loom. As regards France, it appears that in the manufacture of three separate grades of

worsted serges, No. 56, No. 60, and No. 56 (with silk line) two looms were tended by one worker in all the cases in France and the United Kingdom, but six in the United States; that the movements of the looms per minute were 120 in all three countries in all cases, save that in the United Kingdom for No. 56 (with silk line) it was 130. The 48 hours' weekly output in yards per loom, which showed great variations, indicated more output for the French looms, which, for the three grades respectively gave 157, 173, and 162 yards against 117, 127.8, and 118 for the United Kingdom, and 110, 125 and 109.5 for the United States. The German looms, which had one man per loom, save in the third grade where there were two, had 90 movements per minute for the first two grades and 120 for the third: the German figures were lowest, being 77, 97.8 and 99.3 yards.

iii. PRODUCTION AND TRADE

No precise figures of wool textile output or of consumption are available, but the following estimate for the year 1927 was published by the National Economic Council in 1932:—

Category	Tons
<i>Combed Wool</i>	
Production	130,300
Imports	700
	<hr/>
Exports	131,000
	29,000
	<hr/>
Consumption	102,000
<i>Noils and Waste</i>	
Production	16,300
Imports	7,400
	<hr/>
Exports	23,700
	17,900
	<hr/>
Consumption	5,800
<i>Yarns</i>	
Production	106,700
Imports	400
	<hr/>
Exports	107,100
	32,500
	<hr/>
Consumption	74,600
<i>Piece Goods</i>	
Production	73,600
Imports	900
	<hr/>
Exports	74,500
	28,700
	<hr/>
Consumption	45,800

The mastery of the home market, as well as the large proportion of exports, is noteworthy in the above table: only .7 per cent. and .54 per cent. respectively of the consumption of tops and yarns come from abroad, whilst imports of piece goods are only 2 per cent. of the consumption. The year 1927 represents probably the highest output achieved.

General Condition of Industry, 1928-33.—From the moment of its reconstruction in 1922-23 till 1930, the whole French industry enjoyed remarkable prosperity. So substantial was the advance in output that in 1927 and 1928 its exports of yarns were not greatly inferior to those of the United Kingdom (being 28.5 against 30.4 per cent. of the international yarns trade) and that, as regards the international trade in piece goods, in which in 1913 the shares of the United Kingdom, Germany, and France were 65.4, 19.1, and 12.4 per cent. respectively, in 1928 these percentages were 37.6, 15.4 and 20.6. In 1927 and 1928 the combined French exports of yarns and piece goods, which had averaged 42,300 tons for the years 1922-26, reached 60,400 and 65,400 tons respectively. Prior to the world depression, French exports were deemed to represent about 60 per cent. of the French output (in 1931, according to the president of the French Federation, 72 per cent. was exported). The crisis in the French industry, which began seriously in 1930, is ascribable to many general and particular causes. The fall in wool prices is among the primary: the prices for staple kinds such as Merinos—"Victorian good greasy" which in the dominating London market were 53 and 50 pence a lb. in 1927 and 1928 fell to 25, 21 and 12 pence in 1930-32 (the 1932 wool prices were the lowest for half a century). The excessive manufacturing equipment in the world as a result both of its increase in the old producing countries like the United Kingdom, Germany and France, and of its great increase in the newer wool-working countries such as Japan, the United States, Italy and other countries in Central and South-Eastern Europe, has concurrently developed undue economic nationalism and has substantially reduced, by high duties or other measures, French outlets abroad, which have likewise been adversely affected by reduced purchasing power both at home and abroad. The changes in fashion which have curtailed the amplitude of woollen garments, or substituted on a considerable scale the more durable fabrics of the knitted, or tweed or homespun textures of the "sports" type for old-time serges, worsted and dress goods, as well as the advent of rayon and greater use of mixtures, have also affected the French industry, which was more especially noted for its dress goods, fancy cloths and novelties. Being dependent on foreign markets for the sale of more than half its output, the French industry was particularly sensitive to the shrinkage of these markets and to the decline in the purchasing power of the well-to-do foreign women customers.

Much compensation, however, in the home market has more recently emerged in the greater popularity of woollen garments, partly due to their lower prices, in the greater length of dresses and coats, in the wide adoption for summer use by men and young people of flannel garments for the former linen, drill or duck fabrics, in the greater adoption by the rural community (near 50 per cent. of total population) of urban modes and in the provision of upholstery material for motor-cars. The widespread fancy for wool knitting and for machine-knitted goods with predominant wool content has also reacted to the advantage of the woollen yarns industry. The importation in 1932, despite a further and very serious decline in exports, of approximately the same quantity of raw wool as in 1931 (254,000 against 258,000 tons) is thereby largely explained.

Despite such new outlets, the French woollen industry appears from several indices to have suffered a serious decline in its activity since 1928, when the general figure was 109. It fell to 76 in 1932 and was 92 for January—September, 1933. The total of the worsted yarns conditioned in four principal centres (Tourcoing, Roubaix, Fourmies, Rheims), which amounted to 20,570 tons in 1930, fell to 15,050 and 12,830 tons in 1931 and 1932. In April, 1932, it was stated, the yarn factories were working only 3 to 4 days a week, whilst in the production of tops only 66 per cent. of time was then being worked. The percentage of total looms in activity, which averaged 74, 70 and 66 in 1928-30, was 59 in 1931 and 49 in 1932. The difficulties experienced were also denoted by the reported closing down in 1931 of five mills with 110,000 spindles in the North; and in the Roubaix-Tourcoing area 11 weaving undertakings operating a total of 2,000 looms were stated to have likewise closed. The depression was further manifested by the decrease in the importation of textile machinery, which is stated to have been only about one-tenth of the imports in 1913. In some respects, the difficulties of various sections of the industry no doubt originated in the collapse of raw wool prices, but they were accentuated by the world crisis which had become general by the close of 1930, and which constrained a widespread reduction in prices whether wholesale or retail, home or foreign, of wool products, as well as a slackening in general demand.

Imports and Exports of Woollen Manufactures.—*Imports*, which were considerable only in the years 1919 and 1920, when, the French factories not having yet been reconstructed, 7,000 and 4,000 tons of yarns and 22,600 and 10,600 tons of piece goods respectively were introduced, have never consistently regained even the normal pre-war dimensions. For the years 1911-13 French imports of yarns and of piece goods averaged 1,067 tons and 4,320 tons respectively: for the years 1922-31 these averages have been 850 and 1,600 tons. They are insignificant in relation both to the home consumption and to the exports. For the three

years 1911-13 yarn and piece goods exports averaged 13,400 and 22,500 tons respectively: this scale was not recovered until 1923 and 1924. Yarn exports mounted, after an average of 15,074 tons for 1922-26, to 34,800 tons in 1927, and until 1932, when they sank to 13,160 tons, averaged 25,400 tons. The principal customers have been the United Kingdom (which from 1928-31 took nearly a quarter), Belgium and Germany: these three countries, with their own highly developed woollen industries, have yet been in the habit of taking 70 to 80 per cent. Holland took an additional 6 to 8 per cent. Between 1923 and 1929, France became the greatest exporter in the world both of yarns and of tops. Piece goods exports had, up to 1931, more than recovered their pre-war scale of 22,500 tons, having averaged 27,250 tons for 1922-26 and 25,150 tons for 1927-30: in 1931-33 they dropped to 18,450, 8,900 and 8,200 tons. Great Britain until 1932 was the principal purchaser (25 to 30 per cent. of the total), followed by Belgium (8 to 9 per cent.), Switzerland, Argentina (each about 6 per cent.), Germany, Holland, Canada (each 3 to 4 per cent.). The great fall in 1932, both in yarn and piece goods exports, was due principally to the reduced purchases by Great Britain (less in both cases by nearly 6,000 tons than in 1931) Germany (less by 3,500 and 2,000 tons) and Belgium (less by 1,000 and by 900 tons). The following table shows the tonnage for 1913 and for the period 1922-33:—

WOOLLEN YARNS AND PIECE GOODS.
(Weight in Metric Tons).

Year	Imports		Exports	
	Yarns	Piece goods	Yarns	Piece Goods
1913	956	4,318	14,843	23,408
1922-26 (average) ...	847	1,498	15,074	27,247
1927	449	966	34,783	25,642
1928	837	1,493	27,959	27,417
1929	1,009	1,845	26,242	25,209
1930	1,050	2,360	24,744	22,499
1931	1,015	2,147	22,757	18,452
1932	653	1,509	13,162	8,888
1933	728	1,733	15,588	8,225

Anglo-French Trade.—United Kingdom exports to France both of woollen yarns and of piece goods, which even before the war, especially as regards yarns, were relatively insignificant in comparison with the same French exports to the United Kingdom, have fallen to still more modest dimensions. The 1913 exports of 717 tons of yarns sank in 1927 to only 157: for the ten years 1922-31 the average was 379 tons, for 1932 and 1933 only 225 and 211 tons. The fall in the United Kingdom exports of piece goods

has been still more marked: from 3,000 tons before the war to 604 tons in 1927, to an average of 920 tons for 1922-31, and of 650 tons in 1932-33. French exports of yarns to Great Britain, which before the war were tenfold the United Kingdom exports to France and represented over 51 per cent. of French yarn exports, have remained substantial, but have declined considerably both absolutely and in proportion to total exports. For the five years 1922-26 the English market purchased on the average 3,000 tons (or 20 per cent. of total), and for the five years 1927-31 an average of 5,660 (nearly 21 per cent.): in 1932-33 only 304 tons (2.1 per cent.). French exports of fabrics to the United Kingdom, which in 1913 reached 45 per cent. of total exports (10,480 out of 23,400 tons) have likewise declined heavily: for the five years 1922-26 to an average of 27.5 per cent. (7,540 out of 27,250), for the years 1927-31 to 26 per cent. (6,260 out of 23,840), and for 1932-33 to 7.8 per cent. (670 out of 8,557 tons). The declines are due to general and to particular causes: those in 1932-33 are mainly due to the higher French cost of production, to the introduction of a United Kingdom import duty of 10 per cent. on yarns and of 20 per cent. on piece goods, and to changes in fashion especially as regards the dress goods which formed a notable part of French fabric exports to the United Kingdom. The following table shows for the years 1911-13 and 1922-33 the French *imports* of woollen yarns and fabrics from the United Kingdom and the *exports* of woollen yarns and fabrics to the United Kingdom.

ANGLO-FRENCH TRADE IN WOOLLEN YARNS AND MANUFACTURES, 1911-1913
AND 1922-1933.

(Weight in Metric Tons).

Year	Imports from United Kingdom		Exports to United Kingdom	
	Yarns	Fabrics	Yarns	Fabrics
1911	—	2,978	—	9,653
1912	916	3,093	6,396	9,333
1913	717	3,030	7,558	10,480
1922-26 (average)	335	1,100	2,999	7,537
1927	157	604	5,656	7,275
1928	387	943	5,105	7,102
1929	564	1,102	5,811	5,951
1930	532	1,096	5,500	5,678
1931	453	959	6,238	5,414
1932	225	599	311	675
1933	211	695	298	664

The Colonial Market.—By reason of their climatic conditions most French overseas territories do not offer the same large market for French woollen as for French cotton fabrics. In 1932, the National Economic Council reported that exports

thereto are very limited, and that for the most important classes of woollen exports, such as piece goods and worsted yarns, the colonies do not take more than 4 or 5 per cent. In only one class of exports, namely blankets, are they important buyers: out of the average exports of blankets in the years 1928-32, which was 564 tons, they took an average of 256 tons (45 per cent.).

IV.—THE LINEN INDUSTRY

1. GENERAL CONDITIONS

The marked prosperity of the French linen trade from the period (about 1924) of the completion of the reconstruction of the industry after its wholesale destruction in the war (according to Monsieur Louis Nicolle, a leading linen manufacturer and the long-time president of the Société Industrielle du Nord, in the *Revue des Deux Mondes* of January, 1931, out of 510,000 flax spindles in the war-occupied territory, 75,000 were carried off to Germany or Austria, 250,000 were destroyed, and the balance were cleared of their parts in copper and bronze) continued until the autumn of 1930. "Whilst in the rest of Europe the spinning mills are far from being all in operation, France has succeeded until last autumn in keeping all its spindles working" (M. Nicolle: *loc. cit.*). The situation both in the French spinning and weaving mills first became serious in the spring of 1931. The index figure of output for that year proved to be only 66 per cent. of the 1913 figure. Many works later in the year had closed for two or more days weekly as the home demand had slackened and exports had fallen from the normal 30 per cent. to 5 per cent. of the national output. Several manufacturing and business firms in the trade failed in 1931 and 1932. At the beginning of the latter year some mills closed, most worked only four days a week: by mutual agreement 30 per cent. of the spindles were stopped. By April, it was reported, work in both spinning and weaving sections amounted only to 60 per cent. of the normal volume. The yarn exports in 1932, which were even lower than in the previous year, amounted to only 6,336 tons (compared with an average of 14,440 tons for 1927-29); fabric exports fell to 1,782 tons (against an average of 2,928 tons for 1927-29). No trace of real improvement has been witnessed in 1933. The export trade, both in yarns and fabrics, was still lower than the already alarming reduction in 1932. The yarn and linen thread trade, which had greatly developed its internal and external trade up to 1929, felt the crisis with especial severity.

Reduced Linen Consumption and Exports.—The reduced consumption that has brought about the exceptional depression in

the linen industry has been due to many causes. Linen consumption generally was particularly affected by the reactions of the great fall in the prices of other textiles, notably of cotton, which fell to about half its pre-war price in gold. Flax prices dropped about 30 per cent. in 1929 and again in 1930, but the fall came much later than that of its chief rival, and was inferior in degree. By virtue of the conditions of flax production in the world, of flax marketing, of flax working, whether in the pulling, retting, scutching, combing, spinning or weaving operations, linen yarns and fabrics are produced at more cost than cotton yarn fabrics, and seem doomed to remain dearer. Linen has also suffered largely, on the same grounds of price, from the partial substitution of jute, hemp, rayon, even of wool, which have supplanted it at least partially in many uses or mixtures. Cotton thread has substantially replaced linen thread in certain great thread-using industries like the leather-working or the lace-making trades and has conquered the immense former market for linen thread existing before the universal use of the sewing machine, for which linen thread is not sufficiently supple. It is of course true that the alliance in varying strengths of linen and cotton is far from rare, but cotton alone has permanently strengthened its position in certain classes of goods in general use, such as table and bed-linen, towels and handkerchiefs. To mitigate the prejudice caused by the unfair competition of cotton or cotton mixed with linen, or with other materials, and sold under the description of linen, the French linen trade has been endeavouring to have a legal definition of goods sold as linen, or *linon* (sheer linen), as *pur fil*, or as cambrics (*batiste*). French manufacturers have also undertaken, like the Irish and Belgian, publicity campaigns for the expansion of the use of linen.

Since 1931 the French home market suffered not only from reduced purchasing power and more severe competition from other cheaper textiles, but also from the comparative absence of foreign visitors or withdrawal from France of foreign residents (through national exchange restrictions, national economic collapse, and so forth), both of which classes were large buyers of the fine linen products. The direct export trade in yarns and fabrics declined partly from the general causes above mentioned, partly on account of the higher price in the foreign market of French goods in relation to Irish, German, Czechoslovakian or Belgian, which was often due among other things to changes in the gold value of the national currencies concerned, as well as to the institution of new or higher customs duties in important markets (e.g. the United Kingdom or the United States).

II. PRODUCTION

Importance of the Industry.—In June, 1914, mills spinning flax, hemp and tow numbered 60, with 677,349 spindles, of which

551,883 (407,695 wet, and 144,188 dry) were located in the Lille area in the North of France (Lille, La Madeleine, Bailleul, Armentières, Comines, Canteleu, Halluin, etc.): in 1929 there were 46 firms with about 550,000 spindles, 43 of which with 396,000 wet and 119,000 dry were in the Lille Economic Region. The preponderance of Lille itself as a spinning centre is indicated by the fact that in 1929 twenty-five mills with 389,740 spindles (292,445 wet and 97,295 dry) and with 15,500 workers were in its immediate area. The number of mills has fallen since 1914 for various reasons: thus eight previously existing mills were not rebuilt after the war (*e.g.*, at Lille, Douai, Halluin, etc.). The balance of approximately 40,000 to 50,000 spindles are found at scattered points (Amiens, Barentin near Rouen, Angers, Rennes, Ligugé, etc.). The spinning equipment is highly modern as a result both of the wholesale re-equipment necessitated by the war destruction or damage of about three-fifths of the plant and of the general replacement in the years 1920 to 1928.

The linen *weaving* industry is also located in the North, but it is not concentrated to the same extent in the Lille neighbourhood. The chief centres are Lille, Armentières, Halluin, Bailleul, which produce most staple lines (heavy, grey, bleached, military, for tents, furniture; waterproof; twills, blue, slate-coloured, white for underclothing); the area Abbeville-Amiens-Hallencourt, which specialises in table-linen and damasks: Cambrai and Valenciennes in fine linen, lawns and sheer linen: Lisieux in Normandy in linen cloths, Cholet near Nantes in sheets and handkerchiefs, Gérardmer in the Vosges for squares (*carrés*). The power looms in the county of the Nord alone are stated by a leading authority to number 22,000, of which about 7,500 are at Lille and its immediate vicinity, 5,550 at Armentières and 3,500 in the Cambrai-Valenciennes area. Handlooms, which numbered 20,000 before the war, are now less numerous. Compared with the North of Ireland, France has about two-thirds of its strength in spindles and rather less than its strength in power looms. As to French output the figure of 27,400 tons of piece goods for 1931 is given.

Numbers Employed—The numbers of persons employed in flax spinning and linen weaving were returned by the census of March, 1926, as 24,973 and 56,503 respectively: those in the preparatory processes of retting and scutching were few, about 1,500, as the bulk of the flax used is obtained from foreign sources, whence it arrives in a prepared state, and as nearly all the French-produced flax is treated in Belgium (mainly along the river Lys as far as Courtrai in the Belgian area near the French frontier). This emigration of retting and scutching is partly due to the traditional capacity of the industry along the Lys, but it is also due to the shortage of labour as a result of competing local employments (mines, metallurgy, various other textile industries); and to the long and exhausting nature of manual

scutching. Recent inventions are removing this drawback: the scutcher, with the newest machines, does not touch the flax. The transfer to factory of both the retting and scutching operations is also increasing. Prior to the existing depression the French industry ceased not to complain of the shortage of labour, which was felt not only in the flax fields for the pulling, retting and scutching operations, but also especially keenly by the yarn manufacturers: it was stated in 1929 that this shortage often obliged them to leave idle 15 to 20 per cent. of their spindles. The difficulty of the spinning mills is partly due to the fact that the bulk of the spinning being wet, the operative works in a warm and damp atmosphere and also finds that flax dust emanations are more disagreeable or harmful than those of other fibres: cotton and wool spinning offers accordingly more attraction. Many mills maintain special omnibuses to convey their workers to and from their work. The percentage of foreign workers, which is higher than in the other textile trades, is partly due to the localisation of the bulk of the industry near the Belgian frontier: in November, 1930 a census in 17 mills employing 3,174 workers, situated in the Lille area, revealed that 437 (of whom 416 Belgian) or 13½ per cent., were foreigners.

Size of Manufacturing Units.—The scale of undertaking, which is larger in the spinning and thread section than in the weaving, cannot be regarded as very large, but it appears more considerable than in the French cotton and wool spinning industries. In 1926, out of 63 yarn mills with 19,485 persons, 14 (22 per cent.) employed from 101 to 200, 25 (40 per cent.) from 201 to 500, 8 (12.7 per cent.) from 501 to 1,000, and two over 1,000; those with over 500 occupied 8,450 persons (43 per cent.), slightly more than the total of 8,417 in the group 201 to 500. On this showing 86 per cent. of the workers were in undertakings with over 200 workers. Of the 18 linen-thread mills with 3,816 workers, one had 1,500, and five from 201 to 500: these six undertakings occupied 2,947 or 77 per cent. of the total.

In the weaving of linen fabrics (*toiles*) there were 940 firms with a total of 57,817 workers, of which 295 with 34,129 were engaged on ordinary textures, 54 with 11,655 on sailcloths, 27 with 999 on cambric and sheer linen (*batiste, linon*), and 517 with 9,720 on table linen and handkerchiefs. In the group with the largest labour force, that for ordinary textures, there were two firms with over 1,000 workers, 7 with from 501 to 1,000, 43 with 201 to 500, and 57 with from 101 to 200; 8,266 persons (24 per cent.) were employed in establishments with over 500, 13,530 (40 per cent.) in those with 201 to 500, and 7,939 (23 per cent.) in those with from 101 to 200. In the sailcloths (*toiles à voiles*) branch the scale is larger: of the 54 firms there are three with over 1,000 and nine with 501 to 1,000, the twelve occupying 9,971 persons out of 11,655, or over 85 per cent. of all employed. In

the table linen and handkerchief group (517 firms) are four with 501 to 1,000 occupying 2,538 people, twelve with 201 to 500 (3,847 people), and eight, with 101 to 200 (1,040 people): accordingly twelve firms with over 200 workers occupy 62 per cent.

Concentration has also developed to a certain extent. In the linen thread section seven factories are grouped under the *Société des Filatures et des Fileries de France*; and there are only five separate thread-manufacturing firms with a total of 2,000 workers in the Lille region. One old-established firm created in 1846 and with a capital of 32½ million francs, which failed in March, 1932, had been operating seven spinning and nine weaving mills.

Flax Supplies.—The area under flax has dwindled in recent years to small dimensions. The following table shows that in 1931 and 1932 it was about one-tenth, one-fifth, and one-third respectively of those in 1860, 1880 and 1913.

Year	Area under Flax	Year	Area under Flax
	Hectares		Hectares
1840	95,000	1923	14,900
1860	100,000	1924	19,600
1880	50,000	1925	24,600
1884	44,540	1926	22,600
1890	32,174	1927	24,437
1900	21,260	1928	33,874
1910	21,700	1929	43,827
1913	30,475	1930	30,503
1920	34,823	1931	10,368
1921	17,500	1932	9,164
1922	15,500	1933	10,954*

* Provisional figures.

On the basis of a yield of 600 kilogrammes of flax per hectare the home output in 1913 and in 1931-33 was 18,300, 6,200, 5,500 and 6,572 tons respectively: in the same ten years the imports were 112,900, 37,140, 42,720 and 44,140 tons. For the ten years 1923-32, the output of flax averaged 14,040 tons and the imports 51,950 tons. France has accordingly produced about 21 per cent. of her consumption. The decline in the acreage in 1931 and 1932 is asserted to have been due to the large Soviet Union exports at low prices since 1929: the wholesale index price (100 in 1913) which was 1,071 in 1928, was only 380 in March, 1931. In December, 1931, the Lille market prices were the lowest for 40 years, formal prices being 350 francs for 100 kilogrammes but in practice about 275 francs, and would have been lower had not the bounty aided sellers to keep supplies off the market for some time. Prices continued to be very low in 1932.

Government Measures.—Growers had long urged the institution of a bounty per hectare under flax, the sum to be higher

if the grower were also retter and scutcher of his own crop. In 1920 and in later years the State proposed the levy of customs duties of varying amount according as the raw material entered as flax in strand, in tow, or in bast (the latter to carry for example a sixfold duty to that in strand), but, strenuously opposed by the manufacturers, the suggestion was dropped. In July, 1931, was passed by the Tardieu Government the law whereby for a period of six years from the financial year 1931-32 bounties were payable, not on a basis solely of acreage under flax, but of output, plus area under flax, plus the state of the market, within the limit of 60 million francs a year, on flax straw of French origin scutched in France. French spinners are obliged to utilise the tow obtained from flax that has received the bounty within the limits of a percentage to be fixed annually. The distribution of the bounty is undertaken by the associations of flax-producers and of scutchers in collaboration with the Ministry of Agriculture. In 1931 the bounty was fixed at 3.90 francs per kilogramme of straw, but was only maintainable at that rate if the official quotation at the Lille Produce Exchange for Soviet Union flax, dry retted of the quality known as 1st sort 4th group, did not exceed 6 fcs. 60 cts. If in the course of the same month the average Lille quotation exceeds 6 fcs. 60 cts. the fixed bounty became reducible in the following month by the margin between this average and the 6 fcs. 60 cts. whilst all bounties are suspended if the average quotation reaches or rises above 10 fcs. 50cts. Besides the fixed bounty, there was provided a variable bounty, which was only to become payable if in June, 1932, funds were available out of the 60 million vote.

Further State protection was afforded by the fixing of a quota for imports. From July, 1931, to June, 1932, the quota was 50,000 tons, and from July, 1932, to June, 1933, 45,000 tons. Included in these imports were retted flax, tow, waste for furniture fillings, paper-making, cigarette paper, etc. The yarn manufacturers protested both in 1931 and 1932 against the establishment of a quota. The industry was also assisted by the larger purchases by the Ministries of War and of Marine and the Public Relief (*Assistance publique*) authorities: in 1932 the two Ministries purchased respectively 7.83 and 1.73 million metres of linen or hemp cloth.

III. FOREIGN TRADE

Manufacturers have generally estimated that in normal times about 30 per cent. of the national output was exported: in 1932 exports were stated to have fallen to only about 5 per cent. of that output. Yarn exports have always predominated, being many times greater in weight than those of fabrics. In the five years 1909-13 the former averaged 11,943 tons against 4,040 tons of fabrics: in 1922-26, 6,124 against 2,086 tons; and for the three

very prosperous years before the slump, 1927-29, 14,440, against 2,930 tons. Belgium has been far the greatest purchaser of yarns, followed by Great Britain: in the four good years 1926-29 they took respectively averages of 7,350 and 1,740 tons out of average total exports of 11,600 tons. For 1930-32, Belgian and United Kingdom purchases averaged 52 per cent. and 15 per cent. (3,910 and 1,150 tons out of the average total of 7,530 tons). The total yarn exports in 1932 were only half of the pre-war figures: save in the boom years 1927-29, they have never recovered the pre-war magnitude. In 1933 they again fell (to 5,173 tons): Great Britain's share was only 1.6 per cent. (82 tons). *Fabric* exports have likewise been persistently lower: compared with the average of 4,040 tons for 1909-13, the average for 1922-26 was 2,086, and for the three good years 1928-30, 3,100 tons. Among the principal buyers are Algeria and Belgium. Great Britain tends to purchase more especially the higher quality goods of the Cambrai-Valenciennes area. In 1932 and 1933 exports showed heavy falls.

On the other hand, linen *imports* into France have been mainly in fabrics. Yarn imports, which averaged 710 tons for 1909-13, reached high figures only in the after-war years pending the reconstruction of the bulk of the French spinning mills (*e.g.* about 6,800 tons in 1919 and 1920 against 419 and 3,360 tons of exports, and in 1921-24 an average of 2,350 tons against 4,000 tons exported); but in 1925 imports fell to 863 tons and exports rose to 8,547 tons. Since 1930 yarn imports have fallen to less than half of normal figures: in 1932 and 1933 even to 226 and 181 tons.

Fabric imports, which in 1909-13 nearly balanced fabric exports, were double for 1922-27, and maintained a considerable superiority till 1930. Before the war, the predominant importer was Northern Ireland, having averaged over three-quarters of these imports in 1909-13, and over 65 per cent. in 1922-26; but in 1927-31, her share fell to barely 40 per cent., and in 1932-33 no imports from Ireland were recorded. Increased imports have come principally from Germany, but also from Holland, Czechoslovakia, Belgium.

The foreign trade returns for linen include hemp, ramie and linoleum products, but there is no doubt that, as linen is the predominant element, the general movement is correctly indicated. The following table shows the total imports and exports for 1909-13 (average), 1913, and 1922-33.

[TABLE]

FRENCH FOREIGN TRADE IN LINEN, HEMP AND RAMIE, 1909-1913 AND
1922-1933.

(Weight in metric tons).

Year	Yarns		Fabrics	
	Imports	Exports	Imports	Exports
1909-13	710	11,943	4,685	4,040
1913	646	11,547	5,106	5,008
1922-26 (average)	1,828	6,124	4,498	2,086
1927	406	16,093	4,294	2,460
1928	452	13,792	4,443	3,120
1929	576	13,431	4,449	3,203
1930	615	8,287	3,900	2,883
1931	395	7,977	2,672	2,170
1932	226	6,336	2,011	1,782
1933	181	5,173	1,465	1,476

Anglo-French Trade.—United Kingdom exports to France, which were mainly fabrics, declined: from an average of 3,270 tons of fabrics for 1911-13 to one of 1,514 for 1927-31. Yarn imports, which, never considerable, consisted chiefly of linen thread for the leather-working trades, have fallen from 294 tons for 1911-13 to 180 for 1927-31, and to only 60 tons in 1932. The following table shows the course of Anglo-French trade in 1911-13, 1913, and for 1922-33 in linen, hemp, and ramie yarns and fabrics, separate figures for linen not being available:—

FRENCH TRADE WITH THE UNITED KINGDOM: LINEN, HEMP AND RAMIE
YARN AND MANUFACTURES.

(Weight in metric tons).

Year	Imports from United Kingdom		Exports to United Kingdom	
	Yarns	Fabrics	Yarns	Fabrics
1911-13	294*	3,271	908*	1,118
1913	229*	3,392	897*	1,317
1922-26 (average)	207	2,954	550	249
1927	116	1,623	2,058	350
1928	230	1,494	2,308	426
1929	260	1,444	1,630	310
1930	175	1,688	1,167	188
1931	122	1,323	1,278	71
1932	60	965	1,008	13.2
1933	36	710	82	—

* Relates only to single yarns in the grey; in the case of other yarns (which constituted 33.7 per cent. of total imports and 8.5 per cent. of total exports) figures were not given for separate countries.

V.—THE SILK INDUSTRY

I. POSITION IN RECENT YEARS

World Position of French Industry.—France holds the first place in Europe, and (if the production of the Far East be dismissed from account owing to inadequacy of exact data) the second in the world, as producer of silk manufactures. Within the last generation the United States advanced into first place: sixty years ago her consumption of raw silk represented 9 per cent. of the ascertainable world output of 9,000 tons, in 1900 28 per cent., and in 1929 more than 80 per cent. She is therefore the arbiter of silk prices: her supplies are drawn almost exclusively from Japan, the greatest producer, which exported thither in 1929 two-thirds of the world output of 44,000 tons. The modern American silk industry, promoted up to quite recently as regards the requisite capital or technique, or both, by the French, Italian and Swiss silk industries, and stimulated in its rapid development since the war by the notable expansion of luxury tastes and by protective duties, tended to employ, before the world slump came, four or five times more silk than the French, and operated roughly two-and-a-half times the number of power looms in the French industry. The relatively lower number of looms to the quantity of silk employed is probably ascribable to certain distinctive features of French and American output. The products of the former are marked by the incessant play of fancy and inventiveness in design and by great novelty in type of material, due not only to the affluence of the French genius in a domain that has been cultivated most particularly by it, but also to the imperative calls of the very numerous markets with varied taste on which French industry depends. The American industry, on the other hand, aims more at large scale output of standard or classic designs and the limitation of novelties, as it caters mainly for the single but vast home market with a rather pronounced taste for simple or only slightly decorative or complicated effects. A leading Lyons authority notes in this connection that each year the separate catalogues of goods drawn up by the Lyons Chamber of Commerce contain not less than 48 classes apiece, whereas in similar American catalogues it would not be easy to find more than a dozen apiece. The variety and constant achievement of novelty are, of course, the outcome of the long tradition of the French industry, of the systematic educational formation of its would-be votaries, of the pre-eminence of Paris as the home of feminine fashions, of the close co-operation of the industry with art, science, literature, creators of fashion designs or executors thereof in divers domains (artists, great dressmakers, interior decorators, etc.).

Four other countries in Continental Europe are important producers: Italy, Germany, Switzerland, and Czecho-Slovakia. Compared with the 60,000 French power looms (and perhaps 5,000 hand looms), Italy has 23,000 (besides 5,000 hand looms), Germany about 42,000 (and 5-6,000 hand looms), Switzerland 14,000 (and 1,000 hand looms), Czecho-Slovakia 8,000 (6,000 hand looms). Minor producers which work almost solely for the particular home market, are: Spain (said to have about 2,000 looms in Catalonia), and Hungary, 1,070 looms; whilst Poland, Belgium, Roumania, Greece and Bulgaria have developed small silk industries. In Asia the most important producers are Japan, China, and British India. Japan, which is the chief Asiatic competitor and whose low prices have been a disturbing factor in the last few years, was estimated to possess in 1924 about 44,000 power looms large size and 49,000 small size, besides 148,000 hand looms. No estimates are available for British India and China.

French Industry, 1928-33.—Prosperous from the end of the 19th century till the war, and as its factories, situated far from the war areas, did not suffer any war damage or, in the war years, any setback in export trade, which normally absorbs two-thirds of the French output, the silk industry was in an excellent situation to profit by the great after-war vogue of silk wear among all classes and both sexes in numerous countries. French silk manufacturers traversed in fact a period of thirty years of great prosperity. Concerning 1925, the Lyons Silk Federation was able to observe that "never was so much silk produced; and never was so much consumed"; yet in 1926 production and consumption advanced still farther. From 1927, however, became more acute the competition of rayon which began to be employed in astounding proportions in mixtures and for all kinds of fabrics. This notable utilisation became more accentuated as rayon prices were lowered and rayon yarns improved. The year 1928 yielded excellent results, but in 1929 silk prices, like rayon prices, began to fall: 1930 proved the worst year since 1876 for the French silk industry. The years 1931 and 1932 became even more disastrous with the aggravation of the world crisis, and consequently reduced consumption and with the introduction of further obstacles to trading (increased duties on silk imports as luxuries, rationing of foreign exchange or even practical embargos on external payments). The state of the industry is illustrated by the returns of the silk conditioned at Lyons: in 1931 and 1932 the totals were 3,563 and 2,288 tons, whereas the ten-year (1920-29) average was 5,752 tons. Average prices for raw silk, which were 435 francs in 1926, and 255 in 1929, dropped to 175, 125 and 90 francs for the years 1930-32. In June, 1933, the French silk industry showed no signs of real improvement: the index of production, which had been 110 in 1928 (1913 = 100), averaged only 35 in 1932 and only about 42 in 1933. Silk manufacturers have continued as since

1929, to employ their plant to a relatively marked extent in the production of rayon fabrics, which continue to grow in popular favour.

II. PRODUCTION

French Raw Silk Production.—The output of silk in France is fast declining, the fall being marked since 1928. Formerly the silkworm was cultivated in most of the counties south and south-east of Lyons, but in 1932 three-quarters of the output took place in only two counties (Ardèche and Gard), the balance being distributed over 20 counties. In 1852 and 1867 respectively 12,066 and 14,083 tons of fresh cocoons were produced: even in 1900 about 9,200 tons were produced by 136,000 growers. But for the years 1911 to 1922 the annual output averaged only 2,079 tons by an average of 67,000 growers. In 1923 steps were taken by the newly constituted Superior Silkworm Cultivation Council and the newly organised Silk Federation, representative of all the silk interests, to revive this agricultural occupation by the creation of several silkworm stations and of a special office for propaganda and practical educational work among the growers. Minimum prices for cocoons to cover the cost of production were fixed by the representatives of the interested parties (growers and spinners) before the harvesting of the cocoons. The development of the plantation of suitable mulberry trees was also taken in hand. Certain results followed in the years 1924-27, when the growers averaged 70,600 and the output 3,600 tons. But in the years 1928-30 the number of growers averaged 49,700 and the output 2,300 tons: and in 1931 the respective figures were 34,460 and 996 tons, and in 1932 and 1933 the respective figures were 18,286 and 15,894 growers and 987 and 943 tons. The main immediate cause of the decadence was the fall in world prices which reacted on home prices: the latter fell from 20.44 francs in 1927 to 7.85, 5.50 and 4.18 francs respectively in 1930-32. A State bounty raised the actual prices paid to silk growers (*e.g.* in 1930 by 4.80 francs a kilogramme and more in 1931 and 1932). Among the general causes of the decline must be reckoned the development of the production in the Far-East, where abundant labour and far lower production in costs obtain, and the growing depopulation in the silk growing areas in France, compared with the still abundant agricultural population in the corresponding areas in Asia and Italy. Silk growing requires minute care, and the diminished agricultural classes in France readily secure less exacting and more remunerative work. The emergence and progress of rayon have contributed to divert to other tasks the growers, who tend to be discouraged by the prospects of its displacing silk to an ever increasing extent. In 1928-33 France produced 205, 195, 175, 140, 80

and 78 tons of silk : in 1930, when the output was 175 tons, she produced only 4 per cent. of her raw silk requirements, and in 1931 and 1932 this percentage was still lower.

Italy, the chief European silk grower, produced in the years 1928-30 an average of 53,000 tons of cocoons, but in 1931 this figure fell to 34,500, and is reported to have fallen farther in 1932 ; in the years 1928-32, Italian output of raw silk was about twenty-four to thirty-fold that of France, having been 4,836, 4,830, 4,882, 3,140, and 2,900 tons respectively. Japan, however, has somewhat increased its internationally visible production in recent years, the figures for 1928-32 having been 33,600, 28,700, 29,600, 33,000 and 34,000 tons. China is estimated to have produced 4,750 in 1932, against 9,200, 9,300, 8,500 and 3,710 tons in 1928-31.

Chief Suppliers of French Industry.—France obtains her silk mainly from China and Italy. In 1930-33, when the total imports were 4,760, 3,370, 2,230 and 3,135 tons, France imported from China 2,330, 1,906, 817 and 1,418 tons, and from Italy in the same years respectively 1,702, 1,190, 569 and 705 tons.

French Production of Selected Silk Moths.—Although France now produces only 3 to 4 per cent. of her raw silk requirements she is an important breeder and exporter of reproducing moths. The industry is supervised by the State, which awards certificates of purity in the case of consignments exported.

Cocoon and Floss Silk Spinning.—The spinning of the native cocoons has further declined as a consequence of the great fall in output. The spinning establishments, which have always been on a small scale, numbered 246 with 13,600 boiling pans in 1902, 85 with 5,460 pans in 1922, but only 40 with about 2,500 pans in 1931. Floss or waste silk spinning industry, which handles the noils or waste silk obtained mainly from the Far East, is, however, carried on in modern large-scale mills.

Silk Throwing.—This industry has been affected by the encroachment of rayon crêpe fabrics, which have enjoyed an immense vogue in the last six years.

State Aid.—The sums specifically allocated for the financial year 1932 for the promotion of raw silk production and of silk spinning amounted respectively to 12½ and 9½ million francs.

Silks and Ribbon Industry.—The commercial centre of the silk fabrics industry is Lyons, but the weaving mills are now mainly located in the surrounding counties (Isère, Ain, Rhone,

etc.). The emigration has taken place in the last fifty years: in 1880 Lyons and its suburbs had 18,800 power looms in 143 factories, in 1914 only 5,360 in 55 establishments. At the latter date the French total was 59,683 looms in 411 factories, so that Lyons and its suburbs had one-eighth of the factories and one-eleventh of the looms. In the interval since 1914 the industry has become still more ruralised. The 4,000-5,000 hand looms are usually owned by home-working weavers or small master weavers who may have up to five to ten looms. In some cases these hand looms are retained for experimenting with new designs. The area of St. Etienne is the home of the silk ribbon industry, and possesses about 16,000 looms (other sources give double this figure). This industry has been mainly an out-workers' industry, the manufacture taking place largely in the workers' houses in a wide country area as well as in St. Etienne, which is the assembling and commercial centre of the trade. The looms, even in the remotest villages, are driven electrically, the regional electricity distributing company having carried out a permanent policy of development in the rural weavers' interests. The decline in ribbon weaving has caused great distress in St. Etienne area, and many weavers perforce took up ordinary fabrics. In 1930 the St. Etienne output was in value only half of that before the war: in 1931 a further drop of 20 per cent. occurred, so that in December, 1931 "an almost complete stoppage, 80 per cent. of the looms being immobilised." In the Calais, Caudry, and Lyons net and lace industries silk was used to a considerable extent especially before the war, and is still used, but it is finding rayon a strong competitor especially for laces.

Number Employed in Industrial Establishments.—In the spinning and weaving of silk and rayon were occupied, at the time of the 1926 Census, a total of 112,895 persons, of whom 76,316 (or 67.6 per cent.) were females and 36,579 (32.4 per cent.) were males. Spinning operations, including preparatory processes such as throwing, winding, carding, combing, occupied 49,998, of whom 66 per cent. were females; and weaving occupied 62,897, of whom 69 per cent. were females. In both sections, a certain number were returned as isolated workers: in the former 1,213 (1,181 women), and in the latter 3,079 (1,813 women). Of the total in the spinning group, 10,824 were entered as flock silk workers and 14,370 as rayon workers.

Comparative Small Scale of the Manufacturing Units.—The number of *spinning* establishments totalled 1,134, of which 73 employed no wage-earners. Of the 1,061 remaining, 379 with 886 workers employed from 1 to 5 persons: 316 with 3,609 from 6 to 20; 201 with 6,527 from 21 to 50; 82 with 6,518 from 51 to 100; 41 with 6,574 from 101 to 200, 22 with 6,953 from 201 to 500: and 20 with 19,025 over 500 persons. In the last group

with 38 per cent. of the employed persons, 7,074 were in six flock silk mills and 12,100 in 14 rayon mills: in fact, of the 42 mills showing over 200 employed persons and which occupied 26,018 (52 per cent. of the total), 21 were rayon mills with 14,492 and 17 more were flock silk mills with 9,964 persons. As only 41 more show between 100 and 200, it is clear that the vast majority of the ordinary silk spinning mills are small-scale undertakings.

The weaving establishments, nearly three times as numerous (3,038 against 1,134) showed an even greater percentage of medium and smaller undertakings. No less than 848 (28 per cent.) returned no wage-earners: 1,229 (40.4 per cent.) with 2,311 persons had from 1 to 5; 419 (13.7 per cent.) with 4,887 from 6 to 20; 247 (8 per cent.) with 8,033 from 21 to 50; 151 (5 per cent.) with 10,754 from 51 to 100; 96 (3.5 per cent.) with 12,278 from 101 to 200; only 40 with 11,553 had from 201 to 500 and only 8 with 5,427 persons had over 500. None reached 1,000 workers. Besides the 28 per cent. without wage-earners, nearly 63 per cent. of the works with 27 per cent. of the workers came within the small scale groups (1 to 50). Taking as medium establishments those employing between 51 and 200, one finds that they form 8.5 per cent. of the total number and occupy 41.7 of the labour force. The large scale, those with over 200 workers, form about $1\frac{1}{2}$ per cent. of the total undertakings and occupy nearly 31 per cent. of the employed.

Business Organisation.—Large-scale output on standardised lines has been shown to be alien to the French silk industry, which is highly creative and individualistic. Concentration and rationalisation, such as have been effected in many other French industries, such as coal, iron and steel, chemicals, many branches of engineering, etc., have not made progress in the silk or in the cotton or woollen industries. In the rayon industry, which more properly belongs to the chemical industry, more progress has been made. In silk dyeing, concentration in the hands of practically one single organisation has been achieved. The spinning and weaving of silk in France, as factory organised, are, however, carried out by hundreds of independent manufacturers.

Trade Organisation.—The all-embracing central federation of silk producers and employers, founded in 1923 and comprising silkworm growers, silk extractors, spinners, weavers, and merchants, continues its work in all fields. The organisation of the industrial silk workers is far less comprehensive and compact: this is no doubt due to the particular conditions of the spinning and weaving sections of the industry, wherein a considerable proportion of the undertakings are in rural areas or in small towns, a goodly proportion of the producers are small masters or home workers, and wherein the greater number of those employed in

factories are women. The majority probably of the producers of ribbons are engaged in home work, the members of the family with perhaps one or more helpers being the unit of production.

III. FOREIGN TRADE

Foreign Trade in Silks.—The test of the well-being of the French silk trade has always been the state of the exports, 70 per cent. of the production having been normally exported. Their value, superior to that of any other single class of exports, has represented a high proportion of the total manufactured exports. Thus, pure silk fabrics alone in the years 1924-27 show an average of 10.3 per cent. of all exports: but in 1928-31 this average was 7.95 per cent., and in 1932 and 1933 only 4.05 and 3.53 per cent. The decline was partly due to the parallel growth of rayon exports: in 1924-27 rayon fabrics represented only .38 of the value of exports, but for 1928-31 3.05 per cent. and in 1932 and 1933 4.8 and 4.28 per cent. (that is, slightly superior to the 4.05 and 3.53 per cent. of the silk fabrics exports in the last two years.

The following table shows in *weight* the total imports and exports of yarns and fabrics both in silk and rayon for the years 1909-13, 1920,24, and for each year from 1925 to 1933.

[TABLE]

FRENCH FOREIGN TRADE IN SILK AND RAYON (YARNS AND FABRICS).
(Weight in metric tons)

Year	Imports				Exports			
	Silk		Rayon		Silk		Rayon	
	Yarns	Fabrics	Yarns	Fabrics	Yarns	Fabrics	Yarns	Fabrics
1909-13 average	223	944	3	59.8	1,054	5,413	256	64
1920-24 average	780	386	657	34.2	539	7,322	195	222
1925 ...	490	238	1,103	97	573	9,079	711	922
1926 ...	290	242	1,093	88.6	466	9,169	1,127	936
1927 ...	81	184	408	87.2	789	7,235	4,839	1,992
1928 ...	318	230	1,034	174	1,876	7,445	5,206	2,681
1929 ...	264	350	594	289	1,573	6,353	6,688	3,904
1930 ...	220	695	1,096	666	1,579	4,768	8,130	4,596
1931 ...	122	675	1,259	635	1,444	4,202	8,947	5,577
1932 ...	53	385	2,088	344	1,118	2,569	8,656	5,542
1933 ...	59	420	1,964	279	1,015	2,134	10,360	4,769

Silk imports, which have never been important, have not recovered the level of the pre-war years. Exports in 1932 and 1933 were less than half those of 1909-13, and barely one-third of the and 1932 are seen to be sixfold the weight in 1925 and 1926: but in 1933 they showed a decline.

Anglo-French Silk Trade.—For generations the United Kingdom has been far the greatest customer of the French silk industry. For the five pre-war years, 1909-13, and for the five after-war years, 1920-24, her purchases of silk fabrics alone averaged in weight 42 and 41 per cent. respectively of the totals exported: in 1925, 45 per cent. and in 1926, 35 per cent. Since 1926 the annual proportion has been from one-third to one-quarter, save in 1932, when it fell to one-fifth. In fact in that year French exports of silk fabrics to the United Kingdom were, in weight, only one-eighth and one-seventh of what they were in 1925 and 1926 respectively. In 1933 combined exports of silk and rayon fabrics to the United Kingdom were 26 per cent. less than in 1932, but figures for the two components separately are not yet published. The British Dominions (notably Canada, Australia, South Africa, India) have likewise been very important purchasers: *e.g.* in 1925 and 1926 their combined purchases weighed 466 and 824 tons respectively, and brought the total British share in French exports of silk piece goods in these years to 50 and 45 per cent.

The shrinkage in French silk exports is due to causes both general (crisis, higher French cost, etc.) and particular—the latter being principally the competition of rayon. In the following table (which shows French imports from the United Kingdom and French exports to the United Kingdom for the periods 1909-1913 and 1920-1924 and for the single years 1925-1933) it will be observed that rayon fabric exports in 1931 and 1932 were manifold the quantities in 1925-1927: and that whereas in 1925-1927 the silk fabric exports averaged 3,150 tons and rayon fabric exports 374 tons, in 1931 and 1932 the tables were completely turned, rayon fabrics being double the weight of the silk in 1931 and threefold their weight in 1932. To a considerable extent, therefore, rayon may be deemed to have taken the place of the former French silk fabrics on the English market and to have been a main cause of the silk shrinkage.

Yarn exports never reached the great dimensions of the fabric exports: yet in this case also it will be noticed that whilst silk yarns have increased in 1928-1931 compared with 1920-1927, the

[TABLE]

FRANCO-BRITISH SILK TRADE.
(Weight in metric tons).

Year	Imports from United Kingdom				Exports to United Kingdom			
	Yarns		Fabrics		Yarns		Fabrics	
	Silk	Rayon	Silk	Rayon	Silk	Rayon	Silk	Rayon
1909-13 (average)	*	*	220		*	*	2,735	
1920-24 (average)	28.5	15.4	71.7	5.2	36.3	36.3	3,008	85
1925 ...	3.2	64.8	43.4	10.8	48.4	264	4,086	309
1926 ...	0.9	74.1	29.5	5.8	12.6	240	3,256	214
1927 ...	1.5	108	35.9	4.5	10.3	43	2,208	599
1928 ...	3.2	129	47.8	17.1	112	818	2,327	1,002
1929 ...	32.6	99	45.4	23.1	114	637	2,000	1,543
1930 ...	6.6	40.1	44.7	25.1	143	190	1,316	1,443
1931 ...	0.2	5.4	45.9	25.3	119	338	1,148	2,375
1932 ...	0	8.6	41.8	9.8	30	775	472	1,756
1933 ...	†	†	35.5	7.7	770†		1,643†	

* Prior to 1919 the trade returns made no distinction between the different kinds of yarns, nor between silk and rayon fabrics.
† Separate figures not yet published.

rayon yarns tend to be usually many times those of silk. French exports of rayon yarn to the United Kingdom for the years 1925-1932 averaged 413 tons, United Kingdom exports to France over the same period 68½ tons.

United Kingdom exports of fabrics to France, which always were almost insignificant in comparison with French exports to the United Kingdom, have averaged in 1925-1933 only 41 tons, compared with 220 for 1909-1913 and 72 for 1920-1924. Rayon fabrics are equally insignificant, having averaged for the years 1928-1933 only 18 tons against an average of French exports of about 1,570 tons. Silk yarn exports are seen to have almost ceased since 1924, save for the year 1929: and rayon yarn exports are seen to have dropped year by year from 129 tons in 1928 to 5.4 and 8.6 tons in 1931 and 1932.

Other Principal Customers.—The second customer, the United States, has greatly reduced her purchases since the crisis of 1929 (*e.g.*, in 1928 fabric exports 1,012 tons; in 1932 and 1933 397 and 374 tons). South America, notably Argentina, Brazil and Chile, previously excellent markets, have made one-half or one-third of their former silk purchases. India has likewise purchased less, whilst the foreign exchange restrictions and higher duties in many European countries have much hampered silk exports thereto.

VI.—LACE AND EMBROIDERY INDUSTRIES

General Conditions, 1928-33.—Exceptionally beholden to the vagaries of fashion for their margin of profitable working, the net, lace and embroideries industries have undergone rather serious vicissitudes in recent years. Before the war embroidered cottons and laces enjoyed very considerable favour, and from 1922-1928 these French industries prospered in a modest manner, but they have since suffered a relative eclipse. Lace and embroidered lace curtains and furnishings have yielded much of their market to plain or heavier nets or other stuffs. The former great market for laces for underclothing decoration has declined notably, but laces for outer clothing purposes, which lost fashion in 1927-1930, regained much lost ground with the return in 1930 of the long and ampler dresses for other than outdoor wear. Cotton laces have held their own far more successfully than silk, and rayon laces have made great headway. Hand laces as an object of ordinary home and foreign trade have ceded ground.

Serious loss of markets first began to be felt in France in 1930 and 1931, when North and South America could buy less, when duties or other impediments to French exports became fairly general in the world, and when the home market, even though it absorbed normally only a relatively small proportion of the machine net, lace, and embroideries output, weakened. The demand for the better goods sank to small dimensions. Silk

laces were especially affected. The year 1932 was bad in nearly every branch. In June, the Federation of Lace, Nets and Embroideries circularised the members of the two Chambers to the effect that out of 151 affiliated members 61 had stopped production or closed their works in 1932, and that 80 per cent. of the remainder still working would be obliged to close unless aid was forthcoming. Apart from the general reduction of outlay in times of depression on goods often classed as luxuries, the French industry no doubt was particularly affected by higher or new foreign customs or exchange restrictions. Thus, far the greatest customer (the United States), which had a duty in 1914 of 60 per cent. on nets and lace, had raised it to 90 per cent. Germany raised its duty on silk lace from 6 mks. a kilo. to 26 mks. and on cotton laces from 3½ marks to 16 marks: Great Britain initiated a duty (increased in 1933 from 10 to 20 per cent.). A large number of former relatively good customers, *e.g.*, in South America or in Central and South-East Europe, instituted exchange restrictions or other handicaps which seriously hampered French sales of these goods.

In the course of 1933 Calais trade conditions grew so serious that official deputations saw the Prime Minister for the purpose of securing relief, but no improvement in the general situation of these industries had been manifested up to February, 1934. As an indication of the state of the trade may well be taken, for an industry so dependent on foreign trade, the movement of visible exports. Compared with 1932, which had witnessed a very great decline, exports of cotton nets and of cotton laces and embroideries were lower by respectively 31, 9 and 10 per cent., silk embroideries by 25 per cent, silk net by 14 per cent., and silk laces by 39 per cent. Rayon tulle and laces declined about 5 per cent. in 1933.

Number Employed and Scale of Industry.—In the making of lace, hand and machine, light fabrics, such as tulle or net, veilings, embroideries, and kindred articles, there were employed at the March, 1926, census, 114,209 persons, of whom 91,738 (or 80.3 per cent.) were women. Far the most numerous groups were hand-embroiderers (50,978), machine net and lace makers (22,480), hand lace makers (15,768), machine embroiderers (10,000), and gauze, muslin, etc., makers (7,244): in these five groups respectively the percentages of women were 96.7, 48, 98, 68, and 61.

They are essentially small-scale industries, often carried on in the home: only 55,030 of the total are returned as working in establishments, whilst 44,296 are returned as isolated workers. The 55,030 are distributed over 10,416 undertakings, of which 1,960 (18.8 per cent.) as employing no wage-earners, are family undertakings, 6,866 (65.9 per cent.) have one to five employed persons, and 654 (6.3 per cent.) from six to ten.

In the Nottingham class of manufacture, *viz*: *machine net and lace*, there are 20,544 workers in 948 establishments, of which

359 with 939 persons employing from 1 to 5, 165 with 1,300 from 6 to 10, 167 with 2,485 from 11 to 20, 130 with 4,071 from 21 to 50, 66 with 4,468 from 51 to 100, 25 with 3,197 from 101 to 200, nine with 2,881 from 201 to 500, and over 500, one with 1,183 persons. It is seen that in 35 undertakings of over 100 persons are found 7,231 persons (35 per cent.), with another 22 per cent. in the group of 51 to 100 persons. In the 836 *machine embroidery* establishments with a total of 8,132 persons, there was only one with over 200 (it had 287 persons), five with 768 with from 101 to 200, 21 with 1,391 with from 51 to 100, and 66 with 2,200 with from 21 to 50 persons. Firms employing over 50 persons accordingly number 27 with a total of 2,446, or 30 per cent. only of all machine embroiderers. In the medium undertakings there were 66 with 2,200 persons in the class of from 21 to 50, and 93 with 1,394 in that of from 11 to 20. But the small scale of hundreds of undertakings is shown by the fact that there are 416 with a total of 913 workers in the group of from 1 to 5, and 150 with 1,179 workers in that of from 6 to 10.

In the hand working trades the scale is even less considerable. Out of 1,711 *hand lace* firms with 2,617 persons, 623 employed no wage-earners; 1,024 with 1,419 workers employed from 1 to 5, 29 with 216 from 6 to 10, 20 with 314 from 11 to 20, 11 with 364 from 21 to 50, and only 4 with 274 in that of from 51 to 100. In fact of the total of 15,769 in the occupation, 10,477 were women working alone.

In the *hand embroidery* industry no fewer than 30,683 out of 50,978 are isolated workers: there are 999 undertakings with no wage-earners, 4,279 undertakings with 6,067 workers, with from 1 to 5. Only one with 204 has over 200 workers, and seven with 917 having from 101 to 200. The *muslin and gauze* makers show larger units: out of 264 establishments with 6,345 workers there was one with 586, eight with 2,337 in the class from 201 to 500, and seven with 988 in that of from 101 to 200, so that 16 establishments employed 62 per cent. of the workers. Another 20 establishments with from 51 to 100 workers employed 1,418 more (22 per cent. of total).

Not without interest for the organisation of the industry is the fact that independent embroidery designing establishments sometimes assume relatively great importance. Classified as embroidery designers were 256 firms with 1,048 persons, of which 192 with 415 people occupied from 1 to 5 workers; 29 with 217 from 6 to 10; 14 with 209 from 11 to 20, and 6 with 207 from 21 to 50.

Chief Manufacturing Centres.—Far the greatest centre in point of range, quality and magnitude of output is Calais (population in 1931, 70,213) where, apart from an important artificial silk works, and the transport trades, the bulk of the local activity is entirely engrossed in the various operations connected with the

manufacture of nets, laces and embroidery goods and with the supply and maintenance of factory requirements. Calais manufactures the finest qualities of machine laces, nets and embroideries in cotton, wool, silk, rayon, or in mixtures thereof, so far as design, novelty, texture or thread mesh are concerned: the ordinary qualities are also produced in great quantities. It leads in design and in novelty, and has in its midst many independent lace designing firms, but the manufacturers also collaborate for designing purposes with the Paris fashion houses and with art schools and artists. In recent years, perhaps as a result of the growing importance of silk and rayon yarns in embroideries and laces, Lyons influence has made an impression in this domain. The Calais machinery equipment is the greatest in the country: about 2,800 Leavers machines, 160 to 170 embroidery machines, 200 bobbin and 500 Cornély machines. Of the 555 firms returned by the 1926 census as existing in the Pas-de-Calais county, in the lace, net, embroidery and light fabric industries, the vast majority are at Calais or in its neighbourhood: of the total, 185 employed from 1 to 5 persons, 93 from 6 to 10, 107 from 11 to 20, 140 from 21 to 100 and 16 from 100 to 500 persons. The lace and net sections are essentially in the hands of small masters with from one to eight or ten machines, a goodly portion of whom are found congregated in varying numbers in factory buildings which supply the necessary power. A recent (1933) *Indicateur de la Production Française* states that there were in Calais about 400 lace manufacturers distributed over 110 factories. Half a dozen makers possess 20 to 25 machines, and a few are said to have over thirty.

Caudry (population 13,056 in 1931) in the adjoining county of the Nord, equidistant from Cambrai and from St. Quentin, was with its neighbourhood before the war the principal producer of plain cotton nets and ordinary laces, but, in the course of the reconstruction and re-equipment of its industry as a whole after very heavy war destruction, much embroidery and lace-curtain machinery was also introduced. Caudry itself was reported in 1932 to possess 350 "modern plain net machines," 350 lace machines, 140 embroidery machines and 50 curtain machines (in three factories). As in Calais, the majority of the tulle or net and lace makers have moderate-sized establishments with from 2 to 6 machines. In neighbouring villages there is a considerable total of machinery, whether in factories or in the houses of the workers. After the great war destruction at St. Quentin, or near by, the considerable pre-war output of machine laces and especially embroidered cottons of the Plauen and St. Gall type has been resumed in newly equipped factories, as has been its noted production of *guipures* (lace curtains).

The Lyons region, which has become more important in more recent years owing to the suspended or greatly reduced output in the war years of Calais, Caudry and St. Quentin, now produces machine laces on a large scale, but is especially noted for silk

and rayon laces and embroideries (particularly gold and silk embroideries) and for muslins and plumeis. The Tarare area, near Lyons, which has an ancient repute for muslins, has also engaged in embroideries. Le Puy, about 90 miles to the southwest of Lyons, in the Auvergne region, was formerly the collecting and commercial centre for the famous hand-made and bobbin-laces known as Le Puy, which were made in the countless highland villages over a wide area, and is still a centre for these goods. With the severe after-war scarcity of labour other more lucrative occupations diverted these country folks from this handicraft, and machines in large numbers were introduced. In 1927, when the present writer visited Le Puy, about 100 machines were working in and near the town, and it was stated that their number was increasing briskly in the area. The United States, which before the war had been a principal outlet for the Le Puy hand made laces, had greatly reduced its purchases. The price of these laces relatively to the machine-made, and the improvement in the latter, were factors in the decline of the demand.

Hand-made laces are made in not inconsiderable quantities in Brittany, where the population still actively cherishes the embroidered Breton costumes of which a copious lace headgear forms an important item: in Normandy, where the lace coiffe is still treasured as part of the old-time raiment, bobbin and hand laces are also still much made (Caen, Bayeux, Argentan, Alençon, Coutances, Mortain, etc.). In the Vosges or Lorraine districts (Nancy, Mirecourt, etc.) much furniture lace as well as white lace embroideries are made. In the Paris district embroidery for dresses is chiefly produced.

Foreign Trade.—(1) Cotton Nets and Laces.—The following table shows the course of the export trade in weight and value of cotton nets, machine and hand laces, and machine embroideries in 1913, in 1922-26, and in the single years 1927 to 1933:—

FRENCH EXPORTS OF LACES AND EMBROIDERIES, 1913 AND 1922 TO 1933.
A. Weight in metric tons. B. Value in millions of frs.

Year	Nets		Machine laces		Hand laces		Embroideries (cotton)	
	A.	B.	A.	B.	A.	B.	A.	B.
1913	530	15.6	802	54	13.3	4.3	161	20.6
1922-26 (average)	312	47.5	761	186	6.7	8.5	57.3	26.7
1927	811	62	910	214	7.2	9.4	59	9.8
1928	972	62	960	206	12.5	12.5	82	10.4
1929	861	51	942	182	14	5.9	28.3	6.5
1930	824	51	940	180	20.8	7.5	24.7	5.1
1931	679	35	844	166	17.6	6.8	18.2	3.6
1932	470	21.3	710	114	12.1	4.0	9	1.3
1933	289	12.9	626	86.4	3.7	1.4	7.7	1.0

The most significant fall has taken place in cotton embroideries exports: from 161 tons in 1913 and an average of 57 tons from 1922-1926, they averaged for 1929-31 only 23.7 tons and in 1933 dropped to 7.7 tons. Even in 1932 cotton machine laces, which averaged 919 tons in 1927-31, fell only 16 per cent. below that average, but in 1933 they fell to 626 tons, or 32 per cent. below that average. Hand laces, always relatively insignificant, have not greatly suffered until 1933. Nets rose from an average of 312 tons for 1921-26 to one of 828 for 1927-31, but fell to nearly half in 1932, and in 1933 were only 289 tons, or one-third.

(2) **Silk and Rayon Nets and Laces.**—Silk lace exports have fallen in a remarkable manner since 1913: for the five years 1927-31 they averaged 55.9 against 225.6 tons in 1913, and fell in 1932 and 1933 to 18.6 and 10.9 tons. Exports of silk nets also fell to half the 1927-31 average. Rayon lace in 1932 was eight-fold the average figure for 1925-26. In 1933 exports of rayon nets exceeded those of 1932 by one-third, and were 5 per cent. more than the 1928-31 average. The following table shows the weight and value of exports of silk nets and laces for 1913 and for 1922-33; before 1925 rayon net and laces were not shown separately from silk.

FRENCH EXPORTS OF SILK AND RAYON NET AND LACE, 1913 AND 1922 TO 1933.

A. Weight in metric tons. B. Value in millions of frs.

Year	Silk Net		Silk Lace	
	A.	B.	A.	B.
1913	28.0	3.2	225.6	22.6
1922-26 (average)	101.4	38.9	87.4	46.7
1927... ..	19.8	7.4	35.5	17.7
1928... ..	57.7	21.6	39.2	19.6
1929... ..	39.9	16.6	52.9	31.6
1930... ..	33.7	16.3	51.4	31.7
1931... ..	26.1	9.7	100.5	40.4
1932... ..	21.2	7.1	18.6	6.2
1933... ..	17.3	5.7	10.9	3.4
	Rayon Net*		Rayon Lace*	
1925-26 (average)	0.67	0.26	8.3	2.4
1927	0.84	0.25	7.3	1.8
1928... ..	14.9	3.0	30.6	7.7
1929... ..	54.0	12.0	19.9	8.1
1930... ..	28.2	7.6	49.8	19.9
1931... ..	18.3	4.0	52.1	17.9
1932... ..	22.5	2.9	67.7	17.3
1933... ..	30.3	3.7	62.6	16.6

* Not separately distinguished before 1925.

Most Important Customers.—The United States has been far the greatest buyer of cotton machine lace, taking one-third of these exports in 1930, over half in 1931, and two-thirds in 1932-33: Great Britain came second until 1931, when she took about one-eighth, but in 1932-33 her purchases fell to insignificant proportions (42 and 8 tons, respectively). Belgium was third up to 1931, and second in 1932-33, though her purchases are now only a fifth of her 1929 figure (240 tons). Egypt and Holland have been the largest buyers of net. Of silk nets the United States is also far the largest buyer: in the six years 1928-33 she took an average of 17.1 tons out of the average total of 35.4 tons: Great Britain came second with an average of 4½ tons. The United States once more is normally the chief buyer of silk laces, although in 1931 and 1932 Great Britain took 52 and 5 tons against her 26 and 3.6 tons, and Germany's purchases in 1932 and 1933 (4.3 and 2.8 tons) were equal to those of the United States. The same three countries are the best customers for rayon laces: in 1930-33 when the total average was 58 tons, Great Britain averaged 18.5, the United States 18.7, and Germany 6.7 tons. Rayon laces appear to be growing at the expense of silk laces, and rayon net at the expense of silk net.

VII—THE JUTE INDUSTRY

Importance and Localisation of the Industry.—In this industry, which has largely owed its impulsion to persons of Scottish (and Dundee) origin, the number of spindles is variously given at 180,000, 200,000 and 250,000, and that of looms at 10,000. On the usual assumption of 20 jute spindles to a loom, the figure of 200,000 spindles would appear the more correct. Compared with the pioneer Scottish or the later Indian jute industries (the latter now said to have over fivefold the number of French spindles and looms), the French industry is small, but it has made great progress and its equipment has been vastly modernised since the war. It is conducted mainly in the North: at or near Dunkirk, whose port receives three-quarters of the raw jute imports from India, and in the Somme valley north of Amiens from Flexicourt to Abbeville and in and near Ailly-sur-Somme. Other mills are found at Bischwiller and Colmar in Alsace, whose recovery is calculated to have added about 10 per cent. to French jute manufacturing capacity; and at widely separated points (*e.g.* Barentin near Rouen, Arques, in the Pas-de-Calais county, Ligugé near Poitiers, La Ferté-Bernard (Sarthe), Saint Laurent-de-Cerdans in the Pyrenees, Albi near Toulouse, St. Etienne, and near Marseilles). In many cases these scattered factories combine linen and hemp working with that of jute. Both spinning and weaving are normally carried on by the larger jute working establishments in the North.

Scope of Production.—The uses of jute in France, though remarkably extended in the last generation, are still rather limited, about 85 to 90 per cent. of the output being apparently devoted to packing material and sacks (for cereals, flour, sugar, fertilisers, and

so forth). Certain finer counts are being used for clothing purposes, and jute yarns alone or in conjunction with linen or hemp, are more employed for many articles such as string, cords, ropes, mats, and matting, rougher carpets, mattress material, tarpaulin, and other articles. In the Pyrenean region (*e.g.* Oloron, Haget-mau, Toulouse) a considerable utilisation of jute is made by the numerous small manufacturers of canvas shoes with plaited jute soles, which are a common footwear in wide areas of the South-West and South.

Relatively Large Scale of Unit.—The number of persons occupied in jute spinning mills at the 1926 Census was 6,740, of whom 4,133 were women. Of the 17 spinning mills, one employed over 1,000 persons, three between 501 and 1,000, and nine between 201 and 500: the four with over 500 employed 3,232 persons (or over 47 per cent. of the grand total), and in the nine others were 3,160 persons, leaving 359 persons in the four remaining mills. The size of unit is therefore, comparatively speaking, larger than in most other French textile spinning industries. No similar figures are available respecting the weaving mills, but the majority of the latter are organised on a biggish scale; perhaps less than half a dozen firms, most of which also spin, being the producers of the great bulk of the jute sacks, packing material, and other principal jute or jute mixed products.

General Conditions 1928-1933.—After the reconstruction of the many war-damaged works, the industry enjoyed prosperity for several years up to 1929, in which year the spinning mills were even obliged to restrict output through shortage of labour. The fall of prices in 1929 and 1930 severely affected the weaving section, which felt the more keenly foreign competition (for both years fabric imports averaged 41,000 tons against 34,000 for 1926-28 and 28,000 in 1913); and production fell at the end of 1930 to 50 per cent. of capacity as compared with 65 per cent. a year earlier. A year later only about four days a week were being generally worked. The fall in the sale of many heavy products using sacks (*e.g.* fertilisers, etc.) reduced the demand therefor. Certain important companies were severely affected: one leading firm saw its profits sink from 12.1 in 1930 to 1.3 million in 1931, and another important one had to go into liquidation. In 1932, when many factories closed, the working time was about 30 hours weekly; and the prices agreement in operation for several years under the aegis of the General Federation of Spinners and Weavers, ceased to be operative, as producers were obliged to liquidate large stocks. A report (March, 1933), adopted by the Avesnes Chamber of Commerce, gave a list of places where jute firms had closed: included were Dunkirk, Doullens, Boeschépe, Etaples, Quesnoy-sur-Airaines, Rouvrois, Amiens, Laménay, La Pallice, Brumath, and Pont-Rémy (partially); and it stated that the factories in operation were working from 30 to 40 hours a week, and that "at over one-third could be estimated the number of the workers unemployed in the jute industry as a result

of the whole or partial stoppage of works which had been growing more marked for over a year." In April, 1933, another Dunkirk works was reported in the technical press as having sought liquidation.

Jute Imports and Exports.—Nine-tenths of the raw jute comes directly from India to France, the rest being imported through Great Britain and Antwerp. Imports for the years 1927-31 averaged 109,000 tons (which is about one-third of the French raw cotton imports), compared with 122,000 tons in 1913. In 1932 they fell as low as 66,000 tons, but in the year 1933 returned to near the average level, 96,000 tons being imported. The 1913 imports represented 14 per cent. of the world jute production, but the United Kingdom and Germany then used 35.3 and 18.8 per cent. In recent times imports and exports of yarns nearly balance: the former in 1927-31 averaged 5,447 and the latter 5,455 tons. In 1932 the respective figures were 4,146 and 2,908 tons. In 1933 there was a greater disparity between imports and exports, the former attaining 7,721 tons as against only 3,424 for exports. As regards these figures it should be pointed out that phorium tenax tends more and more to represent the more important constituent in the totals shown for yarns. Thus, in the tables below the yarns of phorium tenax, abaca, and other unspecified vegetable fibres comprise, in the years 1930 to 1933, 72, 89, 97 and 99 per cent. of imports and 34, 37, 47 and 51 per cent. of exports.

Piece goods imports in 1927-31 averaged 37,500 tons against 19,040 tons of exports. In 1932 the exports amounted to 10,668 and the imports to 30,835 tons, and in 1933 they were respectively 13,022 and 25,591 tons. Here also it must be observed that the imports consist very largely of sacks containing merchandise (78, 87, 92 and 93 per cent. of the total imports of fabrics in 1930-33). The export returns do not make this distinction, but about four-fifths of the total quantities exported consist almost equally of new and of used sacks. Piece goods are imported mainly from Belgium, Germany, Italy, Holland, Great Britain, whilst yarns come largely from Holland and Belgium. It is estimated that piece-goods imports represent over a third of the French national output in these goods—in the case of cotton imports it is about 1 per cent. The chief external markets are found in the French colonies. Algerian purchases of piece-goods in 1927-31 averaged 8,365 tons (or 46 per cent. of total) and Tunisian 2,326 tons (12 per cent.): in 1932-33 Algerian purchases amounted respectively to 3,646 and 4,974 tons and Tunisian to 1,884 and 1,619, while in 1933 purchases by the colonies formed 71 per cent. of the total exports.

The following tables give in weight and value the imports and exports of jute yarns and piece-goods in 1913, 1922-26 and for the single years 1927 to 1933 :—

FRENCH IMPORTS OF JUTE YARNS AND FABRICS.

(Including those of Phorium Tenax, Abaca and other unspecified vegetable fibres).

A. = Weight in metric tons.

B. = Value in millions of francs.

Year	Yarns				Fabrics			
	Weight		Value		Weight		Value	
	Total	From U.K.	Total	From U.K.	Total	From U.K.	Total	From U.K.
1913 ...	5,074	—	—	—	28,470	—	14.7	—
1922-26 (Average)	4,118	525	19.8	2.3	40,571	2,409	93.9	10.1
1927 ...	4,295	119	27.7	0.7	34,060	987	109.2	5.4
1928 ...	2,878	133	18.2	0.9	35,442	1,261	122.3	6.7
1929 ...	5,886	380	33.9	2.1	43,773	1,806	168.2	10.0
1930 ...	7,900	328	44.6	1.6	40,419	1,297	153.6	7.6
1931 ...	6,278	232	25.0	1.0	33,820	1,241	109.4	5.7
1932 ...	4,146	20.4	11.6	0	30,835	1,217	67.5	4.5
1933 ...	7,721	*	16.4	*	25,591	1,355	48.5	4.1

Figures not yet published.

Exports.

Year	Yarns				Fabrics			
	Weight		Value		Weight		Value	
	Total	To U.K.	Total	To U.K.	Total	To U.K.	Total	To U.K.
1913 ...	6,857	A —	8	B —	18,739	A —	17.4	B —
1922-26 (Average)	2,672	70	15.8	0.5	17,615	409	79	2.3
1927 ...	8,027	443	44.2	2.4	20,672	676	143	7.0
1928 ...	6,979	905	42.0	5.4	23,848	1,274	162	11.1
1929 ...	4,890	207	32.5	1.8	18,523	405	144	9.4
1930 ...	2,697	82	18.8	0.6	19,127	277	120	1.7
1931 ...	4,693	131	19.0	0.7	13,626	238	79	2.3
1932 ...	2,908	6.4	9.7	0	10,668	0.9	48.5	0
1933 ...	3,424	*	10.6	*	13,022	*	47	*

* Figures not yet published.

VIII.—THE RAYON INDUSTRY

French Share in World Output.—In the last ten years, and notably since 1927, the total world output of rayon has advanced rapidly: from about 43,000 tons in 1923 to 130,000 in 1927 and to 235,000 in 1932. The U.S.A. remained in 1932 easily the greatest producer with 54,000 tons (her previous highest figure, in 1931, exceeded, however, 64,000 tons): Italy, the United Kingdom, and Japan, were almost on a level with 32,000, 31,700 and 31,000 tons respectively. No figures are yet available for Germany, but her output in 1932 is thought to have been approximately the same as in 1931, when it is said to have been about 25,000 tons. France, which now occupies sixth place, produced about 4,000 tons in 1922, 15,000 in 1927, 19,000 in 1929 (but another source gives 25,000 for this year) and 23,000 tons in 1930. In 1931 and 1932 this continuous progression does not appear to have been maintained: for 1931 figures of 16,500, 20,000 and of 21,000 tons are cited, and for 1932 the output is stated (April, 1933) by the Lyons Federation of Silk Manufacturers to have been 23,000 tons. Japan, thanks largely to far lower costs of production and to depreciated currency, has recently advanced by leaps and bounds, having raised her output from under 3,000 tons in 1927 to 21,000 tons in 1931, to 31,000 in 1932, and to 41,000 in 1933; and thereby in these six years her share in the visible world production was raised from 4 to 16 per cent. In 1932 Great Britain also showed the notable increase of 30 per cent. (from 24,500 to 31,700 tons); but in the United States of America, Germany, Italy, France, Belgium and Holland, output appears to have remained stationary or to have declined. The amount of rayon produced in the world is now approximately sixfold that of natural silk (that is, excluding the Chinese and Japanese production of silk for internal consumption which does not emerge into international trade); but it is still only one-twentieth of the cotton, and one-seventh of the wool or the jute production of the world.

Stationary Output.—The failure of France to show marked progress in rayon output in the last few years has been due to many causes, of which the more potent were the decline in home consumption and the difficulties of various kinds in foreign trade. The actual rayon exports of France in 1932 were 14,200 tons against 7,890 in 1928 and 10,590 in 1929, but they were 12,730 in 1930 and 14,520 in 1931. Exports advanced to 15,130 tons in 1933. The lack of resiliency is more ascribable to the dull home demand, which for both silk and rayon tended to fall since 1930. Home sales of silk manufactures (as against rayon) were favoured not only by the great simultaneous fall in raw silk prices (by 1932 the quotations finally fell lower than at any period for a century) which enabled silk fabrics to be sold far cheaper, but also by the slump in sales of silk goods

abroad, due to additional handicaps through tariffs, quotas respecting both commodities and foreign exchange facilities, or other practical prohibitions on "luxury" goods, among which silk was usually included. French exports of silk fabrics fell from 7,445 and 6,353 tons in 1928 and 1929 to 4,202, 2,569 and 2,134 tons in 1931-33: as such exports had tended to represent about 60 of these abnormal quantities inevitably reduced the home prices. The rayon position since 1930 has been further complicated by the instability of cotton and wool prices, which declined about 35 per cent. and 50 per cent. respectively (rayon prices decreased in 1931 by 30 per cent. compared with 1930, and in 1932 by 28 per cent. compared with 1931). In 1931 heavy losses were shown in several cases by rayon companies (*e.g.* one, a loss of nearly 15 millions, a second, of nearly 8, a third of about 3 millions): the profits of one of the largest producers were .2 against 5.6 millions, of another 1.8 against 4.4 millions. For 1932, financial results appeared to be very meagre (*e.g.*, the balance sheet of one company of importance disclosed a loss of nearly 10 million francs; some others had just balanced accounts): the failure or closing of several units has, however, enabled a number of others to work to full capacity.

This disarray of prices and of home and foreign markets affected the French rayon industry severely, owing to the leadership of France in output of silk fabrics, and of course checked expansion in rayon output. Rayon has been so substantially improved in various respects and has made such progress in France, both for piece goods and for hosiery, whether used alone, or in union with silk, cotton, or wool admixtures, that only the abnormality of general conditions could have checked the hitherto persistent expansion in tonnage output. The actual home consumption in France in 1932 is judged indeed to have exceeded that of any previous year: the Lyons Silk Manufacturers' Federation in April, 1933, stated that the French consumption of rayon in that year was 15,147 tons, whereas the consumption of natural silk (excluding *bourrette* and *schappe*) was 1,729 tons. In 1927 a leading French authority considered that in France 50 per cent. of rayon was used for hosiery, 30 per cent. for weaving in the piece, and 20 per cent. for ribbons and braids: in the interval its use for hosiery has further developed, and immense advance has occurred in its use for piece goods both for human wear and for furnishing purposes.

Productive Capacity.—Great activity in the establishment of new rayon factories was displayed in France up to 1929. By that year over 20 separate works existed. In the Lyons area or south of it they were situated at Isieux (Loire County), St. Chamond (Loire), La Voultre-sur-Rhône (Ardèche), Vals-les-Bains (Ardèche), Valence (Drôme), Roussillon (Isère), Feysin (Isère), Décines (Isère),

Albi (Tarn) : to the North of Lyons, at Besançon (Doubs), Nevers Nièvre), Clairoux (Oise), Gauchy (Aisne), Arques-la-Bataille (Seine Inférieure), Rennes (Ille-et-Vilaine), Valenciennes (Nord), Givet (Ardennes). In 1928 were also being built or planned about fifteen new works, of which a number were situated in the North, *e.g.* at Calais, Grand Quévilly near Rouen, St. Aubin near Elbeuf, Cambrai (Nord), Blanc-Misseom (Nord), Vauban at Condé sur Escaut (Nord), Odomez near Valenciennes (Nord), Rantigny (Oise), Compiègne (Oise), Aubenton (Aisne), Amiens (Somme); three in Alsace-Lorraine at Strasbourg, Colmar and Benfeld; and two in the Lyons area, one at Lyons and the other at Vénissieux. All the planned works do not seem to have been fully realised. In 1930-32 many works have been closed either temporarily or perhaps permanently; in some few cases they have definitely failed, in others the works are for sale: at all events in the spring of 1933 those at Aubenton, Nevers, Roanne, Vénissieux, Feysin, Compiègne, were reported as not being in operation. Subsequent to 1929 only one new undertaking, apart from those already mentioned as planned or being built, seems to have come into being, that at Moy, near St. Quentin (reported capacity of about 1,000 tons a year). As regards the territorial distribution of French output, it is probable that the greater part still takes place in the so-called Lyons zone, but that it is proportionately less than in 1928 owing to the creation of certain new works north and east of Paris.

French rayon works do not show the high output capacity of the English, American, Canadian, Italian, or German works: the three or four largest appear to have a capacity of 10 to 12 tons a day, quite a dozen about 4 to 5 tons, and about half a dozen $2\frac{1}{2}$ to $3\frac{1}{2}$ tons. Over 90 per cent. of the output is viscose: 1,000 to 1,200 tons a year of acetate are stated to be produced by the two works concerned: one works (Besançon) employs the Chardonnet process: the only works (Roanne) employing the copper process appears to be closed.

Concentration in French Industry.—Two groups still control the bulk of the French output: the Gillet-Bernheim or Givet-Izieux group, and the Viscose or Carnot group. The former comprises about ten works (Givet-Izieux; Rhodiaseta with works at Lyons-Vau and Piage de Roussillon, and with branches in Germany, Italy and Brazil; St. Chamond; Roanne; Gauchy; etc.) and the latter about the same number (La Viscose Française, Arques-la-Bataille, Albi, Colmar, Grenoble, etc.). Both have common interests in two or three other concerns (*e.g.* *Société Artificielle d'Alsace*, Besançon, *Société Nationale de la Viscose*), and both are identified with the *Comptoir des Textiles Artificiels*, which is the central selling agency, co-ordinates technical and financial efforts, and acts abroad for the affiliated concerns (*e.g.* as regards French rayon interests in America, England, Belgium,

Italy, Switzerland, Spain, Holland, Germany, Poland). There are apparently two or three works not directly affiliated to either of the two groups, notably the few works (Nevers, Odomez, Strasbourg) under the *Union des Textiles Chimiques*, which is affiliated to a great chemical group, but at the end of 1930 it was reported that the *Union* had also confided its sales to the *Comptoir*. Collaboration is extended to the common purchase of rayon manufacturing equipment from a single engineering works, of chemical products and of wood pulp from one of the two greatest chemical groups in France.

French producers have fairly substantial interests in foreign works, whether North or South American, Belgian, Swiss, Italian, Spanish or Polish. Thus the Carnot group has large interests in the *Société Suisse de la Viscose*, and the Rhodiaseta of the Givet-Izieux group has interests in the works in Freiburg in Germany and elsewhere. On the other hand, several foreign producers have manufacturing interests in France: Dutch undertakings in the *Soie de Valenciennes* and in the *Société Lyonnaise de Soie Artificielle*, and Belgian in the French Tubize: British in large modern works in the North of France.

National Trade Agreement.—Competition with home and foreign producers on the internal market and consequent price cutting had further aggravated to such an extent the unsatisfactory state of the French industry that in July, 1932, firms representing about 90 per cent. of the national viscose capacity agreed to the fixing of production quotas and to the bringing into operation of common conditions of sale and of propaganda. The participating members, which formed a special association for the above purposes, included the two principal groups, besides the *Soie d'Alsace*, the *Société Lyonnaise de Soie Artificielle (Rhône-Poulenc)*, *La Soie de Calais*, *La Soie de Valenciennes*, *Les Soieries de Strasbourg*, and others: apparently the producers of acetate rayon, namely, the *Tubize Française*, and Borvisk, of the *Textiles Chimiques du Nord et de l'Est*, are not participating as regards home production quotas, but are as regards foreign selling.

International Agreements.—In January, 1933, came into operation the European Rayon Cartel, to which France adhered. In 1927 was dissolved the international viscose agreement which included the Courtauld-Glanzstoff English-German group, the Bemberg German group, the Tubize Franco-Belgian group, the Enka Dutch group, and the Snia Viscosa Italian group. After three years of competition a ten-year arrangement respecting sales in Germany was made in 1932 between the chief German, Dutch, Swiss and Italian groups, whereby their combined sales in Germany were not to exceed 25 per cent. of the 1930 total sales of rayon in that country (which were about 30,000 tons), 75 per cent. being thus left to German producers, and certain prices were

to be imposed. But non-participants, whether of the above participating countries or other countries, having rendered the agreement somewhat ineffective (especially as crêpe and crêpe yarns, which formed the great vogue in 1931 and 1932, were exported in considerable quantities at low prices from France and Belgium in 1931-32), negotiations, begun early in 1932, resulted in December in an agreement, to which adhered the chief producers of viscose in France, Germany, Italy, Switzerland, Holland, Belgium, as well as the copper rayon group Bemberg, I.C. Farbenindustrie and Fr. Küttnet, and the acetate groups the German Rhodiaseta, Acetat-Lichtenberg and Belgian Tubize. There has been formed at Berlin the Federation of Producer-Exporters of Rayon, and as pendant in France the Central Office of Rayon Producers. The allocation to France is stated to be 6 per cent. of the total rayon consumption in Germany.

Foreign Trade.—Imports of rayon yarns grew from 1,034 and 594 tons in 1928 and 1929 to 1,096, 1,259 and 2,088 tons in 1930-32: but yarn exports were many times greater, having averaged in the five years 1928-32 no less than 7,525 tons. In 1933 imports declined slightly to 1,964 tons, while exports advanced by 19.7 per cent. to 10,360 tons. Imports of rayon fabrics were likewise inconsiderable, having averaged 422 tons in 1928-32; but exports, which amounted to 2,681 tons in 1928, were more than double in 1931 and 1932 (average for the five years 4,460 tons). In 1933 imports further declined to 279 tons, and exports, which amounted to 4,769 tons, were 14.2 per cent. below the figures for the two preceding years. Italy is the principal importer of yarns into France (followed by Switzerland and Germany), and Germany has been the principal importer of fabrics (largely hosiery) into France. French exports of fabrics went in a very large proportion to the United Kingdom which, *e.g.*, in 1931-33 took 1,220, 729 and 378 tons out of 1,847, 1,702 and 1,273 tons of crêpe exported, about half of the velvets and of the ribbons, a third of the category fabrics scoured, bleached or dyed. Canada, Australia, South Africa, were also considerable buyers in certain classes. The most notable features in recent French rayon exports have been the increase in those of crêpes (which were only 292 tons in 1929), and of velvets and ribbons. Unlike other French textiles, rayon export figures, notably as regards yarns, advanced in 1931-1933: the combined exports of yarns and fabrics in 1930-33 were 12,726, 14,524, 14,198 and 15,129 tons, and represent in weight about two-thirds of the national output.

Artificial Silk as Trade Designation.—For many years has been debated in France the propriety of the word "silk" for products not exclusively of the silk worm and of "silk" mixture for goods that are composed of a mixture of natural and artificial

silk or other textiles. In 1932 the referendum of the Lyons Silk Manufacturers' Association to its members elicited 142 votes for and 72 votes against the use of the word 'silk' in the expression "artificial silk." No legislative act has yet decided the question, but in November, 1932, the Customs Commission of the Chamber of Deputies which considered a Government Bill and other bills relating to the repression of frauds and to the definition of silk and artificial silk, rejected the proposal to employ a new term for artificial silk such as *Chardonne* (after de Chardonnet) or *rayon*, or *néofil*, and held that the term "artificial silk" had been in use for many years, and that the word 'artificial' was sufficient to enlighten the buyer as to what he was purchasing, as it was in the case of 'artificial' pearls or 'artificial' flowers. The Government Bill, as redrafted by the Committee, provides that the word 'silk,' without any adjective, is reserved to natural silk, which is exclusively the product of the silk worm, that the description 'artificial silk' is reserved to yarn and fabrics derived from the chemical industry, and 'mixed silk' is any fabric which is composed of natural and artificial silk in any proportion. The French and the International Silk Federations are strongly pressing, however, for the omission of the word 'silk' for denoting rayon, and are supported by the Agricultural Committee of the Chamber of Deputies.

IX.—THE CHEMICAL INDUSTRIES

I. PROGRESS OF THE INDUSTRY

General Advance.—France, who, by immense technical exertions during and after the war, as well as by virtue of the recovery of great chemical potentialities in the shape of Alsatian potash and Lorraine ore mines and iron production, raised in a fundamental manner her international position as a producer of chemicals, has not ceased to consolidate and expand the new bases of her chemical power. In the half dozen years after the conclusion of peace was established the modern framework of the French chemical industry by the reconstruction and enlargement of the chief former works in the war area, by the extension and improvement of various units elsewhere that had been already stimulated into maximum output for war necessities, by new construction and equipment on a large scale in numerous branches, such as in those of Alsatian potash salts, hydraulic power, bauxite, magnesium, nitrates, sulphate of ammonia, gas making and coke oven by-products, dyestuffs, various light chemicals, pharmaceutical, photographic, and so forth. Other notable achievements for the due completion of this structure included higher technical organisation, greater sectionalisation of output, new provision for the research of processes by creation of large laboratories at the chief works, more adequate

financial organisation, and a higher degree of centralised or collective direction through the gradual absorption into a few hands of the control of the industry.

In the years 1928-1933, this movement of widespread advance has been steadily pursued, partly to cope with the multiple requirements of an essentially dynamic industry most fertile in new discoveries, partly to effect output on a large scale in branches previously little cultivated in France. This material improvement would have been effected at a still greater pace had not the general depression since 1930 reduced markets and simultaneously deterred the hitherto generous investment of capital in further development. A balance sheet of the French chemical industries for the last five years would, however, show noteworthy national advance in many respects: *e.g.*, increase in total output capacity; increases in capital invested; introduction on a large scale of the practically new industry for France of modern oil refining; marked development of the alliance of the chemical with the coal industry for the obtaining of coal by-products, with resultant marked advance in output of benzol, hydrogen, and other products; increased output or increased equipment for output of nitrate of soda, sulphate of ammonia, cyanamide, alcohols, and many other commodities.

Foreign trade also indicated great progress up to 1930, despite the increase of capacity of, and of competition from, the United Kingdom, the United States, Germany, Japan, and other countries. Exports of manufactured chemicals for the three years 1928-1930 averaged 3,051,500 tons compared with 2,841,500 tons for 1925-27, with 1,274,400 tons in 1913, and with 1,666,300 tons in 1932: while in 1933 a continued advance was shown, 1,907,264 tons being exported. Imports averaged 974,600 tons for 1928-30, compared with 555,000 tons for 1925-27: the increase was mainly due to the phenomenal increase of imports of products directly derived from coal-tar distillation, which averaged only 25,400 tons for 1925-27, but 404,800 tons for 1928-30, and were 714,000 and 600,000 tons in 1932 and 1933. Imports in 1933 amounted to 1,230,827 tons, or 88,397 tons less than in 1932.

Evidence of Greater Output and Self-Sufficiency.—In both heavy and light chemicals progress has been great. In the former group it has been marked in the case of *fertilisers*. France, with French North Africa, now produces in abundance four principal elements for their composition, phosphates of lime, basic slag, potash, and nitrates. Tunis, Algeria and Morocco together produce nearly 60 per cent. of the world phosphates output of 10 to 11 million tons a year, Moroccan phosphates, with 75-77 per cent. of phosphoric acid content, being particularly rich, compared with 63 to 68 per cent. of the two others. France, which takes 1,600,000 tons a year, transforms them in about 70 factories into *superphosphates* by treating with sulphuric acid. French output of the latter has increased—in 1913, 1,200,000 tons, in 1929 over 1.6 million in about 80 works. In 1931, apart from that produced from bones, the

output by this method was 2,430,000 tons of superphosphates : the consumption was 2,110,000 tons. The exports of phosphate fertilisers, which sank in 1932 to 607,000 tons, averaged 1,290,000 tons for the four years 1927-30 : the imports, 234,000 in 1932, averaged for the same four years 348,000 tons. The recovery of Lorraine doubled French resources in phosphoric ores and almost doubled French steel capacity : in good steel years the national output of *basic slag* has accordingly reached more than $1\frac{1}{2}$ million tons, and brought the French slag output nearly to the level of the German output (1.8 to 1.9 million) in good years. Without any *potash* on its territory in 1913, France, by the recovery of Alsace, acquired the Alsatian potash mines, whose present annual output capacity of 4 million tons of crude salts from its 20 pits could be readily doubled at will. In 1927 to 1930 exports of chloride of potash averaged 721,000 tons.

In 1913, France consumed 63,500 tons of *nitrogen* (azote), of which she produced 15,000 tons in the form of 74,500 tons of sulphate of ammonia : in recent years (1927-30), she consumed 140 to 150,000 tons of nitrogen, of which 45 per cent. was produced at home. The great State works at Toulouse, erected in recent years at a cost of 500 million francs, had alone raised its output from 2,500 tons in 1928 to 24,000 tons in 1931 : its present capacity is about 40,000 tons, corresponding to 80,000 tons of ammonium sulphate (16,000 tons of nitrogen), 80,000 tons of ammonitric (12,000 tons of nitrogen), and 80,000 tons of nitrate of soda (12,000 tons of nitrogen). Synthetic ammonia is now produced at 16 or 17 private works, which are stated to have attained an output of 45,000 tons by the Casale and Claude processes. French production of *sulphate of ammonia* has risen from 74,500 tons in 1913 to 420,000 tons in 1929. The production of other nitrogenous fertilisers has also expanded. *Cyanamide* production in several electro-chemical works in the Alps and in the Pyrenees reached 64,000 tons (or five-sixths of French consumption) in 1931, compared with 12,000 tons in 1913. *Nitrate of lime* and *nitric acid* have also increased : the latter now reaches about 30,000 tons a year, produced by oxidation of ammonia under the action of catalysers, and though inferior to the consumption, the output is stated by the central chemical organisation to be rapidly increasing. Synthetic *acetic acid* (e.g. for acetate rayon), and synthetic *ether* have been realised. Developments have also occurred in the manufacture of composite fertilisers, uniting at least two of the three principles of phosphate, potash, and nitrogen : there have been placed on the market, *potasote* (nitrate of ammonia and sylvinitic), *phosphosote* (cyanamide of lime and urea) and *nitrate of potash*.

Coal and Gas By-Products.—The numerous forms of derivation of *by-products from coal, coke, and gas manufactures* having been little practised until after the war, France failed, until recently, to derive due chemical yields therefrom : thus, coke and

gas production and coal distillation did not provide benzol and other valuable by-products. As a consequence of the new practice, the output of benzol rose from 23,000 tons in 1923 to 68,000, 80,000 and 81,400 tons in 1928-30. Formerly the gas works and cokeries sold tar without seeking first to extract its by-products. Since 1923 exists the legal obligation upon producers of lighting gas to extract the benzol content in course of the refining process; and no tar must be used for roads before distillation, so that it yields phenol, creosol, benzene, toluene, pyridine, naphthalene, anthracene, and other products. The chemical results of this measure may be gauged from the fact that the quantities of tar used for roads in France increased from 30,000 tons in 1922 to 450,000 tons in 1931. The total output of tar in France in 1929 and 1930 was 561,000 and 595,000 tons. The alliance, in recent years, of the chemical works with the collieries has been fertile in results, some particulars of which are given in the coal chapter of this Report. It suffices to mention here that numerous chemical products and by-products of the cokeries, gas works, and distillation plants are now duly recovered. Hydrogen is now extracted from the coke oven gases, which were formerly employed merely as fuel; and they yield also carbonic oxide, methane, ethylene, whence, by later operations, are derived methyl alcohol (for mixture with benzol), ethyl alcohol, ether and other products.

Dyestuffs. —The most familiar example of French progress in output is the case of dyestuffs. In 1913, when French consumption was 9,000 tons, that output was 7,000 tons, but its manufacture was practically a German monopoly, for, of the ten works in France, six were German owned, and three were obliged to obtain intermediates from Germany or Switzerland. Only one French firm (at St. Denis, near Paris) was a producer of certain intermediates. The situation is completely transformed: the output, which is entirely in French hands, has in recent years ranged from 15,000 to 16,600 tons, which has allowed exports of 3,000 to 5,000 tons (in 1927); and imports, which in 1920 still represented 53 per cent. of French consumption, amount to 10 or 12 per cent. (85 per cent. from Germany, 10 per cent. from Switzerland). France now claims to rank fourth in the world as a producer of dyestuffs, coming after Germany, the United States and the United Kingdom, and being more or less on a level with Switzerland. The advance is not merely in quantity. Few intermediates have to be obtained from foreign countries. Since 1924 a number of important new dyes have been discovered by the French industry, such as acid dyes resisting light and fulling operations, chrome dyes, direct dyes for cotton, vat dyes known as solanthrime, cotton dyes (naphtazols), special dyes for acetate rayon, vat non-indigo dyes for wool, special products for dyeing furs (which, formerly a German speciality, has been a leading cause of the maintenance of the great Leipzig annual fur fair), and numerous special leather dyes. The following table gives details of the production for 1926-31 in tons:—

	1926	1927	1928	1931
Dyes—Alizarine	634	455	588	610
Azoic	6,620	5,320	6,622	6,610
Sulphur	2,080	1,443	1,871	2,410
Di- and Tri-phenylmethane	973	701	712	1,085
Indophenolazines, Oxazines				
and Thiazines	234	184	246	115
Indigo	4,307	5,713	2,956	4,250
Miscellaneous	1,759	1,700	2,109	870
	16,607	15,516	15,104	15,950

For 1929 and 1930 French output is given at 16,830 and 15,950 tons: of the former figure 3,450 were classed as acid, 4,640 as vat, 3,600 as direct, 1,800 as sulphur, and 770 as basic dyes. The large-scale provision made for research by the French Dyestuffs Corporation, which controls directly nine-tenths of the production, and by the remaining firm, is likely to keep the industry well abreast of new developments.

Mineral Oil Refining.—Perhaps the outstanding single development since 1923, in the French chemical domain, was the legislative adoption and the practical execution of a national mineral oils refining policy. By a law of that year, the importation of oils was subjected to licence, quotas being fixed on the basis of previous imports, and, by its various provisions, refining on French soil was so stimulated that in 1931-33 two large refineries came into being near Bordeaux, two, with a third in prospective, near Marseilles, four along the Seine from Rouen to Havre, and one at Dunkirk. The erection of others at various points is proceeding (*e.g.* along the Loire, near Sète on the Mediterranean). The four new works along the Seine will be able to treat annually about 2½ million tons of crude oil. The numbers employed in oil refining were returned at the 1921 and 1926 Census as being 9,930 and 13,070 respectively: with the subsequent entry into operation of eight or nine new large refineries, the number must reach 20,000. A full account of the execution of the French oil refining policy is given in pp. 152-176.

Other Semi-Finished and Fine Chemicals.—Great advance appears to have been made in other branches of semi-finished and fine chemicals, notably in those dependent upon coal tar derivatives, as a consequence of the immense development in coal tar distillation in France. Among these are synthetic pharmaceutical products, perfumes, camphor, and resins. France, who had previously been almost entirely dependent on German synthetic pharmaceutical preparations, now exports far more than she imports in numerous cases. Thus, for the three years 1928-30 the imports and exports respectively of the following synthetic organic pharmaceutical products averaged (in metric cwt.):—

	Metric cwt. 220 lbs.	
	Imports 1928-30	Exports 1928-30
Chloroform	51	332
Ethyl Chloride	7	236
Medicinal Resorcin	3	497
Guaiacol	50	145
Guaiacol Salts and By-Products	94	210
Salicylic Acid	42	250
Other Salicylates	80	331
Salicylate of Methyl	30	418
Acetylsalicylic Acid	104	1,302
Phenacetin	50	672
Analgesin and Salts	34	210

The exports of synthetic pharmaceutical products, which amounted to 1,210 tons in 1913, averaged 1,777 tons for the eight years 1923-1930 (1,460 and 1,060 in 1931 and 1932); imports, 113 tons in 1913, averaged for the same period, 430 tons (but 1,940 and 2,240 tons in 1931 and 1932).

The manufacture of the chief *synthetic perfumes* (vanillin, terpineol, heliotropine, artificial musks, benzoic and cinnamic aldehydes, hydroxycitronellal), which are now made by about fifteen manufacturers in Paris and Lyons, has been mainly developed since 1919. The precise output of each is not known, but an official report in December, 1932, mentions that, of terpineol, one of the most important, the annual output is 150 tons, of which one-third is exported; and that the annual value of the output of these synthetic perfumes is about 125 million francs in periods of normal trade. Synthetic camphor, which is making some progress for use in the manufacture of celluloid, smokeless powders, and certain pharmaceutical products, is inferior to the home demand, but in 1927 the exports amounted to 105 tons. The output of synthetic *resins*, an essential constituent of synthetic camphor, which was started in 1918, is now about 1,500 tons a year. Resin from the essence of turpentine and of colophane, has been always abundantly produced from the pines of the Landes (from Bordeaux almost to Bayonne): in 1930, output was 30,000 tons of turpentine and 110,000 tons of colophane. Before the war, France already possessed, of course, an important pharmaceutical output in ordinary and in organic products like *quinine*, *cocaine*, *morphia*, *heroin*, etc. Her output capacity for quinine is estimated at 50 to 56 tons, but under international convention her quota is restricted to 45 tons: her exports of quinine and quinine salts averaged 41.5 tons in 1928-30 (imports .2 ton). Her manufacture of cocaine is estimated to have averaged 1.1 tons for 1926-28, and that of morphine and heroin to have been in 1928, 7.3 and 3.4 tons respectively.

In *photographic* material, considerable progress is claimed for photographic plates and developing products, notably metol and hydroquinone. In 1928-33, exports of metol advanced from 18.2 to 49.7 tons while imports declined from 1.1 to 0.3 tons; and exports

of hydroquinone averaged 42.5 tons, against 2.2 for imports. The output of *plastic materials* with bases of synthetic resin, or of cellulose, or of milk, has been important. The exports of celluloid in 1929-33 averaged 1,106 tons, against imports of 346 tons. Viscose (and its derivative cellophane) has been developed on a large scale for the rayon industry. Half-a-dozen manufacturers of casein (used as a substitute for ivory, horn, ebonite, tortoise-shell, vulcanite, etc.) now produce 40,000 to 45,000 tons a year, compared with 1,200 tons in 1924.

In the category of *paints* and *varnishes* great advance is claimed. Home production of industrial paints, which in 1913 is said to have reached only 7 per cent. of the demand, is now 85 per cent. Crushed barytes output rose from 12,000 tons in 1918 to 40,000 tons in 1927: lithopone from 1,500 to 30,000 tons in 1929, its imports having decreased from 11,000 tons in 1925 to an average of 178 tons in 1929-33. Cellulose varnishes, which have been those in chief demand in recent years, are largely produced in France.

Industrial Alcohols.—The production of *industrial alcohols* is becoming far more important as one consequence of the endeavour to secure a satisfactory native carburant. Beetroot alcohol, which is bought at a fixed price by the State, is the principal product: out of a total production in 1931-32 and in 1932-33 of 3,900,000 and 3,128,000 hectolitres, beet alcohol represented 1,716,000 and 2,435,000 hectolitres. Wine distillation, which yielded in 1931-32 over 260,000 tons, gave in 1932-33 only 100,200 hectolitres. There are about 70 beetroot distillers, the vast majority to the North and North-East of Paris, where molasses also are principally distilled, others being in the Mediterranean region.

Electro-Chemical and Electro-Metallurgical Industries.—France, who was the pioneer and still occupies a leading place in these industries as a consequence of the development of her hydraulic power and of her resources of bauxite, unique in Europe, has largely increased her production in recent years. The shares and debenture capital invested has increased from 735 millions in 1920 to 1,800 millions in 1931; and the total electric power of the undertakings—now about sixty in number—was estimated to be 711,000 kilowatts, compared with 206,000 in 1910. The fourteen aluminium works, of which eleven are in the Savoy Alps and three in the Pyrenees, employ about three-sevenths of this power, the chemical (calcium carbide, chlorate, sodium and by-products) works about a quarter, the balance being utilised in the production of electric furnace pig iron and steel, ferro-alloys such as ferro-manganese, ferro-chrome, ferro-vanadium, ferromolybdenum, ferro-tungsten, and so forth. The output of aluminium rose from 13,500 tons in 1913 to 27,000 in 1928 but fell to

24,400 in 1931 and 14,100 in 1932: the present capacity is stated to be 35,000 tons. Magnesium, a metal lighter than aluminium, has also made great progress in France by its use in the motor-car and aviation industries; it is now produced by electrolysis of chloride of magnesium, which is of sea-salt origin. Carbide of calcium, 41,000 tons in 1913, rose to an average of 72,000 tons for 1924-27, and to 88,000 and 105,000 tons in 1929 and 1930. The present output of chlorates is 10 to 12,000 tons a year: that of gaseous chlorides is nearly 35,000 tons, and that of chloride of lime, 25,000 tons. Electric furnace pig iron manufacture, which began in France during the war, has been well maintained: the average for the six years 1919-24 was 64,800 tons, and for the six years 1925-30, 60,200 tons. Electric furnace steel has made immense progress: from 21,100 tons in 1913, it averaged for the six years 1919-24, 45,600 tons, and for the six years 1925-30, 111,400 tons (it was over 151,000 in both 1929 and 1930). France is surpassed only by the United States and Italy in this manufacture, the former having produced from 430,000 to 950,000 tons between 1923 and 1928, and the latter, 171,000 to 246,000 tons in the same years. A principal use of electric steel is found in the motor vehicle industry.

Scale of the Industry.—Since war necessities crudely revealed the serious gaps in her chemical self-sufficiency, the chemical industries of France have developed a growing force in her economic life; and they have achieved a notable advance in recent years. The Census of 1926 showed that, since 1921, the number of persons employed had risen from 190,500 to 218,000: including the additional 30,000 employed in State, county, or municipal undertakings in the manufacture of tobacco and matches, powder and explosives, and gas, the total was then brought to nearly 250,000. Within this total, the categories having in 1926 over 4,000 employed persons were: gas, 44,000; heavy chemicals (acids, salts, etc.), 36,000; tobacco and matches, 18,700; perfumes, 15,600; pharmaceutical products, 14,600; fertilisers (superphosphates, etc.), 13,600; powders and explosives, 11,300; dyestuffs, 13,030; vegetable oils, 11,100; pencils, inks, varnishes, polishes, 7,730; soaps and glycerines, 6,600; refuse removal, etc., 4,600; and tallow and candle making, 4,250. From 1926 to 1930 the numbers considerably increased, and the subsequent losses in labour power through trade depression have been somewhat compensated by the new extensions in oil refining, distillation of coal products and alcohol, electro-chemical, electro-metallurgical and other branches. The total amount of capital invested, excluding participations of chemical firms in other industries, is estimated at from 12 to 15 milliards of francs. In value of output, the chemical group of industries takes seventh rank, after the coal, engineering, metallurgical, silk, cotton, and woollen industries: in 1929, its turnover was estimated at from 10 to 12 milliards. In value of exports, it takes fourth place:

thus, in 1930, they amounted to 3.20 milliards, or 7.5 per cent. of the total, as compared with 6.64 milliards for textiles, 5.22 milliards for engineering, and 3.53 milliards for metals. In 1928 France took fourth place for her part in world production, which was 7 per cent.; for the United States, 45.8 per cent., for Germany, 16.7 per cent.; and for Great Britain, 12.5 per cent.: she also takes fourth place in foreign trade.

Geographical Distribution.—The chemical industries are dispersed to a great extent throughout France. The predominant areas are those of Paris, Marseilles, the Nord county, Lyons, and Rouen. Alsace is important for its potash and mineral oil (Pechelbronn) mines, and for its textile dyeing and printing; and Lorraine for its great salt mines and soda works near Nancy, and for the large output of coke with by-products and of basic slag from a metallurgical industry representing nearly two-thirds of the national power in this respect. As to the Paris area, in the capital itself, which (1926) had 19,000 persons in the industry, 5,000 were engaged in pharmaceutical production, 9,400 in the coal, petrol and wood distillation, and 2,100 in dyes, paints, varnishes, etc. Of the 45,000 in the Paris suburbs, 13,000 were engaged in vegetable oils, perfumes, soaps; 12,000 in coal, etc., distillation; 7,000 in dyes, paints, etc.; 4,500 in pharmaceutical products; 4,300 in animal oils, glue, etc.; 4,000 in heavy chemicals (acids, salts, etc.). In the two counties near Paris, Seine-et-Oise and Seine-et-Marne, considerable further production takes place in coal distillation and in pharmaceutical goods, whilst near Creil, in the adjoining Oise county, is the headquarters of the dyestuffs output, and, in the Aisne, the next county, the chief heavy chemical and glass works of the other principal group.

The North has its special chemical importance from the by-products of its coal and coke industries (which are the greatest in France); and in its area are considerable numbers of other chemical manufactures, acids, salts, super-phosphates, starches, soft soap, candles, perfumes, oil refining, fertilisers. Of the 11,300 persons in the chemical trades in the Rouen area, 6,500 were engaged in distilling coal, petrol and wood; 1,550 in acids, salts and fertilisers; and 1,200 in mineral oils, salts, etc. Since 1931, oil refining occupies a very important place in the Rouen-Havre area. Marseilles is easily the predominant centre for oilseed crushing and hard soap manufacture: in 1926, out of 17,400 chemical workers, 9,555 were engaged in soap, candles and perfume making; 4,000 in heavy chemicals (salts, acids, etc.); 2,120 in the distillation of coal, petrol and woods; and nearly 1,000 in animal fats, glue and fertilisers. Since 1931 it has, like Rouen, been an important oil refining centre. The Lyons area returned 12,600, of whom 3,500 were in heavy chemicals; 3,025 in coal, petrol and wood distillation; 2,400 in dyestuffs, inks and varnishes; 1,015 in pharmaceutical products. In the counties of the Haute-

Savoie and Isère, close to Lyons, are found the main electro-chemical and electro-metallurgical works : out of 2,000 in the former, 1,600 workers are so engaged ; and in the Isère about 600 ; the bulk of the remaining output takes place in the Hautes-Pyrénées country.

Bordeaux and Dunkirk rank after Marseilles for oilseed crushing : they, and most other ports not already cited, such as Nantes, La Rochelle, Tonnay-Charente, Dunkirk, Sète on the Mediterranean, have considerable chemical works, usually for fertilisers, distillation of coal, petrol or woods. In recent years, mineral oil refining has assumed great importance in several other ports besides Rouen, Havre and Marseilles, notably at Bordeaux and Dunkirk.

II. CONCENTRATION OF CONTROL

Scale of Undertakings.—In comparison with the conditions prevailing in the United Kingdom, Germany, and the United States, the great majority of French chemical undertakings appear to be organised on a medium or small scale. Out of the 6,010 separate chemical establishments recorded by the 1926 census, only 17 employed over 1,000 persons : they included 6 gasworks, 4 paper-mills, 2 general heavy chemicals, one soda, one petrol, one vegetable oils, one stearine and candle, and one artificial or electric coal works. Even in the category with from 501 to 1,000 persons only 36 firms appear : 13 are in the coal, petrol, etc., distillation group, 12 in the acids, salts, etc., group, 6 in the dyestuffs, paints and varnishes, etc., group, 2 in the vegetable oils, 2 in fertilisers, etc., and 1 in electro-chemical works. The number of persons in these 53 works with over 500 persons totalled 55,000, or a little more than one-fifth of all employed. The medium establishments with from 201 to 500 persons numbered 142 with 42,200 persons : 43 in the coal, etc., distillation group, 26 in animal oils, fertilisers, etc., 25 in heavy chemicals, 18 in vegetable oils and soap, 11 in electro-chemicals and explosives, 9 in pharmaceutical and 9 in dyestuffs, varnishes, etc. The third group of 240 undertakings, with from 101 to 200 persons, and employing a total of 33,000 persons, showed 72 in coal, etc., distillation, 46 in vegetable oils, 27 in pharmaceutical, 21 in dyestuffs, 10 in electro-chemicals and explosives. Of the smaller-scale groups, the fourth (with 51 to 100 persons) showed 399 establishments with 27,900 persons ; the fifth (21 to 50) 800 establishments with 25,860 persons ; the sixth (11 to 20) 816 establishments with 12,200 persons ; and the seventh (6 to 10) 953 establishments with 7,413 persons. It is perceived that, out of the 6,010 establishments, only 195, with 97,333 persons, fell in the categories of over 200 persons, and another 240, with 33,000 persons, in that of from 101 to 200.

The boundless variety and number of chemical products—an international agreement in 1931 respecting only dyestuffs covered 3,000 items—and the relatively small consumption for the majority

thereof, go far to account for the numerical predominance of small and medium undertakings. In the undertakings producing heavy chemicals, refining oil, making gas, aluminium, distilling coal products, and generally in those engaged in standardised output for considerable markets, the tendency is towards enlargement of units, but in many cases this tendency is checked by the problem of cost of transport to a distance of heavy products, so that works for regional markets have been established, particularly in or near ports (Nantes, Bordeaux, Sète, Marseilles, Rouen, etc.) where raw materials and fuel are also obtainable under favourable conditions.

Concentration Developments in Chemical Industry in Recent Years.—Despite the variety and multitude of the undertakings, many main branches of the French chemical industry are organised on a large scale, and are controlled by a few concerns or groups, whose ramifications in all directions are apt to baffle any ready computation. The heavy chemicals are dominated by three groups, Kuhlmann, St. Gobain, Bozel-Malétra, which do not, however, necessarily confine themselves to heavy chemicals: the electro-chemical and electro-metallurgical by the Alais, Frogès et Carmargue group, which, among other things, produces about nine-tenths of the aluminium: oxygen, hydrogen, nitrogen, acetylene, synthetic ammonia, by the Air Liquide, connected with St. Gobain, Grande Paroisse, coal mines, and others, as well as by the State (at Toulouse): and coal tar products by the gas companies, Kuhlmann and St. Gobain in conjunction with coal mines. Potash output is in the hands of the State (two-thirds) and of one company (one-third), and its sale in those of a single organisation. Dyestuffs are produced to the extent of nine-tenths by the Kuhlmann group, the remainder by a company in which Kuhlmann and St. Gobain have important interests: the Kuhlmann group also makes rayon, pharmaceutical products, synthetic resins, glues, plastic substances, and so forth. The bulk of the superphosphates and fertilisers generally are produced by the Kuhlmann and St. Gobain groups in their own or affiliated widely scattered factories. Perfumes are made principally by half a dozen firms: pharmaceutical and other fine chemicals, notably for photographic and laboratory uses, by the Usines du Rhône-Poulenc amalgamated company. Rayon is controlled by the firms in the *Comptoir des Textiles Artificiels*. The collection and treatment of animal waste products are mainly handled by a single company. The chief maker of disinfectants has fifty or sixty factories in France. The bulk of the soaps manufacture, which is carried on principally in Marseilles (hard soaps), Lille (soft) and Paris (perfumed), is in few hands.

Recent Growth and Scope of Certain Great Firms.—The Kuhlmann company, which since 1930 has the largest capital (320 millions) of any chemical concern, possessed in 1914 with a capital of 6 million francs five medium works in or near Lille and one at Amiens, all occupied in making sulphuric and nitric acids,

chloride of lime, superphosphates and other heavy chemicals. It became possessed of other works during the war when five of its own were in enemy hands, and raised its capital eighteen times before its present figure was reached. It now operates directly nineteen works: those in France are at Loos near Lille, La Madeleine near Lille, Roubaix-Wattrelos, Petit-Quévilly near Rouen, Aubervilliers near Paris, Nevers, Nantes, Paimboeuf near Nantes, Hennebont near Lorient in Brittany, Bordeaux, Estaque near Marseilles, Port-de-Bouc near Marseilles, Dieuze in Lorraine, Gouhenans in the Haute-Saône, Tonnay-Charente near La Rochelle, Villers St. Paul near Creil and Oissel near Rouen. It has large participations in thirty-five more, and has 118 selling branches and 121 depots throughout France. Its products include industrial chemicals (acids, oleum, sulphates, sodas, chromium salts, chlorine, etc.) agricultural chemicals (phosphatic, nitrogenous, phospho-nitrogenous, superphosphates, insecticides, etc.) and organic products (dyestuffs, glues, plastic materials, paints, varnishes, synthetic resins, pharmaceutical products, etc.). At its great Villers St. Paul (near Creil) works, covering over 100 acres, and three other works are produced dyestuffs, plastic materials, etc.: it has interests in the St. Denis dyestuffs company (capital 50 millions). It has formed three companies with three leading collieries (Courrières, Anzin, Maries) for tar products and by-products. Two of its companies produce rayon. In 1930 it absorbed the *Compagnie Bordelaise de Produits chimiques* (capital then 70 millions, but reduced to 35 millions in December, 1932), whose four super-phosphate works had a total capacity of 370,000 tons (Nantes, 120,000 tons, Sète, on the Mediterranean, 95,000 tons, Rouen, 85,000 tons, and Bordeaux, 70,000 tons). In 1929 it had secured interests in the Uginé electro-chemical and electro-metallurgical company (capital 122 millions, with ten hydroelectric power works in the Alps and elsewhere, and with various works for metallic carbides, electric steels, etc.). In 1932, it secured control of the *Société Aubry* (capital 55 millions) with three works near Douai and elsewhere for the manufacture of compound fertilisers, explosives and other products: in the same year it absorbed the *Société de Produits Chimiques de Quillan*, near the Pyrenees, which specialised in anticryptogamic products from viticulture. With its affiliated concerns, the Kuhlmann company has likewise expanded production capacity since 1928. It has created sulphuric acid plants at Dieuze in Lorraine, and at Port de Bouc near Marseilles: a lithopone plant or section at Dieuze, for the production of their affiliated *Société de Produits Barytiques*: a carbon bi-sulphide plant at Wattrelos, near Roubaix, and at L'Estaque, near Marseilles, for that of its affiliated *Société Progil-Kuhlmann*: a nitric acid plant (Fauser method) with a daily capacity of 350 tons at the Lille-lez-Madeleine works: a formaldehyde plant at their great and very modern works of Villers St. Paul, near Creil, where the dyestuffs and the plastic materials capacity have actively developed in recent years.

The St. Gobain company, whose capital of 60 millions in 1919 has been progressively increased to its present figure of 310 millions, the last increase in 1930 having been from 225 millions (in 1928), produces on a large scale all industrial and agricultural chemicals and is the largest producer of plate-glass and other glasses in France. It owns 25 or 26 chemical works, 4 glass-works, a salt mine in Lorraine, a pyrites mine in the Lyons area, and a phosphate mine in Tunis: in 1931 and 1932 it had participations in 158 and in 153 other undertakings. The scale of these participations is very great: in 1932 no less than 580 millions were so employed, of which 369 by direct investment and 211 by way of current account advances, and, in addition, 255 millions had been accorded by way of guarantee. The widespread distribution of the participations fell into 8 trade groups, and the amounts by way of investment and of currents were as follows:—(1) raw materials; 23 participations, by investments 31.44 millions, in current accounts, 18.8: (2) glass-works; 13 participations, 45.82 and 30.43 millions: (3) patent investigation, commercial concerns, depots; 34 participations, 18.49 and 11.68 millions: (4) drawn glass; 25 participations, 81.45 and 37.45 millions: (5) various glass industries; 16 participations, 18.89 and 15.13 millions: (6) bottles, flasks, etc.; 15 participations, 11.26 and 7.37 millions; (7) cellulose papers, miscellaneous; 12 participations, 102 and 89 millions: (8) dyestuffs and chemical products; 15 participations, 59 and .92 millions. Its most remarkable single participation is that in the new oil refinery on the Etang de Berre, near Marseilles: its investment therein appears to represent 122 millions, or over half the capital, and (in 1932) its guarantees amounted to 207 millions. Like Kuhlmann, St. Gobain has close relations with the coal mining industry for chemical purposes; and among its participations is that in the *Air Liquide* (24 works, capital 88 millions) a leading producer of synthetic ammonia, oxygen, hydrogen, etc., which, in 1931, absorbed *Ammonia Synthétique*, and has long been connected with *La Grande Paroisse* (capital 60 millions), which it also works with colliery companies.

The company does not appear to manufacture itself the finer chemicals, which is no doubt undertaken by some of the 153 affiliated companies. Its 26 owned chemical works are in or near all the chief towns (Paris, two, Lille, Dunkirk, Nancy, Rouen, Tours, Poitiers, Angers, Nantes, two, Bordeaux, two, Tonnay-Charente, Bayonne, Toulouse, Sète, Avignon, Marseilles, Lyons, etc.): its chief glass-works are at Chauny and Cirey (near Nancy). In recent years, St. Gobain has again amplified its industrial equipment. It has built, *inter alia*, a new sulphuric acid plant at La Bassée, near Lille; in conjunction with the *Produits Chimiques de Roche-la-Molière*, a factory at St. Fons for nitric acid production: in 1932, it opened a new works at Rouen for synthetic fertilisers with ammonia basis: in 1933, with the *Société Grande Paroisse*, a synthetic nitrate of soda works at Chauny. It would

not be possible to trace all the improvements that may have been recently effected by the 150 affiliated companies—chemical or other—but it may be noted that the *Air Liquide* has erected oxygen plant at Boulogne, near Paris. In the boom years, 1928-30, the advance in technical equipment and enlargement had been general in the chemical and its allied trades. In its glass-works, it has recently taken over the working licences of the Pittsburg Plate Glass Company at the Franière works, and of the Donci-Poli continuous system at the Chantereine works. Its glass participations are very numerous and important.

Brief reference may be made to a few other important chemical concerns, which are mainly the result of absorption since the war. The Bozel Company, originally of Bozel in the Savoy, which had in 1921 a capital of six millions, gradually absorbed various concerns, including the *Etablissements Malètra* in 1925, when its capital was brought to 39 millions: subsequent increases occurred till the capital reached its present figure of 100 millions. It now operates 14 works. Near Bozel, it has two hydro-electric power works and mines, and makes calcium carbide, acetic aldehyde, ferro-alloys, etc.; it has other hydro-electric works in Savoy making similar products, also near the Mediterranean at Plan du Var. Other works are: two near Paris, three in the Seine-Inférieure (near Rouen, etc.) one at Rennes and so forth. Its chief products are heavy chemicals, soda, carbonate of soda and potash, liquid chlorine, oleum, nitric acids, sulphate of ammonia, fertilisers, etc. It owns salt mines in Algeria, cobalt and chrome concessions in New Caledonia, large industrial property (125 acres) near the new petrol refining port of St. Jerome on the Seine. Its participations are numerous: in water power, glue, rayon, plastic materials, and other works.

The *Rhône-Poulenc* concern, which was formed by the absorption by the *Usines du Rhône* of the *Etablissements Poulenc* in 1928, when its capital was raised from 27 to 36 millions, again raised its capital in 1929 to 50 millions, and in 1931 to 75 millions. It operates nine works. The old specialities of the *Usines du Rhône*, namely, pharmaceutical products, have more than maintained their importance, but it has also developed technical products, notably acetate of cellulose for rayon, ethyl chloride and methyl, phenol and nitrophenols, etc. It controls *Rhodiaseta*, which is the chief producer of acetate rayon, with two works, at Lyons and at Roussillon. It has greatly extended the photographic requisites and chemicals side, and laboratory requisites, in all of which the Poulenc firm excelled, as well as the synthetic raw materials for perfumery and plastic manufactures.

The present *Alais, Frogès et Camargue Company*, which is far the greatest electro-chemical and electro-metallurgical concern, and can produce, *inter alia*, about 25,000 tons of aluminium a year, is mainly the outcome of the fusion in 1921 of the *Alais and Camargue* company (founded in 1855) with the *Frogès* company (founded in 1888) known as the *Société Electro-métallurgique Française*:

the capital of the former was then raised from 60 to 130 millions : the last increase in 1929 brought it to 262½ millions. It possesses now about 18 manufacturing works and 24 water-power electricity works, the majority in the Alps and the rest in the Pyrenees, which can supply daily its works with 3,200,000 kw.-hours. Of the 16 factories, six are chemical, and ten are electro-metallurgical. The former produce principally sulphates of aluminium, iron, copper, ammonia, magnesium, chlorine and its by-products, bromine, soda, ammonia and many organic products required in the dye-stuffs industry. The large-scale manufacture of magnesium is a recent development ; the present capacity is over 1,000 to 2,000 tons a year. In June, 1933, the company was building a new special section for its production. Besides aluminium, it is a large producer of electric steel and ferro-alloys. The output affords a good example of vertical concentration : the company possesses its own lignite and bauxite, pyrite and spath-fluor mines, its own salt beds (e.g. one of 24,000 acres on the Mediterranean seaboard), its own water-power electricity works. Further particulars concerning the company occur in the chapter on aluminium. It may be noted here that its participations are extensive. Through them it undertook, since 1922, the fixation of nitrogen, and manufacture of synthetic ammonia by the Casals process, of which it possesses exclusively the working rights for France. Such participations include: the *Société Ammonia Casals*; *Société Ammonia*; *Société des Produits Azotés*; *Compagnie des Produits Chimiques de Roche-la-Molière*; *Société Huiles, Goudron et Dérivés*; *Le Duralumin*; *Société Générale du Magnésium*; *Compagnie Française des Pétroles*; *Compagnie Thomson-Houston*; a series of water-power works; and numerous others. It holds likewise interests in the *Société d'Electro-chimie, d'Electro-metallurgie, et des Acières Electriques d'Ugine*, which shares with it the monopoly of aluminium output in France, and produces most of the same products. Its capital is 122 millions, and it has over a dozen works, 9 of which are situated in the Savoy and Isère counties.

III. INTERNATIONAL RELATIONS

Nitrogenous Fertilisers : International Position.—The consumption of fertilisers has made much headway in France since 1913, potash having risen from 33,000 to 190,000 tons, phosphatic from 394,600 to 530,000, and nitrogenous from 63,000 to 145,000 tons : in the last three years, agricultural depression has tended to check progress. France harbours no misgivings concerning the requisite native supplies of potash and of phosphatic fertilisers, but she has seriously been exercised by the problem of nitrates, both from the point of view of national defence and of agricultural requirements. Her coke ovens and gas-works produce sulphate of ammonia, but not in adequate quantities : her

synthetic ammonia output is likewise inadequate, and she is handicapped in relation to the chief European producers (Germany, Great Britain and Norway) by her inferior coal or water-power resources, and by certain capital charges (especially in relation to Germany—the chief producer—whose overhead charges had been largely reduced through various circumstances). A leader in the French chemical industry wrote in 1931 that the cost of French coal is so much more than that both of the German lignite and of the Norwegian electric energy, that it makes the cost of the French synthetic ammonia fertilisers about one-third dearer than the German or Norwegian. From 1926, the synthetic producers, notably the United Kingdom and Germany, showed such an excess of output that the Chilean mines found their pre-war markets reduced by about three-fifths in 1927 and 1928. France did not take part in the Anglo-German-Norwegian-Chilean conference of 1929, which agreed upon reduction of output, unification of prices, and common propaganda. The French chemical industry took part, however, in the European Conference in 1930, which resulted, by an agreement for one year, in the reservation of the national markets to national production, the fixation of a scheme of reduction of national output, the institution of a central office to safeguard prices levels and of a central clearing house for compensating the limitations upon output in certain cases, the common participation in propaganda and in research. This agreement was not renewed in 1931: at the Conference summoned for its consideration, the production capacity of France was estimated at 153,000 tons of nitrogen (71,950 by the Claude, 46,700 by the Casale, 18,250 by the Mont-Cenis and 16,100 by the N.E.C. processes). The present capacity is estimated at 70 to 80,000 tons.

State Action.—In 1931, in view of this failure to reach agreement, of the general over-production of ammonium sulphate and of synthetic ammonia, which caused prices to fall heavily, the internal production was regulated by agreement between producers, of which the State is one. The State reserved the right to sell a minimum of 80,000 tons a year: certain private concerns, notably Anzin-Kuhlmann and Marles-Kuhlmann (the latter in the year 1931-32 produced 9,891 tons of synthetic ammonia and 20,335 tons of ammonium sulphate) had their output limited. The State then subjected to import licences the imports of ammonia, cyanamide and nitrates of soda and lime; and a little later restricted imports of all other nitrogenous fertilisers such as potassium nitrates, phosphates and nitrate of ammonia. The chemical industry, which had met with the effective opposition of the agricultural interests to any import control measures, lowered their prices by 10 per cent. by mutual agreement. The first import licence was granted only at the end of 1931, after negotiations between the German *Stikstoff* Syndicate and the *Comptoir Français de l'Azote*, the selling organisation of the French

nitrogen producers: it would appear that Germany was to be allowed to import 150,000 tons of soda nitrates, the importers to sell at 95 francs a 100 kilogrammes and to pay the *Comptoir* 12 francs per 100 kilogrammes. (It may be mentioned that the French price of dry 20.4 ammonium sulphate was 122 francs 40 centimes ex-works, and, at the beginning of 1932, 98 francs delivered to consumer.) Licences were subsequently accorded to the United States and other countries under analogous conditions. At the end of 1932, a special committee was formed to assist the Government in controlling the nitrogen market: it was composed of representatives of the Ministers of Agriculture, Commerce, and War, seven of Agricultural associations and firms of the nitrogen trade.

Besides the rather detailed regulation of nitrogenous imports, the Government brought within the scope of the imports quota system many other chemical imports, *e.g.*, sulphide of carbon, iodine, hydrogen peroxide, sulphuric acid, quebracho extracts, phosphatic fertilisers, glues. In April, 1933, quotas were fixed for a number of other products pending the establishment of new duties. The goods included, iodides of ammonium, lithium, potassium, sodium, strontium, and other iodides except of ethyl and methyl: silicates of potash, anhydrous or crystallised, hydrated; silicates of soda, anhydrous or vitreous, hydrated; tin oxide or metastannic acid: magnesium, crude metal rolled, etc., and wares of magnesium: alloys of magnesium, including aluminium, cadmium, and calcium; iodoform: tartaric acid, colours for art painting or decoration in tablets, colours in wood or metal boxes: medicinal adhesive plasters: certain waxes: vitrified glasses, spun glass, beads, etc. In July were promulgated the new duties, the increases of which in many cases were considerable, *e.g.*, the minimum duties for most iodides from 20 francs to 125 francs a kilogramme: tin oxide from nil to 18 per cent. *ad valorem*: magnesium from 18 per cent. *ad valorem* to 600 francs per 100 kilogrammes: tartaric acid from 30 to 250 francs per 100 kilogrammes.

Working Agreements—Home and Foreign.—The great diversity of the products of the chemical industry, for many of which the demand is strictly limited, helps to account for the large number of separate undertakings in the French industry. Recent general influences have, however, tended to induce a large movement of concentrated direction, notably in the raw materials and primary and secondary heavy chemicals, and in certain branches such as electro-metallurgical, pharmaceutical, photographic, where modern habits have given birth to standardised demand on a large scale. It has been seen that several great groups have come into being in recent years: how, in one case, over 150, and in another, nearly forty undertakings were affiliated to concerns which themselves directly operated respectively nearly 30 and 20 separate

works, some of large dimensions. Very numerous concerns affiliated to the half-a-dozen leading groups have in their turn many affiliated firms, so that, despite the seeming multitude of French undertakings, a goodly measure of cohesion and of co-ordination has been realised among the units of consequence in their particular domain. Working agreements have also been reached between certain of the great groups: *e.g.*, between St. Gobain and Kuhlmann as regards dyestuffs through the St. Denis concern wherein they are both represented: between Pechiney and Ugine, producers of practically all the French aluminium and magnesium: between the producers of synthetic ammonia, of potash, and so forth. Not all the multifarious working agreements become publicly known, for the obvious reason that the parties do not seek to cry from the rooftops the conditions or methods of collaboration within their own trade.

International agreements made by French producers, insofar as they have been divulged, are fairly numerous. In 1926, France and Germany made the potash agreement, still operative, which reserved the national and colonial markets to the respective parties, and gave France a 30 per cent. quota in other markets, with contingent increase. The glues agreement of 1926 was signed by 16 countries, including France. In 1927, a dyestuffs agreement made with Germany covered the fixation of quotas of production, of price, the general reservation of respective home markets, the division of foreign markets. In 1929, Switzerland, and, early in 1932, the United Kingdom adhered to this agreement. France was also a party to the 1931 nitrate agreement, signed also by the United Kingdom, Norway, Italy, Belgium, Holland, Poland and Czechoslovakia, but which was not renewed. She has adhered to the bismuth cartel with the United Kingdom, Germany, and Italy: to the iodine convention with the United Kingdom and Norway, to the quinine convention with the United Kingdom, Germany, the United States, Japan, Holland, and to the borax and magnesium cartels. The foregoing agreements have been made with the national federations of the countries concerned: France, as a State, has also been a party to other international agreements (*e.g.*, drugs, etc.) to which various other States were signatories.

National Organisation for General Purposes.—In 1927 was created at Paris the Federation of the Chemical Industries (now called *Union des Industries Chimiques*) for the purpose of providing a strong national organisation to serve as a connecting link between the manufacturing units and separate groups for general representation objects, general policy, and researches or other matters of common interest. In 1932 were affiliated twenty-nine of the central trade associations for the separate chemical branches; they included those for: gas and by-products of gas and tar distillation; wood distillation; glues and gelatine;

dyestuffs; tanning extracts and dyes; explosives; fertilisers and superphosphates; carbonic acid; lithopone and zinc white; synthetic products of organic chemistry; drugs and pharmaceutical products; photography; cinematographic films; paints; varnishes; petrol; stearine and soaps; and so forth.

International Chemistry Office.—Designed to be the centre of the International Pure and Applied Electricity Union, as well as the headquarters and clearing house for all chemical documentation, the International Chemistry Office was founded in Paris in 1927 as the result of an international conference summoned by the French Government. By January, 1931, a total of 25 million francs had been subscribed towards its realisation: and in 1932, the required number of ratifications of the Convention creating the Office having been received, its activities commenced. The building in the centre of Paris destined to be its headquarters was nearly completed early in 1934.

iv. FOREIGN TRADE

The following tables, which illustrate the fluctuating course of French imports and exports of chemicals in the five years 1929-33, render manifest the immense progress which the chemical industries of France have achieved since 1914, notably in such cases as coal-tar products, potash, phosphates and other fertilisers, and by-products of the electrochemical industries.

[TABLE]

PRINCIPAL CHEMICAL IMPORTS INTO FRANCE.

	1929		1930		1931		1932		1933	
	Tons	1,000 francs	Tons	1,000 francs	Tons	1,000 francs	Tons	1,000 francs	Tons	1,000 francs
Ammonium Chloride	9,530	14,316	3,438	6,292	2,901	4,167	532	694	850	648
Ammonium Sulphate	116,857	137,797	92,556	99,659	22,750	23,815	5,010	4,376	2	6
Borate of Lime	10,045	9,932	9,802	8,418	7,140	6,753	6,409	5,491	8,986	6,560
Borax	1,758	2,527	2,939	4,257	3,303	4,054	2,833	3,321	3,181	2,693
Sulphuric Acid	20,764	6,401	47,892	13,932	38,634	9,381	23,790	4,854	24,356	4,713
Alkaline Chromates and Bichromates	3,048	10,835	2,367	8,626	2,329	8,206	1,918	6,515	3,207	9,502
Copper Sulphate	22,295	69,756	28,373	76,257	32,538	70,510	42,728	62,480	42,196	50,643
Magnesia	2,005	2,712	6,305	5,671	6,042	5,241	14,206	8,428	14,693	8,434
Sodium Chloride	62,349	9,371	78,540	11,894	76,407	10,494	83,491	9,962	96,548	11,514
Benzols	5,898	13,079	5,674	12,057	7,456	11,897	11,685	15,076	13,596	19,640
Heavy Oils	6,444	5,016	13,044	9,121	13,778	8,229	48,837	21,322	19,233	6,403
Pitch	388,935	129,611	409,482	139,861	362,276	119,500	476,338	163,261	459,380	189,921
Tartaric Acid	875	13,091	868	11,209	956	9,556	676	4,582	851	5,174
Alkaline Tartrates	12,892	29,398	10,812	20,380	7,476	12,184	3,893	5,807	3,825	6,174
Oleic Acid	8,372	32,406	7,856	26,839	13,210	24,897	8,500	13,373	3,963	7,363
Citric Acid	580	13,772	519	9,563	596	6,686	700	4,034	1,288	6,040
Citrate of Lime	928	7,195	1,040	6,845	1,344	4,003	301	723	685	1,715
Synthetic resins	268	5,765	428	8,116	607	9,331	600	7,001	782	7,807
Quebracho extract	13,397	39,572	13,679	39,052	15,050	29,706	14,434	14,785	19,782	19,780
Fertilizers—phosphatic:										
Mineral superphosphates	11,914	2,727	20,656	6,752	62,635	16,066	129,025	26,735	125,494	26,725
Compound or manufactured	11,041	3,992	9,508	5,370	13,156	8,189	23,002	7,248	39,537	12,112
Bone superphosphates and phosphates	8,999	7,438	6,596	5,958	6,034	3,953	12,580	6,369	16,738	9,124
Basic Slag	3,827	145	6,552	1,325	35,160	7,668	64,506	14,388	35,102	8,434
Others	3,645	3,361	3,919	3,522	4,446	3,369	9,345	5,294	12,738	7,995
Fertilizers—nitrogenous:										
Nitrate of Soda	578,196	678,885	280,638	313,147	374,051	405,150	304,213	281,152	166,703	170,387
Nitrate of Lime	20,484	22,394	28,335	27,168	31,866	30,921	7,804	7,060	65,653	15,384
Cyanamide of Calcium	12,675	11,709	19,013	17,632	4,927	4,520	30	9	—	—

PRINCIPAL CHEMICAL EXPORTS FROM FRANCE.

	1929		1930		1931		1932		1933	
	Tons	1,000 francs	Tons	1,000 francs	Tons	1,000 francs	Tons	1,000 francs	Tons	1,000 francs
Potassium Nitrate	6,746	14,431	4,167	8,913	3,605	7,190	2,252	4,389	2,127	4,007
Ammonium Sulphate	5,566	6,712	9,169	8,071	17,134	15,279	14,931	12,711	21,754	18,444
Bromine	347	2,439	782	5,889	626	3,894	636	3,047	62	270
Calcium Carbide	24,132	32,299	23,040	31,305	27,337	35,068	17,973	22,998	18,650	23,394
Cyanides	1,312	11,417	1,126	8,935	1,180	9,618	1,080	8,230	1,300	7,504
Potassium Chlorate	2,809	7,641	2,890	6,974	2,374	5,952	2,742	7,100	1,871	4,681
Sodium Chlorate	6,069	14,406	5,664	14,250	3,310	8,297	2,993	7,416	2,996	7,094
Chloride of Lime	11,827	6,707	9,204	4,726	9,326	4,419	9,794	4,431	9,009	3,351
Sulphuric Acid	20,992	7,637	16,384	6,486	7,240	3,477	5,239	2,325	7,234	2,350
Sulphurous Acid	972	2,450	941	2,199	1,698	5,963	1,607	5,642	2,007	6,584
Anhydrous Alumina	35,410	49,449	24,906	36,709	17,895	25,942	17,435	25,182	19,382	26,686
Alumina hydrate	4,925	5,453	5,229	5,525	6,315	6,279	5,188	4,341	5,335	3,634
Alumina sulphate	23,119	17,664	20,702	15,708	12,407	7,953	5,290	4,509	2,807	1,388
Copper sulphate	3,731	12,009	4,999	16,553	5,045	11,864	3,812	6,699	4,571	6,522
Lead oxides	663	2,415	2,203	8,680	1,467	4,887	1,393	3,901	1,267	2,981
Caustic potash	4,552	6,900	5,302	7,560	4,924	7,261	6,101	9,386	5,833	9,094
Potassium chloride, including carnallite, sylvinite, etc.	794,505	381,936	780,959	409,037	472,807	280,742	321,744	185,302	414,182	190,523
Sodium chloride	162,987	19,427	148,441	18,479	130,563	13,863	130,542	13,127	133,014	12,748
Caustic soda	37,310	54,583	36,204	54,378	32,760	48,208	32,064	42,631	28,105	35,051
Carbonate of soda	173,176	82,582	148,360	74,773	126,771	62,421	112,481	54,403	99,711	44,911
Bicarbonate of soda	6,735	6,187	7,350	6,301	6,408	6,099	5,304	4,866	3,910	4,000
Zinc oxide	2,505	9,361	3,239	11,222	3,444	8,951	2,707	6,680	2,409	5,438
Benzols	20,715	42,629	26,690	54,731	24,689	44,491	23,056	45,210	25,128	49,136
Glycerine	4,690	14,634	6,189	19,979	5,421	14,668	2,927	6,271	2,147	4,105
Cellulose acetate	253	8,266	170	5,378	200	4,398	237	4,209	405	6,452
Tartaric acid	1,075	16,148	973	12,360	967	10,029	658	5,160	450	3,408

PRINCIPAL CHEMICAL EXPORTS FROM FRANCE—*continued.*

	1929		1930		1931		1932		1933	
	Tons	1,000 francs	Tons	1,000 francs	Tons	1,000 francs	Tons	1,000 francs	Tons	1,000 francs
alkaline tartrates	13,227	85,385	11,419	66,281	8,926	37,107	8,117	24,751	8,321	21,333
cetylsalicylic acid	120	2,106	131	3,378	219	5,393	215	5,304	238	5,490
niline and Aniline salts	879	6,751	937	6,529	938	5,922	537	2,859	527	2,980
nalgesine and its salts	10	347	55	3,696	54	4,429	56	4,016	40	2,770
uinine and its salts	40	4,448	50	5,861	55	5,876	40	4,480	41	3,198
elluloid, including artificial ivory and tortoise-shell	876	25,655	1,447	46,780	1,177	32,276	1,088	27,852	962	17,384
ardened casein	2,961	19,596	2,465	18,116	1,985	8,869	1,353	3,936	1,204	4,994
xtracts of gall nut, sumach, etc.	38,458	74,906	45,476	81,609	29,364	49,883	22,725	34,459	22,372	31,985
uebracho extract... ..	6,387	11,874	5,813	10,826	3,685	6,486	2,452	2,130	1,389	1,348
ertilizers—phosphatic:										
Mineral superphosphates	220,864	63,382	199,962	58,706	84,737	24,518	36,317	11,276	36,058	10,749
Compound or manufactured	26,511	20,776	19,452	14,220	18,880	13,006	17,532	12,343	15,448	10,993
Basic Slag	955,767	187,517	992,555	210,826	1,011,544	198,452	545,431	82,626	670,617	104,525
Others	15,597	7,844	10,271	5,676	5,706	3,753	3,440	2,574	4,098	3,569
nti-cryptogamic products: cupreous	3,085	8,885	3,999	9,478	4,433	9,167	2,994	5,532	4,956	7,904
ther anti-cryptogamic products	484	5,094	677	7,572	572	5,072	723	5,119	868	4,199
eyewood extracts	3,804	22,373	2,874	16,990	2,959	17,394	2,110	11,879	2,235	11,932
oal tar dyes (dry):										
Monoazoic	200	4,146	289	5,875	382	8,238	454	9,738	301	6,022
Polyazoic	591	15,107	448	12,029	575	14,197	791	18,536	710	14,871
Di and Tri-phenylmethane	527	9,995	514	12,974	431	10,082	229	6,977	213	6,837
Synthetic indigo	210	2,635	277	3,586	191	3,572	428	6,953	284	4,521
oal tar dyes (paste):										
Synthetic indigo	513	3,612	369	2,979	824	7,323	1,382	12,917	990	8,302

CHAPTER VI.—TRANSPORT AND COMMUNICATIONS

I. RAILWAYS

1. GENERAL SITUATION

Internal Communications.—The total length of the lines worked by the seven great railways is about 26,000 miles. Among the more important extensions in recent years may be mentioned the opening in October, 1923, of the line through the Vosges from St. Dié to Saales, one of the projected routes to facilitate communications between Alsace and the rest of France. The new line reduces the distance between St. Dié and Strasbourg by 50 miles and between Epinal and Strasbourg by nearly 20 miles. Another line through the Vosges from St. Maurice to Wesserling, a distance of about 10 miles, costing 190 millions, was classified by the National Economic Council in July, 1932, as a matter of urgency, because it will link Epinal to Mulhouse and carry heavy traffic between Switzerland and Upper Alsace on the one hand and the Ardennes and Northern France on the other. Two other Vosges projects for lines, one from St. Dié to Ste. Marie-aux-Mines and the other from Cornimont to Metzeral, were declared by the Council to be less urgent; they would cost 336 millions, and their construction could not be considered to be a matter of national interest such as to outweigh the need for retrenchment.

A new line from Lérrouville to Metz was opened in May, 1931, which shortens the distance to the latter town from Paris by about 23 miles and relieves the trunk line to the capital from Nancy. The competent commissions of the Chamber of Deputies have approved a Government Bill relating to a new direct railway line from Avignon to Nice via Pertuis and Les Arcs, which would reduce the distance between the two points by over 50 miles. The cost was estimated several years ago at 550 millions. Apart from the strategic importance of the new line, its main purpose would be to relieve the existing Marseilles-Nice line, which cannot carry more traffic without being widened at great expense. Another project of much interest that has been mooted for some time past and freely discussed recently is a new direct line from Lons-le-Saunier (Jura) to Geneva, which would involve a tunnel through the Faucille some $7\frac{1}{2}$ miles in length. If the scheme were carried out, it would reduce the distance from Geneva to Metz by nearly 67 miles, to Brussels by 45 miles, to Amsterdam by $17\frac{1}{2}$ miles and to Ostend by 48 miles. The Eastern Railway has carried out extensive alterations and extensions at its Paris terminus at a cost of some 300 millions. The goods traffic has been transferred to La Villette, the entrance to the station has been enlarged from

three lines to six, involving the rebuilding of three bridges, and the long-distance passenger traffic has been separated from the suburban traffic, which is particularly heavy on the Eastern Railway, by the building of a new part of the station for the latter. On the State Railway a new and up-to-date station has been built at Havre and a harbour station at Cherbourg. A large station 216 metres in length has been built by the Alsace-Lorraine Railway Company at Mulhouse and was opened in December, 1932, to deal with the heavy traffic between France and Switzerland, Italy and Germany.

External Communications.—Three new lines have been planned, and two completed, to improve communications between France and Spain through the Pyrenees, which hitherto had passed at the western end of the chain via Hendaye and Irun and at the eastern end via Cerbère and Port-Bou. The first line via Bédous (Basses-Pyrénées) and Canfranc was opened in July, 1928, and much improves the connection between south-west France and north-west Spain. The opening of an express service by this route in March, 1929, reduced the time taken between Paris and Madrid by three hours. The second line via Ax-les-Thermes and Puigcerda (25 miles) was opened in July, 1929. It crosses very difficult country, involving steep gradients, and rises at one point to 8,465 feet, one of the highest altitudes reached by a French railway. There are numerous bridges and tunnels, including an ordinary tunnel of 5,857 yards and a spiral tunnel of 1,924 yards. The new line shortens the distance from Paris to Barcelona by about 67 miles and is likely to encourage trade not only between France and the rich province of Catalonia but also between France and Morocco. Little progress appears to have been made with the third Transpyrenean line between Saint Giron and Lerida via Oust, and in July, 1932, the National Economic Council recommended that work on it should be suspended pending the result of negotiations between the French and Spanish Governments. It appears that in November, 1931, the Council was informed by the Under-Secretary for Touring that he had suggested that the Ministry for Foreign Affairs should submit to the Spanish Government a proposal for the construction of an international road from Spain to Saint Giron via the Salau pass on the understanding that in that event the Transpyrenean line would be abandoned.

In October, 1928, communications between France and Italy were improved by the opening of a new line between Nice and Coni (Cuneo) via Sospel, a distance of 76 miles, which has been built by the P. L. M. Railway at a cost of 450 millions. Connected with this line is a branch line leaving the frontier at Breil and running to the Mediterranean coast at Ventimiglia. The difficult nature of the country made it necessary to construct 27 bridges or viaducts, 5 metal bridges and 41 tunnels, one being over $3\frac{1}{2}$ miles long. The connection between Piedmont and the Mediterranean coast will be greatly improved by the new line, which

should also facilitate the consignment of perishable goods such as flowers and fruit from the Riviera to Central and Northern Europe.

Traffic.—In spite of the competition of the road the great French railways carried 795 million passengers and 315 million tons of goods in 1930 as against 540 million passengers and 200 million tons of goods in 1913. At the same time, the number of passengers in 1930 showed a distinct fall in comparison with 1925, when 820 million were carried. The fall is particularly noticeable in the case of first- and second-class passengers, potential motor-car owners, who accounted in 1930 for only 2 and 7 per cent. respectively of the total passenger traffic as against 7 and 22 per cent. before the war. Since 1930 traffic has diminished as a result of the economic crisis. Thus, car loadings in 1931, which were 19,691,450, showed a fall of 8.36 per cent. on the figures for 1930; and those of 1932 and 1933, which were 17,319,330 and 16,523,030 respectively, falls of 12.04 and 16.09 per cent. as compared with 1931. Gross receipts in 1932 were 12 milliards, or 2,124 millions (*i.e.*, 15.21 per cent.) lower than in the previous year, and it may be noted that already in 1931 they were lower by 1,440 millions (or nine per cent.) than in 1930. In 1933 occurred a further shrinkage of 703 millions.

Financial Position.—The seven French trunk lines have been operated since 1922 under the complete scheme of general reform introduced by the Railways Law of October, 1921. Under that new dispensation the independence of the separate railways was preserved so far as normal administration is concerned, but there was established a co-ordinating central council (Superior Railways Council) representative not only of the railways but also of the State, of users, and of other general interests, whose functions are generally to supervise, to lay down general principles for the better collaboration of the units, *e.g.* as regards establishment or alteration of fares or freight rates or wages conditions, the standardisation of rolling stock, the placing of orders for railway line equipment. There was also established a Committee of Direction consisting of representatives of the seven lines which meets weekly to deal with current questions. The financial clauses of the Act included provision respecting the modification of the agreements relative to the redemption of the railways on the expiration of their concessions, methods of assistance for development of their lines, for electrification, for general improvements, and the institution of a pooling or compensatory system of profits indemnification on a basis of bonus payments in proportion to improved working results.

This great railways reform with the accompanying convention of the railways with the State was after a few years followed by

a marked improvement in their financial position. The deficit of 2,046 millions in 1921 was reduced both in 1922 and 1923 by nearly half, to 500 millions in 1924 and 1925, until in 1926 a surplus of 576 millions resulted, although no surplus had been anticipated before a year later. The satisfactory yield of 1926 was indeed due to the artificial stimulus given to the movement of goods and passengers arising from the rapid depreciation of the franc which caused on a large scale the accelerated consumption of goods and services. For the three years 1927-29 the Common Fund showed a final deficit of 68 millions: this result was explained by the fact that under the convention the railways were bound as from 1927 to repay the State about 500 millions each year representing the charge on loans floated to cover deficits of the 1921-26 transitional period and by the fact that the great increase in 1926 of the transport tax precluded the railways, by readjusting railway charges and rates, from making good the annual burden of 500 millions. The situation at once became worse in 1930 with the development of the world crisis, which reduced the profitable foreign passenger traffic and with the increased wages brought about by the practical assimilation of railway workers to State servants. The deficits in 1930-32 are given in a Parliamentary report as 1,781, 3,100 and 4,107 millions respectively; for 1933 the deficit is expected to be 4,422 millions. The Common Fund or pool, which had a deficit of 189 millions in 1929, showed deficits of 1,970 and 5,070 millions at the end of 1930 and 1931: it is anticipated that it will prove to be 13,600 millions at the end of 1933. The difficulties are attributed, disregarding the important causes of the general economic depression and the competition of the road, mainly to the great increase in working costs brought about by the eight-hour day and by the increased wages and to heavy State taxation. The wages bill, which is equivalent to over 60 per cent. of working expenses, amounts to nearly 8,000 millions against 711 millions in 1913; and State taxation on passenger tickets, which was 12 per cent. in 1913, was raised to 32½ per cent. and to 62 in the case of so-called luxury places, whilst for goods the rate became 5 to 10 per cent. against nil in 1913. For the six years 1926-31 the State is said to have received 18,690 millions by way either of taxation or of savings effected in connection with the transport of mail, officials, soldiers, materials, etc. (for example the railways reckon the loss through the carriage of mails alone at 716 millions a year).

In July, 1932, the Government requested the seven trunk railways to examine the question of their unification within the framework of existing legislation and, after an unfavourable reply, repeated their request in September with the further suggestion that a Bill would be required to effect the reform. In reply to the Minister's second proposal, the railways, after drawing attention to the fact that they no longer held their former transport monopoly, recommended as the only remedy for their

financial situation a general reorganisation of transport on the following lines :

- (1) Rational co-ordination of all means of transport, which at present are in a state of anarchy, by putting the railways on terms of commercial equality with road transport and allowing them greater freedom in the matter of rates and of fixing the number and time-tables of their trains :
- (2) Re-organisation of the railway systems by better co-ordination in respect of management and greater utilisation in common of their different services :
- (3) Financial reforms, including an increase in passenger fares to five times the pre-war rate, the reduction of the State tax on passengers to 12 per cent. and also a reduction in the tax on goods, etc.

The railway companies considered that, if their plan were carried out, it would produce nearly four milliard francs yearly, a sum not far from the total deficit of the lines for 1932. An important step towards the realisation of these aims was taken by the signature on the 6th July, 1933, of a codicil to the Railways Convention of June, 1931, which provides for the nomination of two representatives of the State on the board of each company and the formation of a contract committee to consider all proposals (works programmes, orders for fixed or rolling stock, repairs, etc.) involving expenditure upwards of 500,000 francs. A change is made in the method of calculating the management bonus (which, however, is not to come into effect until the results of a working year show a decrease of 1,000 million francs on the deficit for the working year 1932, and modifications to existing specifications and conventions are inserted, to facilitate the adoption of technical and commercial improvements. The conditions under which the State will take back the rolling-stock on the expiration of the companies' concessions are also defined.

The fusion of the Paris-Orleans and the Midi Railways working mainly the West and South-West of France, which had been advocated for many years, largely on account of the close practical co-operation which alone their geographical overlapping necessitated, entered upon the path of realisation in June, 1933. A five-years agreement (renewable by mutual consent) was concluded between them for the purpose of realising a community of financial, commercial and technical interests and of bringing about an extended fusion of their exploitation. Each of the two concerns retains its separate legal identity and keeps separate finance, overhead and maintenance accounts, but the control of the two systems will henceforth be assured by a common council consisting of six directors of the Paris-Orleans company, four of the Midi and two representatives of the State. Decisions respecting programmes of work to be undertaken, orders for rolling-stock, electrification schemes, will rest with this joint council, and throughout the two systems unification will be introduced wherever advantages appear likely to result from working in common. Receipts and expenditure are to be divided between the two companies in agreed proportions, and all new personnel recruited is to be interchangeable between one system and the other.

II. ROAD COMPETITION

Road and Rail.—The French railways, made fully alive in recent years to the danger both to their passenger and moderate distance goods traffic from competition of the road by the ever thicker network of motor coach and lorry services, have entered the motor lists themselves. The P.L.M. runs road services along the Mediterranean coast between Marseilles and Nice, between Evian, Grenoble, Dijon, Nice (Route des Alpes), between Nice and Strasbourg via Grenoble-Besançon, and to many points of interest in Provence, in Savoy, Dauphiny and elsewhere. The motor-coaches of the company's auxiliary, the *Société auxiliaire de transports du réseau P.L.M.*, which was founded in 1929, now serve 26 lines, on three of which passenger trains have been altogether done away with, and cover 4,500 kilometres a day. The Southern Railway has also founded an auxiliary, which at the end of 1931, was running regular services over 2,920 kilometres as against 2,582 kilometres at the end of 1930. Motor coach services are worked from Biarritz at one end of the Pyrenees to Cerbère at the other. Similar action has been taken by the Northern Railway in founding an auxiliary, the *Société de transports automobiles de la région du Nord*. In 1931, its cars covered 2,600,000 kilometres and carried over $1\frac{1}{2}$ million passengers. Auxiliaries of the same kind have been formed by the State, Eastern and Paris-Orleans railways. In another direction the railways are making efforts to meet the competition of the road by issuing tickets at reduced prices for families, as well as for single visitors to seaside and health resorts during the season. They also carry motor-cars at special rates for the benefit of holiday travellers.

Nearly Universal Competition in Region of French Towns.—The combined efforts of the railways are, however, far from matching the competition, ever more keen, that is sapping steadily the former lucrative passenger and goods traffic in the neighbourhood of big towns and regional centres. Although Paris now has fixed and frequent daily motor-bus services from Place de la Concorde or elsewhere to and from numerous towns within a radius of 40 to 50 miles (e.g., Mantes, Chantilly, Coulommiers, Melun, etc.), yet relatively to the total traffic the Paris motor-services are not comparable in importance as absorbers of former railway traffic, with those which ply at places like Bordeaux, Nantes, Biarritz, Lyons, Marseilles, Cannes, Nice, Monte-Carlo, Grenoble and many other places and the innumerable local or county or inter-county services. The Citroën company alone maintains (April, 1933) about 40 separate coach routes to towns in the Paris area, the longest being 75 miles to Rouen and Elbeuf and 70 miles to Orleans, and has numerous others in the

Nantes, Bordeaux, etc., areas. Thus its services from Nantes to and from St. Nazaire (40 miles) and on to La Baule run frequently from and to the centre of Nantes, whereas from 7 a.m. to 7 p.m. there are only seven trains. The fare to St. Nazaire in 1932 was 10 francs by motor coach : by train, Fcs. 28.85, Fcs. 19.45 and Fcs. 12.90, first, second and third classes respectively. In the same region are several other lines *e.g.* to Pornic, to Sables-d'Olonne, etc. In the Bordeaux region the Paris-Orleans has competing motor services to several towns on its main lines, *e.g.*, to Angoulême (73 miles), to Libourne (20 miles), and the Southern Railway has to meet similar competition. The Marseilles-Riviera stretch affords a striking example of the sapping away of railway traffic. In the spring of 1933 there were three concerns running services between Marseilles and Toulon (42 miles by the inland road route), so that between 6 a.m. and 7 p.m. about four motor coaches an hour were running in the daytime in each direction between these centres, besides other frequent services with La Ciotat (20 miles) and Bandol (36 miles), both on the seaboard route. To and from Aix (19 miles from Marseilles) run two or three distinct motor coach services. Between Cannes and Nice (19.3 miles), and thus also serving populous intervening places, cars run every four or five minutes : between Nice, Monte Carlo and Mentone (19 miles) are nearly equally frequent car services. The charges in all cases are far lower : between Marseilles and Toulon 10 francs against Fcs. 30.20, Fcs. 20.35 and Fcs. 13.50 in 1st, 2nd and 3rd class, and between Cannes and Nice 4 to 6 francs (according to the car company concerned) against Fcs. 13.95, Fcs. 9.45 and Fcs. 6.15.

Throughout the country are innumerable services between county towns and smaller localities, very many of which are subsidized by the State or by the county or counties concerned. Thus, in December, 1932, was published in the *Gazette* a decree relative to the counties of the Yonne and the Aube, whereby a contract was approved with the *Société Générale de Transports Départementaux* of Paris for the organisation and working of twenty public bus lines and an annual subvention for 10 years of 250,100 francs accorded. In November, 1932, a similar contract with the same company was made for the Manche county (Cherbourg chief town) for 10 lines for a total subvention of 263,000 francs. In the same month the same company made a contract for the organisation and running of 15 lines in the Meurthe-et-Moselle county (Nancy chief town) for a subvention of 140,000 francs.

Rail Motor Developments.—On these lines of secondary importance speed in travelling and economy have resulted from the institution of rail motor services of passenger coaches fitted with petrol or Diesel engines. The Southern and P.L.M. Railways have been enabled by this means to suppress many

trains run at a loss and to close many small stations; and as signals can be dispensed with on account of the shortness of the distance for bringing the coaches to a stop and the guarding of level crossings becomes unnecessary, in both respects economies are made. The Southern Railway is using eleven coaches made of duralumin, with a seating capacity for 60, a luggage compartment, fitted with a Diesel engine capable of a speed of 56 miles an hour, for the 220 miles of their routes in the area round Mont-de-Marsan. The *P.L.M.* has ordered a score of similar vehicles. The *Est* Railway ordered in 1931 thirty 24-seaters; and the State Railway, having made trials with 24-seater "Michelines" (pneumatic tyred motor coaches with flanged wheels permitting their use on the rail, similar to types already in use in England, Italy and Holland) fitted with 4 or 6 cylinder engines of 20 or 46 h.p., ordered in October, 1931, a number of larger 56-passenger vehicles. Since May, 1932, it has been operating these vehicles on the Argentan-Granville and Argentan-Alençon routes, 82 and 27 miles respectively, to scheduled speeds of $44\frac{1}{2}$ and $27\frac{1}{2}$ miles an hour. The *Nord* Railway is now contemplating the adoption of similar vehicles on its Valenciennes-Douai line ($22\frac{1}{2}$ miles), on which speeds of over 47 miles can be maintained and the journey time lessened from 60 to 30 minutes. The *Est* Railway is still experimenting with three different models capable of seating 24, 40 and 60 passengers respectively, in the Ardennes district, where a regular service has been running since March, 1932, on the route Charleville-Givet-Dinant.

The most important development in this respect in 1933 has been the introduction of rail motor coaches drawn by Diesel electric engines. Unlike vehicles of the "Micheline" and kindred types, which have rubber pneumatic tyres, these coaches have flanged wheels for running directly on the rails. They are capable of carrying between 70 and 80 passengers and $1\frac{1}{2}$ tons of baggage with a speed of 120 kilometres an hour, and their adoption should result in notable economies on sections where the volume of traffic is too small to admit of the profitable working of ordinary trains. Such fuel oil driven vehicles have already been introduced on sections of six railway systems—the *P.L.M.*, Paris-Orleans, Midi, State, *Est* and *Nord*.

III. TECHNICAL PROGRESS

General Advance in Administrative and Technical Efficiency.—The railways reform law of 1921 generated a compact series of measures of administrative betterment and of general co-operation between the seven trunk lines that have tended greatly to increase their technical efficiency in its widest sense. The central railways executive in permanent activity, provided by the institution of the Committee of Direction of the Great Railways, as well

as the statutory Superior Railways Council, were important agencies to that end. Under the impulsion of general tendencies and of these two organisations there gradually came into effect in the ensuing years such measures as standardisation of passenger and freight rates; development of common commercial representation in bigger centres for goods reception, ticket, and general information offices; centralisation of orders for rolling-stock requirements and permanent way materials; standardisation of types as regards equipment (rails, fishplates, sleepers, trucks, locomotives, etc.); uniformisation of signalling methods; decisions to manufacture only metallic rolling-stock, to adopt uniform brake rules, to introduce the continuous brake system, to adopt common norms as regards electric installations for power purposes. These co-ordinating and assimilating measures have given birth to the Conference of Head Engineers (*Conférence des Ingénieurs en chef*) for the pooling of ideas and the realisation of questions of a technical character, and to the *Office Central d'Etudes de Matériel de Chemin de fer*, which has as its two main divisions the *Office Central des Wagons* and the *Office Central d'Etudes de Matériel roulant*. The latter, which has been very active, has practically finished the unification of specifications. As regards purchases of German deliveries in kind, coal and wooden sleepers, the seven systems worked in common, but apparently this practice has lapsed as regards sleepers, and reparations in kind belong also to the past.

In more recent years co-ordination of efforts has become more regularised and more definite. In July, 1930, the Superior Railways Council decreed that all orders for rolling-stock under the 1930-34 railways equipment programme must be drawn up in uniform manner by all the companies: to facilitate specialisation by locomotive and coach builders, orders for material of like design are to be placed, as far as possible, with the same manufacturer. As from October, 1932, was put into operation the common technical supervision (*Contrôle Technique Commun*) whereby each company will supervise the work under execution for other companies in any works served by its lines, for such companies. Arrangements in common for inspection of trains with the same purpose of economy exist at stations where the Paris-Orleans and the P. L. M. systems or the Paris-Orleans and the Southern Railways meet. In many cases working arrangements are in vogue whereby Paris-Orleans trains have running power over the Southern lines (*e.g.*, Bordeaux-Hendaye-Spanish frontier, Montauban-Toulouse-Perpignan-Spanish frontier); and such arrangements will doubtless become more numerous as a result of the agreement between the two companies, mentioned in the section on the Financial Position (page 396).

Station Building or Rebuilding on Large Scale.—To the layman the rebuilding, enlargement, or modernisation of numerous stations, including many important terminus stations in Paris, appear among the chief improvements effected in the last

few years; this work has contributed much to the convenience of travellers and to the technical efficiency of the services. The most signal reconstruction, that of the doubling of the Paris terminus of the *Est* Railway, which was completed in 1931, was urgently required so as to cope with the increase in passenger traffic at this terminus, which had risen from 8 million in 1900 to 25 million in 1930. The surface of the lines of the station and of the station buildings, both ground and underground, have been enlarged, involving encroachment on former city space to the extent of 75 yards over a length of 550 yards and the rebuilding of several bridges. Six new platforms with 12 new tracks were added, making a total of 30 tracks: innovations include a post-office, writing and welcome rooms, baths and other conveniences for travellers. The Paris-Orleans has greatly enlarged its principal station of Austerlitz by the addition of 8 new lines as well as of new warehouses. The *P. L. M.* has added eight passenger platforms at the *Gare de Lyon*. The St. Lazare and Montparnasse stations of the State Railway at Paris were greatly improved and modernised in 1928-31: a scheme involving the expenditure of 700 millions on the latter station awaits decision. The *Nord* station was re-arranged and improved in 1930-31; and certain goods services were removed elsewhere. In the provinces, 500 millions have been spent on the building of the new Maritime station and the rebuilding of the central station at Havre in 1931 and 1932, 165 millions on the Cherbourg Maritime station in 1931-32, and 70 millions are being employed (since 1931) on the enlargement of *Nancy* station. The old station of the important industrial town of Mulhouse in Alsace, in service since 1841, was rebuilt and enlarged in 1932. A new goods station has recently been built at Marseilles. Projects are afoot for providing *Nantes* with a new railway station; and plans have been far advanced for many years for creating a new great station at Lille at a little distance from the present Central station. Between 1922 and 1928, new, larger and well equipped stations have been also built in *Nice*, *La Rochelle*, *Rouen*, *Limoges*; and the numerous war-devastated stations of the *Nord* and *Est* railway systems have also been rebuilt on modern lines. In all the reconstruction work of railway stations for passenger and goods traffic, great attention has been paid to mechanical equipment (electric cranes, electric motors, signalling apparatus, etc.).

Permanent Way Improvements.—Several companies, which already in the years following the war had thoroughly overhauled the permanent way equipment, have been paying in the year 1928-32 again great attention to the renewal of rails, sleepers and points. Thus on the *Paris-Orleans* system in 1929 and 1930 the new sleepers utilised numbered 998,000 and 1,182,400 compared with a normal annual figure of 700,000 before 1914: the increase is partly due to the increase from 21 to 25 or 27 of the number per 16½ metres of rail. The same solicitude for greater security led the *Paris-Orleans* to replace in the same two years 691 sets of

points and crossing of the ordinary pattern by new ones of a special manganese steel. The P.L.M. company is adopting a heavier type of rail, weighing 62 kilogrammes to the metres as against the 48 kilogrammes hitherto employed, and made in 18 to 24 metre lengths. It is expected that the new rail, besides having a longer life, will give greater rigidity of track, and thus enable trains to be run at substantially higher speeds.

Signalling Improvements.—The block system of train control has been much extended in recent years; and other improvements are being introduced, notably the replacement of the semaphore system with its numerous signal shapes and their diversity of significance on different railway systems by a uniform system of signals, luminous by day and by night, and limited to the colours red, yellow, and green. Approved by the competent Ministry in August, 1930, and receiving a "commencement of execution" in 1931, the new system covering 70,000 signals will take from three to five years to realise and is expected to cost 60 to 70 million francs. Centralised electrical control of signals is replacing, on the main lines, decentralised mechanical control; and on the secondary lines telegraphic communication between adjacent signal boxes is being replaced by telephones.

All-Metal Coaches.—The substitution of all-metal passenger coaches for wooden is proceeding with all possible speed in keeping with the common decision of the Railways to construct only such vehicles for passengers. On the *Nord* all the main line trains may be said to be now composed only of metal coaches; and in 1930 over 40 all-metal coaches were delivered to the Southern Railway. In 1929, 1930 and 1931 orders for new rolling-stock to replace worn out or out of date types were very considerable, reaching the value of 1,150, 1,500 and 1,500 million francs respectively; these figures for 1930 and 1931 were double those for 1928 and treble those for 1926-27. The quinquennial programme for 1930-34 allocated 1,060 millions for each of the years 1932-34, but the transformed financial situation may involve reduction: it provided, however, for 700 more all-metal coaches for the *Nord* and 50 for the Alsace-Lorraine system.

Extension of Sleeping Accommodation.—Sleeping accommodation was long restricted to first-class travellers. On the State Railway, which was the first to provide it for third-class passengers about ten years ago, the number of first-class sleepers utilised in 1930 and 1931 was 14,920 and 12,933 respectively; of second-class, 13,586 and 21,290; and of third-class, 16,546 and 29,744. The *Paris-Lyons-Mediterranean*, which recently introduced second-class sleepers on its main services, experienced likewise an increase in their utilisation and a decrease as regards those in the first-class: the same railway announces the inauguration, as from 1st April, 1933, of third-class sleepers in both directions,

Paris-Marseilles-Toulon-Nice, the supplement to the third-class fare being fixed at 75 francs to Marseilles, 80 francs to Toulon, and 100 francs to Nice.

Containers.—Although the container is employed on a large scale in the U.S.A., and over 8,000 are already in use in the United Kingdom, and 3,000 in Germany, its employment in France has not made great headway. The systems serving the chief industrial areas, namely the *Nord* and the *Est*, studied in 1929 the question of having constructed metal frames to hold containers, and as a result of their favourable decision it is understood that steps are being taken to provide for the container traffic.

Technical Advances and Economy in Internal Operations—The railways, aiming at greater self-sufficiency, are relying less than formerly upon external assistance for repairs and other work, and are rationalising their works. Noteworthy savings of time and labour power have resulted from the more generalised use of travelling cranes, the installation of special types of machine-tools, the adoption of the chain system, of the chronographing of operations and other developments. Thus in the *Paris-Orléans* repair shops the average period of immobilisation of a locomotive for general overhauling, including replacement of the hearth and the fire-box, was reduced from 37 to 33 and then to 28 days in 1929-30: much saving of time has been effected by applying the chain system to brake repair on trucks and to similar work, and the methodical planning of work has reduced by 12½ per cent. the time on general repair jobs. The introduction of special machine tools for special tasks has reduced greatly the time spent on machining. The same company has effected a saving of 65 per cent. in time and 50 per cent. in labour by employing the system of toboggans for mixing and distributing coal to locomotives. In the State Railway repair shops, where the chain system and the chronographing of work is practised, the average time for repair to "Pacific" locomotives was reduced from 74 days in 1930 to 50 days at the end of 1931; that for major repairs to goods trucks and guards' vans was successively reduced in 1929, 1930 and 1931, to 129, 99, and 54 days respectively; and a workshop, which repaired in 1930 a monthly average of 12 electric coaches, showed, without any increase of labour force, an average of 20 for 1931. Similar economies are definitely claimed by the *Nord* Railway as a result of reorganisation, more scientific routine of work, and no doubt improved mechanisation, in its workshops at Lille, Aulnoye, Lens, and elsewhere.

Mechanisation devices adopted by railways in recent years include (*e.g.* on the State Railway) the washing of trains by driving them through a tunnel lined with brushwork, the use of machines for pulling up grass and weeds, said to have saved the Railway 11 millions in 1930; the adoption (*e.g.* *Paris-Orléans*) of special

trucks for rail laying, of others fitted with tipping devices for depositing ballast along the permanent way and packing it under the rails, the use of tractors driven by petrol or heavy oil engines to transport gangs of workers (resulting in some cases in a saving of 50 per cent. in labour). At the Perpignan station of the Southern Railway automatic apparatus is used for unloading empty packing cases.

Similar methods have been applied in the commercial or office organisations. Several companies have effected considerable reductions in office staff through the introduction of calculating, accounting and other machines. Certain companies have applied modern methods of cost accounting for keeping closer check on the exact cost of each order put through the repair or construction shops.

Railways Operation.—Attention has been applied to effecting improvements and economies in the actual working. The loss of time and labour involved in shunting operations has been reduced by various measures. At Dunkirk 24 new tracks have been laid for the storage and sorting of trucks in connection with export trade: the *Nord* railway made important extensions and rearrangements of track at Le Bourget in 1929 when, in order to disengage the terminus, it removed the goods services to Le Bourget. Similar improvements were facilitated on a large scale at several other Paris termini where station reconstruction work was undertaken. The building of new stations at places like Havre, Rouen, La Rochelle and elsewhere enabled improved arrangements for the handling of rolling-stock. The adoption of the two-car unit system by the *Nord* and the State railways has eliminated a source of great wastage caused by the running of almost empty trains throughout the day: drivable from either end, they require no shunting, and during the slack hours they can be run as short trains, and extended to 4, 6 or 8 coach trains as required. Progress has been made with the equipment of the continuous Westinghouse brake: it was adopted by the *P.L.M.* system as from August, 1931, and the *Nord* company reports that its use enables a considerable speeding-up of trains—notably of the coal trains from the *Nord* and *Pas-de-Calais* to the Paris area.

French railways have been introducing more and more the powerful locomotives of the "Pacific" and "Mountain" types, which ensure greater speed and regularity in the services. The *Nord* took delivery in 1930-31 of 40 new Super-Pacific engines; the State Railway is to use for the transatlantic boat expresses from Cherbourg to Paris a new type of very powerful engine; and both the State and the *Est* Railways are adopting a new type of 4-8-2 form cylinder compound engine. On seven stretches or routes the trains now regularly effect their journey at speeds of 62.1 to 66.1 miles an hour: on 27 more a speed of 60 miles is maintained and on 129 more one of from 56½ to 60 miles. One

of the most noteworthy runs is that of the Paris-Liège-Berlin express which covers the 147.3 miles from Paris to Jeumont at a speed of 66 miles an hour.

iv. ELECTRIFICATION

Mileage under Electric Traction.—Of the seven main railway companies in France, only two, the *Midi* (or Southern) and the *Paris-Orléans* railways, have electrified any considerable proportion of their total mileage. In 1914 only about 60 miles of railway had been electrified. By 1928 the length of track converted to electric traction had attained 716 miles, giving France the lead in Europe as regards absolute length of line electrified without reference to relative total national lengths. Much progress was made between 1928 and 1932, over 500 miles, or 70 per cent., having been added to the mileage operated electrically on the main railways, so that the total at the end of 1932 was 1,965 kilometres, or 1,220 miles; if lines of secondary or local interest be included, this total attained at least 2,727 kilometres (1,695 miles). Fuller particulars are given in the later paragraphs of this chapter respecting individual lines, but it may be observed here that on the Southern Railway electric trains are now running on four important sections of main line (Bordeaux-Bayonne to the Spanish frontier at Irun, Bayonne to Toulouse, Toulouse to the Spanish frontier at Puigcerda, and Béziers to Neussargues) as well as on nearly all the branch lines running into the Pyrenees, whilst other important branch lines, such as that from Montauban to Sète (170 miles) and the new line from Bordeaux to the ocean port of Verdon (66 miles) are under way. On the Paris-Orléans railway the stretch Paris-Orléans-Vierzon has already been electrified for several years, and is being extended to Brive, whilst other important work is in hand: on the State railway, the greater part of the Paris suburban lines are now operated under electric traction; on the Paris-Lyons-Mediterranean line only a short section on the line to Italy has yet been converted. On the *Nord* and the *Est*, no steps towards electrification have so far been taken, partly because coal supplies are more easily obtainable, the *Nord* serving the chief coal area of France, partly perhaps because an electricity system is peculiarly vulnerable in case of hostilities, partly perhaps because the remaining period of the concessions before the reversion of the lines is deemed to be too short to permit of redemption of the capital outlay, which, in the case of the *Nord* alone, has been estimated at a milliard francs.

Schemes for Future Development.—The programme of electrification drawn up in 1920, but suspended in 1924 after it had been partly carried into effect, related to 5,000 miles of line already

in operation, 220 miles under construction and 270 miles of proposed new lines. In the second half of 1931 a fresh study of the subject was made by the Superior Public Works Council, with a view to pronouncing upon the advisability of resuming the 1920 programme, with or without modifications, both as a stage in the national re-equipment scheme and as a palliative of the growing unemployment. The report, issued in April, 1932, contained suggestions for the electrification within eight to ten years of some 1,865 miles of line, which, added to the 1,645 miles then already working or in course of conversion, would make a total of 3,510 miles, or one-eighth of the total mileage of the seven main companies. The Superior Railways Council considered this report in November, 1932, and, although in general agreement with the conclusions of the Superior Public Works Council, somewhat modified the proposed order of priority; relegating to some future date all the work proposed in the North and East of France and recommending that the following lines, aggregating some 1,500 miles, should be electrified within a period of eight years: Paris-Le Havre (State: 141.6 miles), Narbonne-Port Bou (Midi: 66.4 miles), Brive-Montauban (Paris-Orleans: 101.2 miles), Bordeaux-Montauban (Midi: 128 miles), Tours-Bordeaux (Paris-Orleans: 213.6 miles), Paris-Le Mans (State: 131 miles), and the southern portion of the P.L.M. railway. The preliminary study of this programme by these two committees occupied eighteen months, and it now remains for the individual companies concerned to enter upon more detailed investigation prior to deciding whether the work shall be put in hand. The cost of the complete programme as advanced by the Superior Public Works Council has been variously estimated at from three to six milliards, and much criticism has been launched at it on two main grounds: (a) that such an ambitious programme, requiring a period of 50 years for the redemption of the capital outlay, is uneconomic, since none can foresee the possible developments in transport technique during such a period; and (b) that in the event of war, electric railways would be far more vulnerable than those operated by steam. In view, however, of the very marked stimulus to employment that would be provided directly and indirectly by the launching of such a programme, its adoption seems probable at the time of writing.

Special Advantages of Electric Traction.—The national advantage from electrification arising out of the economy of coal appeals with special force to France, which imports over one-third of its total coal consumption; and the railways find special advantages of a technical kind in its employment. The Southern Railway reported an economy of 285,000 tons for the year 1929, and it is highly probable that with the increased mileage electrified the saving in 1932 exceeded 350,000 tons. The Paris-Orleans line has dispensed with the consumption of about 250,000 tons.

Although there is no published information respecting the corresponding figures for the P.L.M. and the State railways, it may be estimated from the figures of current consumption that their combined saving is in the neighbourhood of 200,000 tons, making 800,000 tons in all. Coal prices have varied widely in the last few years, but taking the limit prices of 130 and 190 francs a ton, there is apparent a gross saving of 104 to 152 million francs. The results of electrification are reported on good authority to be very satisfactory technically: on the Paris-Orleans system the consumption of power per ton-kilometre in 1929 was only 11.5 watt-hours for goods trains, 21 for fast passenger trains and 27 for suburban trains. As regards the locomotives themselves, working expenses are about 30 per cent. lower as a result of economies in lubricants and the suppression of water charges: in other ways they are more economical than steam engines as the latter usually can run only a certain number of hours at a time, require constant overhauling, new boilers, etc., and coal charging. Electric locomotives also start and move more easily and attain greater speeds. Labour costs are considerably lowered (elimination of steam-raising crews, fewer cleaners for engine and coaches, suppression of necessity for stoking, etc.); staff can be made much more interchangeable than was formerly possible; reduced depot charges result from the elimination of the handling, weighing and stocking of coal; there is lessened wear and tear of the rails during starting and stopping; reduction of claims for damage by fires caused by sparks from the engines, and so forth.

Mileage, Rolling-Stock, etc.—The total distance travelled yearly by electric trains in France is some 30 to 35 million kilometres, and includes about one-third of the total traffic on the Southern system, one-fifth of that on the Paris-Orleans, and the greater part of the Paris suburban traffic on the State railway. The cost of electric traction per train-kilometre is estimated by different authorities at from Fcs. 2 to Fcs. 2.90 less than that of steam locomotion, the actual figure reported by one company being Fcs. 2.40. At the end of 1931 there were in service 543 electric locomotives and 370 "automotrices," or passenger coaches with a driving unit incorporated in them. The Southern Railway has since taken delivery of six high-speed locomotives of 3,950 h.p., which on their first trials attained a speed of 90 miles an hour; and at the end of 1932 an order was placed for forty-seven locomotives of 1,780 h.p., intended for use on the Montauban-Sète section of that company's line, which should be ready for electric traction by 1937. The current consumed by the railways is probably at least 400 million kilowatt-hours yearly, equivalent to about two-thirds of the energy consumed in Paris (average 615 million kw.h. in 1929-31), or one thirty-eighth part of the total consumption in France. The cost of current per kilowatt-hour varies, being for instance 27 centimes on the State railway and 34 centimes on the Paris-Orleans. It is probably

lower on the *Midi*, by reason of the abundant water-power resources that company has at its command and the relatively small distances between extreme points on its system.

Electric Power Supplies.—In France the problem of electrification of the railways has been considered as a particular case of the electrification of the districts served by the lines, and the method of high tension direct current has been preferred to the monophasic system used in some other countries. The *Midi* Railway obtains its power entirely, and the Paris-Orléans almost entirely, from their own hydro-electric power stations. The State and the P.L.M. each obtain relatively small proportions of power from their own generating stations, but purchase the bulk of it from outside producers.

The *Midi* Railway owns seven hydro-electric stations in the Pyrenees, three of which date from pre-war days, one from 1919: the remaining three (Hourat, Miégebat and Artouste) were constructed during the period 1920-30. Their combined output amounts to 400 million kw.h. yearly, of which little more than half is consumed by the company for traction purposes, the remainder being distributed to districts within its area, either over its own transmission lines (500 miles of primary and 600 miles of secondary lines) or those of the Union of Producers of Electricity in the Western Pyrenees (see pp. 196-7). Main lines carrying a tension of 150,000 volts from inter-connection between the power stations and Dax, Pessac and Portet St. Simon, and a new line to carry a similar load, now under construction, will link up all these stations with Saint-Victor, a point from which subsidiary transmission lines at 60,000 volts will convey the energy to the sub-stations situated at intervals of 15 to 18 miles along the railway lines. In recent years the company has expended 1,073 million francs on power stations and transmission lines, of which 310 millions were devoted to the construction of hydro-electric stations, 185 millions to the primary lines carrying 150,000 volts, and 578 millions on subsidiary lines carrying 60,000 or 10,000 volts. The company itself does not at present propose to embark upon the construction of any more power stations or transmission lines, but its subsidiary, the *Société Hydro-électrique du Midi*, formed in July, 1929, has adopted the rôle, in collaboration with local industrial interests, of a generating and distributing company. It has already begun the construction of two small hydro-electric stations in the upper valley of the Louron (above Arreau-Cadéac), and has applied for concessions for the harnessing of other waterfalls in the valleys of the Ariège and the Têt. It is planning to construct a transmission line prolonging, from Tour-de-Carol to Villefranche-de-Conflent, the Southern company's own line in the Ariège valley. This new line will bring within the reach of consumers in a part of the Eastern Pyrenees, at present ill-supplied with electrical facilities, current produced by the

stations in the Central Pyrenees. It is estimated that a revenue of some 30 millions yearly will accrue to the company from this extension.

The *Paris-Orleans Railway* obtains its current mainly from the two large hydro-electric stations of Eguzon and Coindre, whose combined output represents some 190 million kw.h. yearly, supplementing this supply, during a brief portion of the year, with power from the thermic station at Gennevilliers (Paris). As mentioned in the separate paragraph relating to this company, two new power stations are in course of construction at Marèges and La Cellette, to be in readiness for the operation of electric traction on the extension from Vierzon to Limoges, now in course of transformation, of the main Paris-Toulouse line. They should yield 322 million kw.h. yearly.

A voltage of 650 has hitherto been employed on the State railway for the actual driving of trains, whereas the other companies use 1,500 volts. The modifications in equipment necessary to enable the State railways to work on a tension of 1,500 volts are now being made, in order to introduce that unification which is necessary before the whole of the railways can be linked up with the grid system now being developed throughout France with the object of a fuller utilisation of the hydro-electric resources of the country.

Progress on Particular Railways.—(a) *Midi, or Southern Railway.*—The presence of abundant water power from the Pyrenees which is within or near its own operating area has enabled this company to adopt electric traction to a far greater extent than the other French railways. At present 1,488 kilometres, or 924 miles, have been converted, and by about the end of 1936 the total should attain 1,852 kilometres (1,150 miles), or 43 per cent. of the company's total mileage. During 1928 electric traction replaced steam on the sections from Pau to Laruns (Basses-Pyrénées) and from Buzy to Bedous on the Western Transpyrenean line. It is also used on the same line from Bedous to the Spanish frontier at Canfranc. In the years 1929 to 1932, the length of track operated electrically was increased by 35, 151, 118 and 79 miles respectively. In July, 1929, the Eastern Transpyrenean line from Ax-les-Thermes to the Spanish frontier station at Puigcerda (27 miles) was put into operation. Of the portion of the same line between Toulouse and Ax-les-Thermes (77½ miles), a short section was opened to traffic towards the end of 1929 and the remainder in March, 1930. Between that date and April, 1931, the line from Bayonne to Orthez, along the foot of the Pyrenees, and the spur lines extending from these towns to St. Etienne-de-Baïgorry, St. Jean-Pied-de-Port, St. Palais and Mauléon were added, as well as a length of eight miles of line encircling Bordeaux. Meanwhile the important

stretch of main line from Béziers in the south to Neussargues (the station, near Aurillac, at which the Midi system reaches its northernmost point in the direction of Paris), which crosses the whole of the Central Plateau from the plain of the Aude to the heart of the Auvergne, was being pushed rapidly ahead; the section of 92 miles from Béziers to Séverac was opened in December, 1931, and the remaining 79 miles in October, 1932. The work on this line, which occupied rather more than two years, was executed with the assistance of German deliveries in kind and cost about 150 million francs. It includes 39 tunnels, whose combined length is $10\frac{1}{2}$ miles; it attains in parts an altitude of 1,053 metres above sea level, and has gradients as steep as 33 millimetres to the metre. By the conversion to electric traction it has been possible to reduce the journey time of trains by 50 per cent.

The next portions of the *Midi* system to be converted to electric traction are the main line from Montauban to Sète (170 miles) and a new line from Bordeaux to the Pointe de Grave (66 miles), the work on which was put in hand towards the end of 1932 and is expected to last five and three years respectively. The latter line, whose terminal point will be at the mouth of the river Gironde, is intended to serve the new advance port for the largest vessels at Verdon, which, already far advanced, should be able to receive shipping late in 1933. Other projects under consideration include the $63\frac{1}{2}$ miles from Espalion to Saint-Flour, in the north-eastern corner of the Aveyron county, and the 55 miles from Montlouis to Quillan, in the Pyrenean district west of Perpignan.

From 1929 to 1930 the distance covered by steam trains on the Southern Railway decreased by 600,000 kilometres, and that covered by electric trains increased by 1,700,000 kilometres. Of a total distance of 34.6 million kilometres, two-thirds were covered by steam trains and one-third by electric. It is expected that by 1934 or 1935 the proportion attained by electric trains will be at least half, and possibly two-thirds, of the total mileage of the company's trains, though it is likely to be some 20 years before the entire system has become converted to electric traction.

In 1929 an economy of 285,000 tons in coal consumption was recorded: by 1932 the saving was estimated to have attained at least 350,000 tons yearly. Not only are direct savings secured through this reduced coal consumption, but an appreciable revenue accrues from the sale of electric power to localities within the area served by the railway. In 1928 the receipts from this source alone were 10 million francs, in 1929 18 millions, and in 1930 21 millions. This field of revenue is capable of considerable development; for instance, as the city of Bordeaux alone is a potential consumer of 100 million kilowatt-hours yearly, this custom would yield, at present rates, an additional five million francs.

(b) *Paris-Orleans Railway*.—This railway has 220 miles of its lines already operated by electric power, 124 miles in course of transformation, and a further 376 miles very likely to be under-

taken within the next eight or ten years: by the end of 1935 it should have 345 miles in all operated electrically, and by about 1941 this total may be increased to 720 miles. The 220 miles already in operation include two short sections in the vicinity of Paris, with a combined length of 20½ miles (branch from Brétigny to Dourdan and the line from Choisy to Orly) on which electric trains have been running for a number of years, and a section of 127 miles from Paris via Orleans to Vierzon, on the main lines as far as Orleans both to Bordeaux and to Limoges and Toulouse, which was completed in 1926. Thus the busiest section of its line—Paris-Orleans (78 miles)—has been electrified for seven years. Since that time the progress of electrification on the Paris-Orleans system has been temporarily arrested by the stringency of financial conditions.

Late in 1930 a decision was taken to give priority to the 72 miles of track from Orleans to Tours (on the main line from Paris to Bordeaux), instead of continuing beyond Vierzon in the direction of Brive, as had been formerly proposed. This work, which was finished in July, 1933, involved the erection of a 90,000-volt transmission line from Chaingy (Loiret) to Saint-Pierre-des-Corps (near Tours), the construction of five substations for stepping down the current to 1,500 volts, the setting of several bridges accompanied in some cases by a lowering of the track levels. The change over to electric power permits an appreciable speeding-up of important main-line trains such as the Sud-Express and the Pyrénées-Côte d'Argent, as well as a general acceleration of train-journey times on the Orleans-Tours section.

The current for the Orleans-Tours section, as that for the Paris-Vierzon section working since 1926, is drawn chiefly from the hydro-electric stations of Eguzon (on the Creuse) and Coindre (Cantal) in the Central Plateau, with generating capacities of 62,000 and 28,000 kw. respectively. For the greater part of the year about half the output of these two stations, which is conveyed to Paris by a 220,000-volt line passing through Chaingy, has hitherto been needed by the Paris-Orleans company for operating the Paris-Vierzon line, the remainder being taken up by the *Union d'Electricité* for distribution to consumers in Paris. In return the thermic stations of the *Union d'Electricité* at Gennevilliers (a northern suburb of Paris) and Vitry (a southern suburb) furnish the railway company with supplementary power during seasons when the output of the hydro-electric stations falls below the requirements for traction purposes.

Contracts for the Vierzon-Chateauroux-Limoges portion (124 miles) of the line to Brive were awarded in 1932, the work to be completed by 1935. The change over to electric traction should result in a saving of one hour in the time of the journey from Paris to Limoges. To provide additional current for operating this line, two new power stations are to be constructed. On

one of them, the Marèges station, two miles from Vernéjoux on the Dordogne, work, begun several years ago, but suspended in 1926, was resumed towards the end of 1932. It will be equipped with four turbo-alternators of 32,000 kw. each, capable of delivering 300 million kilowatt-hours yearly. The other station, La Cellette, at the foot of the Chavanon dam in the Corrèze, designed for a generating capacity of 45,000 kw. and a yearly output of 22 million kw.h., was commenced early in 1933. It is expected that both stations will be finished by 1935, when the Vierzon-Limoges line will be electrified.

If the projects at present under consideration are adopted, the subsequent sections of line to be converted will be Limoges-Brive (61½ miles), Brive-Montauban (101 miles), and the 213½ miles of the main Paris-Bordeaux line which lie between Tours and Bordeaux, which would bring up the total length of line electrified to 1,160 kilometres, or 720 miles, as indicated above.

The distance covered in 1931 by electric trains on the Paris-Orleans system was 9,322,000 train-kilometres, and the tonnage hauled amounted to 5,029 million ton-kilometres, corresponding to 14.5 per cent. of the total distance covered, and 19.4 per cent. of the total tonnage transported, by the company's trains. Current consumption in 1931 was 127 million kw.h., as against 109, 123, 135, and 123 million kw.h. in 1927-1930, respectively. The company estimates that electric traction results in a saving of Fcs. 2.40 per train-kilometre in the cost of fuel, lubrication, upkeep and driving. Electrical rolling-stock comprises five high-speed locomotives for testing purposes, 200 locomotives for passenger and goods trains and 80 "automotrices," or railway coaches with a driving unit incorporated in them. When the new rolling-stock now on order is delivered, the company will have a park of 314 electric locomotives, representing a total power of 526,000 h.p.; while the saving in coal consumption, already amounting to 260,000 tons a year, is expected to be increased to 318,000 tons.

(c). *Paris-Lyons-Mediterranean Railway*.—Of the 6,150 miles included in this company's system it is intended eventually to convert 1,553 miles to electric traction: the total length of line at present operated electrically is 84 miles. Excepting the 18.6 miles of narrow-gauge track in the Mont Blanc district, from Le Fayet to Vallorcine, in operation for a number of years, work has been restricted to the 86-mile stretch from Cuoz to Modane, on the main line to Italy. By reason of the numerous steep gradients, some of which attain 30 millimetres per metre, and the sharp curves (400 metres radius), the advantages of electrical over steam haulage over this stretch are particularly marked. The 16-mile section Chambéry to St. Pierre d'Albigny, commenced in 1923, was opened to electric traction in 1928: in June, 1929, the service was extended by 28½ miles to St. Jean de Maurienne, and early in 1930 by 17 miles to Modane. On the remaining portion between Cuoz and Chambéry, which

lies nearest to Paris and is at much lower levels than the portions already transformed, very little work has yet been done; a sub-station has been built, but the transformation of the permanent way to prepare for electric traction has not yet been undertaken.

According to the latest available pronouncements the next portions of the system to be electrified, after the completion of the Modane-Culoz line, will be the Lyons-Grenoble (75 miles), Grenoble-Veynes (69 miles), Veynes-Marseilles (123 miles) and Lyons-Geneva (105 miles) lines, after which it is proposed to take in hand the line along the Riviera coast from Marseilles to Vintimiglia (161 miles) and the short line connecting Cannes with Grasse (12½ miles). The P.L.M. originally intended to utilise German deliveries in kind for this work.

The power for the line in the Chamonix valley is furnished by the P.L.M. company's two power stations at Servoz and Chavants, on the river Arve, with a combined installed capacity of some 5,600 kilowatts, and that for the Culoz-Modane line by seven hydro-electric stations belonging to the Ugine electro-metallurgical concern, which are situated on tributaries of the rivers Isère, Arly and Arve. By the time the Lyons-Grenoble line is converted to electric traction, the P.L.M. company proposes, in collaboration with other financial and industrial interests of the region, to erect a hydro-electric station which will derive its power from a large fall some 15 miles to the south of Grenoble, with the lakes of Laffrey as a reserve. It is hoped that other stations in the Rhône Valley, whose construction has been projected for a number of years past, will be ready for the inauguration of the electrical working of the Lyons-Marseilles line (220 miles). Unlike the Midi and Paris-Orleans railways, the P.L.M. uses the third-rail system except in large railway stations, where, owing to the risk of danger to the personnel, an overhead cable is employed. The electrical rolling-stock includes 37 locomotives, ranging from 125 to 156 tons in weight and developing from 2,400 to 5,000 h.p.

(d). *State Railway*.—Only 64.6 miles out of a total length of 5,410 miles of permanent way have as yet been converted to electric traction on the State railway, which has hitherto confined its efforts to the Paris suburban lines. On these lines a particularly heavy business and holiday traffic is handled, the number of passengers departing from St. Lazare station alone, during the hour from 6.30 to 7.30 p.m., having grown from 13,000 to 18,000 in 1910 and 1920, respectively, to 52,000 in 1932, while the total number of passengers using this station attains 110 million yearly. Since the opening in 1900, in time for the Universal Exhibition, of the line on the left bank of the Seine, from Paris (Invalides) to Versailles, other lines from Paris (St. Lazare) to Versailles, St. Germain, etc., have been added. The only addition since 1928 is the 9.3 miles spur line from St. Cloud to Marly, which was put into service early in 1930.

The conversion of the main line from Paris to Le Havre (141½ miles) and of the Paris-Le Mans portion (131 miles) of the line to Nantes are among the proposals now being considered. The portion of that line from the Paris terminus to Argenteuil (13.6 miles) will first be pushed forward to completion in order to facilitate the handling of the great volume of suburban traffic. Included in the scheme for the reconstruction of the Paris terminal station at Montparnasse are proposals for the conversion to electric traction of the suburban lines which have that station as their point of departure. It is foreshadowed that the whole of the Paris suburban lines on the State system will be so converted by 1940. It may be added that nothing now remains of the original 1900 equipment on the Invalides-Versailles line, the whole of this installation having gradually been replaced to conform with the more modern practice adopted on the lines subsequently built.

Current is received from four power stations: (a) a thermic station of 7,000 kw. at Moulineaux, constructed by the State railway in 1900; (b) two additional thermic stations of 20,000 kw. each at Nanterre and Moulineaux, constructed about 1920 by the *Union d'Electricité* in accordance with the terms of a contract for supplying the State system with power; and (c) the Gennevilliers station of the same company, with which the State railway is linked up by a large transformer station at Asnières. In order to render possible those substantial economies in coal consumption that would result from a linking-up with the hydro-electric power resources from the Central Plateau which have recently been brought within the reach of Paris consumers (see chapter on hydro-electric production), it is necessary to eliminate the lack of uniformity in the characteristics of power derived from such diverse units (triphase current at 25 and at 50 periods, and at voltages of 5,000, 15,750 and 60,000). To this end, steps were taken in 1929 to modify the existing installations both in the power stations and in the 14 sub-stations from which the current is distributed to the permanent way. (The third rail is adopted on the State system.) Henceforth 50-period triphase current at a uniform tension of 60,000 volts will be received at the Nanterre and Moulineaux stations, whence it will be transformed to 15,000 volts prior to its distribution to the 14 sub-stations which in their turn will step it down to 650 volts. In each of the sub-stations, which have hitherto required a personnel of seven (three 8-hourly shifts of two men, plus one substitute), the installation of automatic devices will enable the whole work to be done by one man, who will merely have to switch on and off the current morning and night. Five of the sub-stations have already been so transformed, and work is proceeding on the other nine.

The electrical rolling-stock of the State system consists of 39 locomotives, used chiefly for goods traffic, and 231 " automo-

trices," or passenger coaches in which a driving unit is incorporated. These are coupled in pairs, with a driving cabin at each end, so that they may be driven in either direction without any need for shunting. By forming trains of one, two or three units of two coaches, the varying traffic requirements of the day can be met without any necessity for running practically empty trains at certain hours. All rolling-stock is constructed of steel throughout. In 1931 the distance covered by electric trains was 5,200,000 train-kilometres, and the tonnage hauled 99,700,000 ton-kilometres.

(c) *Other Railways.*—The other three main line companies in France (the North, the East and the Alsace-Lorraine railways) have not yet adopted electric traction. The relatively brief period still to run before the reversion to the State of the concessions checks the capital outlay on a large scale (estimated, for the *Nord* alone, at about one milliard francs) that the conversion to electricity would involve. There are, however, on the *Nord* system, two short sections of line (22 miles from Douai to Valenciennes, and 46½ miles from Valenciennes to Hirson, on the Franco-Belgian frontier) whose electrification is included in the programme, suggested by the Committee of the Superior Public Works Council in 1931, which is still under consideration by the railways council. Among other electric railways operated in France are one in the Haute-Vienne county, 214 miles in length, serving the environs of Limoges; one of 18 miles in the Eastern Pyrenees and another of 64 miles in the vicinity of Toulouse and Castres, both operated by a subsidiary company of the Midi railway; and a line of 16.6 miles connecting Pierrefitte with Cauterets and Luz, in the Hautes-Pyrénées.

In the absence of complete statistics, it is difficult to ascertain exactly what length of electric railway exists in France apart from the 1,220 miles on the systems of the main line companies. There are, however, at least 475 miles of local or secondary railways so operated, some of them being narrow-gauge.

The Paris and Greater Paris Underground System.—

The most important is the *Metropolitain*, or underground electric railway of Paris, first opened to traffic in July, 1900. Originally a single line, 6½ miles in length, it has now grown to a network serving the whole of Paris and exceeding 78 miles in total length. At the beginning of 1930 it absorbed the separate company the *Nord-Sud*, which, as its name indicates, operated a line running from north to south of the capital. Thus the whole of the electric railways of Paris are now under one control, and a uniform fare is charged (Fcs. 1.15 in first-class and 70 centimes in second-class) for a journey from any one station to any other, irrespective of the number of changes. At the end of April, 1931, the extension of line No. 7 from its terminus at the Palais Royal to the Porte d'Ivry, on the southern boundary of the city, constituted a valuable addition to the transport facilities of a district hitherto none

too well provided in this respect; and a week later the line running below the main boulevards from Richelieu-Drouot to the Porte de Charenton, at the eastern boundary of the city, was put into service. The construction of the former line was regarded as a notable engineering feat by reason of the difficulties to be overcome in tunneling under the river and the risk of flooding at Jussieu Station, situated below the wine warehouses; while the latter line was constructed partly with a view to facilitating access to the Colonial Exhibition. Sixty per cent. of the total number of visitors to that exhibition are stated to have been conveyed by this line.

The extension of two lines within Paris, one of which is expected to be completed by the end of 1933 and the other early in 1935, will increase by 14.9 miles to a total of 93 miles the length of line exploited by the company within the city boundaries, while a further 33 miles outside the city will result from the works enumerated in the following paragraph.

As a contribution towards the solution of the new traffic problem that has arisen with the rapid growth in population of the Paris suburbs, and the consequent necessity to transport far greater numbers of persons to and from their work in the centre, it was decided in October, 1929, to extend the *Metropolitain* beyond its present termini at the former fortifications of Paris, to distances of six to ten miles into the suburbs, with 43 new stations and a total length of 20.3 miles of new lines. Of the fifteen such extensions eventually to be realised, three are already under construction, namely those intended to serve Boulogne-sur-Seine, Vincennes and Issy-les-Moulineaux, and work on the fourth, to Levallois, is to begin shortly. It is expected that the first two will be put into service at the end of 1933, and the third in 1934. All four places are thickly populated working-class districts, and Boulogne and Levallois are also busy centres of the motor-car and engineering industries. It has also been decided that the *Metropolitain* shall absorb into its system the 12½ miles of line, formerly part of the Paris-Orleans railways, which run from the Luxemburg Gardens (near the University of Paris) to Sceaux and Massy-Palaiseau, suburbs in the south. A law of the 10th April and a decree of the 25th August, 1932, have paved the way to the realisation of this project; but owing to the extent of structural alterations needed, as well as the decision to suppress several level crossings, the line will not be ready for operation electrically before 1935. Concurrently with these extensions into the suburbs, it is intended to lengthen the platforms of existing stations from 75 to 105 metres, to enable the use of trains of seven coaches instead of the present five. As this idea had already been put into operation on the new Richelieu—Porte de Charenton line, it was possible to run 7-coach trains on that line during the life of the Colonial Exhibition in 1931.

The *Metropolitain* operates under a concession from the Municipality of Paris, last revised in October, 1929, and entering into effect as from the beginning of 1930. The company receives a fixed sum of 37.85 centimes per passenger carried (subject to certain unimportant variations), pays the Municipality 40 per cent. of the profits realised, and places the balance of revenue, after deduction of working expenses, to the credit of a special reserve account which will accrue to the conceding authority at the end of the concession. The share of the Municipality amounted to 18.4 million francs in 1930, to 20.3 millions in 1931, and about the same amount in 1932. The special reserve account amounted at the end of 1930 to 57.4 millions, but was reduced to 33.6 millions as a consequence of the deficitary results of working in 1931. A loan of 900 millions is being issued to provide the funds necessary for the execution of the numerous extensions. The distance covered by the company's trains in 1931 was 123,179 kilometres, and the number of passengers carried 887 and 929 millions, respectively, in 1930 and 1931. It is claimed that the Paris system has, in proportion to its length, a more intense traffic than the electric railway of any other capital. The number of passengers conveyed per kilometre of line in operation in 1930 was 7,650,000 (declining in 1931 to 7,542,000), as compared with 4,500,000 in Berlin and 3,200,000 in London. Figures for 1930 are not available in the case of New York, but in 1929 the electric railways of that city carried 5,800,000 passengers per kilometre.

Algiers.—On the Algerian State Railways electric traction has been applied for the first time on a length of 67 miles of narrow-gauge line between Duvivier and Oued-Reberit, on the Bône-Tébessa line, which serves largely for the transport of iron ores and phosphates. Current is furnished by a thermic power station in the port of Bône, delivering triphase current at a tension of 90,000 volts, which is transformed to 5,500 volts at two substations situated 40 and 93 miles, respectively, from Bône. As this line includes gradients of 25 per cent. and curves of only 250 metres radius, considerable economies are expected from the adoption of electric power.

Morocco.—In Morocco, where normal-gauge railways have only been in existence since 1922, the work of electrification on the *Chemins de fer du Maroc* has proceeded apace since 1927. In that year electric traction was introduced on two lines, from Casablanca to Kourigha and Sale, 149 miles in all; in the last quarter of 1930 another 44 miles from Sale to Port Lyautey and from Kourigha to Oued Zhem were put into service; in May, 1932, was added the line from Sidi el Aidi to Mecchra Ben Abbou, and the continuation of this line as far as Marrakech, an additional 80 miles, was completed in 1933. The lines employ continuous current at 3,000 volts, the same tension

as that serving for general electric distribution throughout the country. The advantages should be particularly marked in the case of the heavy trains (2,200 tons) conveying phosphate from mine to port, as there is a continuous down-grade of 10 to 12 millimetres per metre in the direction in which they travel loaded, and the adoption of three-phase lines will permit of a recuperation of energy thereon. The power is furnished by three units: a thermic station of 28,000 kw. at Casablanca, a hydroelectric station of 20,000 kw. at Sidi Machou, on the Orm er Rebia, and two small units at Sale and Marrakech, operated by Diesel engines developing 2,800 and 1,500 kw., respectively. There are 425 miles of transmission lines conveying three-phase current, 50 periods, at a tension of 60,000 volts, and 13½ miles carrying current at 22,000 volts, to feed the four semi-automatic sub-stations in which the high-tension current is transformed into continuous current at 3,000 volts for traction. The overhead cable system is employed for the picking up of the current by the trains.

A separate company, the *Compagnie Franco-Espagnole du Chemin de fer de Tanger à Fez*, is engaged in the conversion to electric traction of that portion of its system which runs from Petitjean to Meknès and Fez, a distance of 68 miles, the installation in this case being similar to that employed on the *Chemins de fer du Maroc*.

II.—ROADS

National and Other Roads.—The modern system of "national roads," which was organised on a great scale in the first place by Louis XIV and continued in the 18th century, was much extended by Napoleon I, and also fostered by the Imperial and Republican régimes which succeeded. In 1930, the length of the national highways was nearly 25,000 miles: in 1914 their length was 23,960 miles, but the recovery of Alsace-Lorraine brought an addition of 750 miles of national roadage. Under a decree of 1811 such roads are built and kept up by the State under the control of the Bridges and Highways Department of the Ministry for Public Works. The other classes of roads, which come under the Ministry of the Interior, comprise the "county" roads, the upkeep of which is borne by the county councils; and the local roads, divided into three sub-classes, according to their importance from the point of view of traffic, viz., main communication, common concern, and ordinary. Expenditure on the main communication and common concern roads is borne by the communes with the assistance of the counties, and construction is subsidized by the State, whereas the upkeep of the purely local roads is borne exclusively by the communes, although new construction may be subsidized by the State on the recommendation of the county council. The total length of these local roads is about 414,000 miles, of which 345,500 miles are

"grand communication" and "common interest," whilst 57,500 are purely local (*vicinal*).

Extension of National Roads System in 1930 and 1932.—An important reform was effected by the law of the 16th April, 1930, whereby roads having a total length of 25,000 miles were to be incorporated within three years in the national road system: this change was completely carried out by the 1st January, 1932. The result has been a very considerable increase in State expenditure.

Expenditure on Roads, 1913-1932.—State expenditure on the "national roads," which was 42 millions in 1913, had become 245, 251, 327, 487, 504, 646 and 847 millions for the years 1924 to 1930; in 1931-1932 it amounted to 1,147.2 millions, in 1932 (nine months) to 1,069.8 millions (or 1,426.6 millions for a whole year), and in 1933 to 1,240 millions. The sums earmarked for the ordinary repairs and upkeep of the national roads for 1931-32 were 700 millions for the old system and 200 millions for the additional system as against 524.1 and 375.0 millions respectively for the nine months covered by the 1932 budget.

The State expenditure on other roads, which was 10 millions in 1913, has been 32½ millions in 1924 and 74.8 in 1928: in 1929 and 1930 it rose to 158 and 208 millions respectively.

On the other hand, the counties and local authorities, whose expenditure in 1913 was 200 millions, devoted to this purpose 1,150 in 1924, 1,275 in 1928, 1,400 in 1930, and about 2,000 in 1933.

General State of French Roads.—Much has certainly been done: since the war nearly 40,000 miles have been entirely reconditioned, and over 2,000 bridges built. In parts of Brittany and in the centre of France delay in reconditioning has occurred; but most parts of France show now very good roads so far as national roads and grand communication roads are concerned. The problem of maintenance has become very great as a result of the increase of motor vehicles (from 100,000 in 1914 to 1,835,000 in 1933, besides 525,000 motor cycles and sidecars). The increase in the heavy traffic has been very great. A Parliamentary Report of January, 1931, considered that out of 650,000 kilometres of roadage, 265,000 were in good condition, 225,000 in mediocre and 160,000 in bad condition. Motorists must agree that all or practically all the *national* roads throughout France are now in splendid condition. One may travel from Calais via Paris, Lyons, Avignon, Marseilles to Nice, from Paris to the Spanish frontier via Tours, Poitiers, Bordeaux, or via Limoges and Perigueux, from Paris to Nancy and Strasbourg, from Paris to Nantes, St. Nazaire, La Baule, from Paris to Deauville, Cherbourg, St. Malo, Rennes, from Bordeaux to Toulouse, Montpellier, Marseilles and so on, without meeting any stretches of bad or mediocre road.

The efforts for further improvement are unabated. Thus, on the 1st January, 1928, 15,000 kilometres of national roads were still without tarred surfaces: at the end of 1932 only 2,000 kilometres remained undone. The National Equipment Acts of March and December, 1931, earmarked 580 millions. The Finance Committee of the Chamber of Deputies has estimated that about 500 millions a year should be earmarked for the maintenance of the whole national system. No doubt work remains still to be done in the widening of by-pass roads, the removal of dangerous corners, of level crossings, etc.: the Finance Committee estimates the cost of the full programme at 1,000 millions a year for at least five years, and as this amount would be beyond budget resources, suggests a loan. For level crossings abolition alone much would be required: the number in 1927 was about 40,000, of which about 6,000 were on national roads. In November, 1932, the Ministry of Public Works considered that about 300 should be abolished as an emergency measure at a cost of 600 millions, but that, even with the two credits of 580 millions in 1931 and the grant of the National Equipment Bill for 1933 and 1934, funds were insufficient. Up to the end of 1932, it would appear that only 16 of these crossings had been removed but that for 29 more the resources had been found.

New Roads.—The density of the surfaced road system in relation to the area of France is calculated to be 1.86 miles of road per square mile, compared with 2 miles for Great Britain. The equipment is therefore adequate. The only new great highway under construction in 1933 was the Alps Road (*Route des Alpes*), which is to start at Evian, and pass by Grenoble along the mountain road to Nice. It is due to be completed in 1936.

Special Motor Roads.—The making of special roads, reserved for motor traffic (autostrade) has been broached more than once recently. In October, 1929, the Minister for Public Works declared that he was attracted by the idea of four such roads running from Paris to the cardinal points of the compass and linked up at a distance of thirty or forty kilometres from the capital by a circular road of the same kind. More recently it has been suggested that a Northern motor road should start at the airport at Le Bourget, 8 miles from Paris, and be laid to near Breteuil (Oise), where it would fork into two branches, one running to Lille and the other to Boulogne and Calais. This project has received the support of the Automobile Club of Northern France, but no progress has yet been made in carrying it out. The section Paris-Chantilly and that Lille to Lens have been approved by the High Council of the Ministry. Although the special broad motor roads now familiar near London have not been built, yet a great deal has been done to widen main roads, *e.g.*, in the neighbourhood of Paris and in the North. As a consequence of the persistence of the lines of the straight old Roman roads between many French towns still centres

of importance, and of the existence of the great military roads built in the 17th-19th centuries to connect Paris with the North and East, France was dowered already to an unusual extent with long broad straight stretches of road.

III. INLAND WATERWAYS

Growing Importance of French Waterways.—Both rivers and canals play an important and growing part in the internal carrying trade, notably in the Paris region and in the industrial Northern and Eastern sections of the country. Railways, and more recently motor traction, have not succeeded in France in arresting the development of the inland waterways system. Many substantial additions have been lately made to their capacity and efficiency. The total goods traffic, which was 21 million tons in 1913, only 9 millions in 1921, became 37.1, 39.06, and 41.85 million tons respectively in the years 1925-27, and 53.2 and 52.37 in 1930 and 1931. Despite the bad trade conditions in 1932, the figure was 50.73 million tons, or 3.1 per cent. less than in 1931: in fact the Northern area actually showed an increase of 6.3 per cent. According to a Parliamentary paper of 1932, whilst French waterways carried 53 million tons in 1930, railways carried 331 million and motor lorries 160 million tons. The freight consists mainly of heavy bulk goods such as coal, oil, ore, building materials, fertilisers, agricultural products like potatoes, beet.

Remarkable Developments.—Much progress has been achieved in many respects since the war. The heavy traffic systems are situated principally in the former theatre of war, and wholesale improvements were effected both in repairing the immense damage done, and in meeting more adequately general modern requirements. The inland ports, about 220 on rivers and about 300 more on canals, have been equipped as a rule with up-to-date handling material such as cranes, tips, etc.; the canals have been better banked, many have been widened and deepened in parts, new canals have been built, electric haulage has been greatly extended, the barges have been enlarged and their methods of propulsion mechanised.

State Aid.—Before the end of the 17th century, the *Canal du Midi* linking the Bay of Biscay with the Gulf of Lyons was a testimony of royal interest in canal building, and the French monarchy and Empire in the 18th and 19th centuries promoted canal construction and navigation. Under the Third Republic there were passed into law no fewer than three national waterway programmes (1879, 1903, and 1921). In 1912 the National Office for Internal Navigation was entrusted with the supervision of technical developments, and, especially for the purposes of war

reconstruction, with active participation in the provision of new equipment. The annual State grants have been considerable (in 1927 and 1928 they were 117 and 125 millions).

Inland Navigation Fleet.—

"The 17,460 kilometres of navigable water are frequented by 2,500 boats of various companies, 8,500 belonging to independent owners, 1,500 foreign boats, mainly Belgian and mainly motor driven. Of the approximate total of 12,500 units, nearly 3,500 are metal and about 9,000 are in wood. The vast majority have about 300 tons capacity. The average age of the wooden barge is 30 years; and its cost 60,000 to 120,000 francs. The steel barge or lighter lasts 50 to 60 years, its average price with a motor is 280,000 francs for one of 280 tons: without motor, 150,000 francs for the 280 tons." (Parliamentary Report).

The last quinquennial canal shipping census (May, 1931) recorded a total of 12,730 French barges and 2,506 foreign, against 12,007 and 1,675 respectively in 1926: the number of power-driven boats, which was 748 in 1912, grew in the period from 1926 to 1931 from 1,005 to 2,803. The average load capacity per unit had grown from 256 tons in 1912 to 312 tons in 1931. Mechanical tractors numbered 669, of which 514 were on rails (3.3 feet) and are driven by electricity: 148 are driven by petrol. No fewer than 452 tractors belong to a single company. Towing, which is especially important in the Seine network of waterways, is done by 250 tugs of from 150 to 850 h.p., of which about 40 carry motor engines: in winter they haul up stream 3 to 5 barges, in summer 6 to 12 of different tonnages. Animal traction, although necessary on special stretches, is disappearing. Electric traction is developing rapidly: 431 kilometres are electrified, another 364 are being electrified and the electrification of another 182 is under consideration. Electric traction is in operation for instance on the great canals of the Northern area, on the Rhine-Rhône Canal from Strasbourg to Mulhouse and on its branch to Huningen (84 miles), to be soon on the Marne-Rhine Canal from Dombasle to Strasbourg (84 miles) and on the 53 miles from Frouard to Thionville; and by 1934, boats will be mechanically propelled from Basle, Strasbourg or Thionville as far as Paris, Rouen, Lille, Dunkirk, either towed in groups by tugs, or drawn by tractors on the banks. The most notable recent development is the Diesel or semi-Diesel *automoteur*: in 1923 it was estimated that 50 barges were equipped with the one driving engine and that now they number 1,500. In the last four years nearly 1,000 barges with engines of from 30 to 80 h.p., representing about 300,000 tons and 300 million francs in cost, are stated to have been delivered to small French barge-owners by Belgian, Dutch and German yards.

New Canals in Recent Years.—Metz-Thionville.—The Lorraine metallurgical region had long required (the early plans go back to 1867) for the water transport of its great ore, coke,

basic slag, pig-iron and other products and for the establishment of connection with the existing network of French waterways (especially with the Marne-Rhine Canal and with the Port of Strasbourg), the canalisation of the Moselle between Metz and Thionville. Work on this "Iron Mines" canal, which was carried out with the active participation of the metallurgical interests concerned, was begun in May, 1929; and it was officially opened in August, 1932. The canal runs along the side of the Moselle for certain stretches, but half its length (from the Port of the Orne to the Barrage of Argency) it follows a straight line at a little distance apart from the river. Its length is 19 miles: it allows the passage of 300-ton barges, but is enlargeable to take those of 1,200 tons. It is to have four ports, Metz, Uckange, Thionville and of the Orne: the two former are completed. They will serve the important local iron and steel works directly connected to it, such as those of Knutange, Uckange, Rombas, Thionville, the de Wendel works at Hayange and in the valley of the Orne and of the Fensch. The work, which cost over 200 million francs, was carried out by a special company, but the State in 1928 granted considerable help by allotting German deliveries in kind, by a subsidy and by a participation greater than the company itself made.

Grand Canal of Alsace.—What may not improperly be described as a stupendous work has been accomplished between 1928 and 1932 in the completion of the first section of this canal and of the Kembs power station on the left bank of the Rhine close to the Swiss frontier. It was officially opened by the President of the Republic in October, 1932. The whole project, whose main objects are to ensure regular navigation at all seasons and to utilise the difference in the level between Basle and Strasbourg for the output of electricity, provides for a navigable canal 110 metres broad, parallel to the Rhine for the 76 miles, from Kembs ($8\frac{1}{2}$ miles from Basle) to Strasbourg, along which would be eight stages of level and eight power works giving a total normal power of 650,000 kilowatts. At the Kembs station, where the first turning of the Rhine waters has been completed, the power is 63,550 kilowatts, but to this must be added the 45,000 kilowatts of the Swiss concession. Both the concessions were granted to the *Société Energie Electrique du Rhin*: perhaps it should be explained here that the whole canal project arose out of the rights given by the Versailles Treaty to France on the whole course of the Rhine between the limits of frontiers, and in particular of the exclusive right to the energy produced by the Rhine. The first barrage is three miles from the point of entry of the Rhine into French territory and the Kembs Fall or power station is $3\frac{1}{2}$ miles from the barrage. By the law of July, 1927, the barrage and attendant works must be constructed by the State at its expense, but a large proportion of the cost came out of deliveries in kind (apparently

about 55 million francs in value). Up to the later part of 1931 the State appears to have undertaken liability up to 170 millions, but the total cost of the Kembs scheme is stated in a Parliamentary paper to be about 750 millions. It is claimed that the Kembs station with its six groups of turbo-alternators, each capable of developing 33,000 h.p., can produce 800 million kilowatt hours per year, and is the most powerful in Europe. It will supply power to the whole area east of the Vosges, and will transmit current via Troyes to Paris at 220,000 volts. The realisation of the remaining seven sections, at all events in the near future, is not certain, for several reasons. It is questioned whether there is any possible outlet for the energy which they would produce and whether the reliance of the interior to such an enhanced extent for their electricity supply, on power stations so vulnerable by their situation would be expedient. The opening to traffic of the new canal is of great value to navigation, for at the part of the Rhine which is now avoidable by shipping, lie the Istein bar or rocks, which are dangerous at certain seasons of the year.

Rhone-Rhine Canal.—The canal has been enlarged so as to allow the passage of 300-ton barges from one end to the other. The Alsace and Mulhouse-Huningue sections have been improved. Electric haulage has been installed as well as the electric working of the locks throughout.

Rhone-Sète Canal.—Work on the improvement of this canal, which was interrupted by the war, has now been completed and barges can now go direct from Lyons to the port of Sète on the Mediterranean without transshipment.

Rhone-Marseilles Canal.—This canal, which had as its object to provide a navigable way from Arles to Marseilles via Port de Bouc, the Etang de Berre and the Rove Tunnel, appears not to be completed. Important (and the most costly) sections have, viz.: the Rove Tunnel, the coastal canal from the exit of the latter, and the portion close to the Port de Bouc.

Nord Canal.—This important link in the network of canals in the North, which is to run from near Douai to the river Somme near Péronne and thence to the Oise Lateral Canal, was begun in 1905 and was so far advanced in 1914 that 90 per cent. of the necessary bridges and 75 per cent. of the sluices had then been completed, and that its utilisation was timed for 1917. Its purpose was shortening by 41 kilometres and saving the passage of 23 sluices (the other canal route between the same points, viz. La Sensée-St. Quentin was 140 kilometres and had 42 sluices as against 99 kilometres and 19 sluices) to provide a cheaper and shorter waterway to Paris for the coal from the North. Both canals, but especially the Nord, were badly damaged in the war. It was deemed more expedient to re-establish with the least possible

delay the waterway connection with Paris by the St. Quentin canal as it required shorter time. Efforts were concentrated on the latter, and it can now handle a traffic of 14 million tons (as against 7.8 million in 1913). The present proposals, approved by the Higher Council of Public Works, are to reconstruct the Nord Canal not merely for the ordinary barge of 38.50 metres long and to carry 300 tons of cargo, which would cost 400 millions, but for barges to carry 600 tons, which would cost 600 millions. As this plan would involve increasing the capacity of the canals serving the mines, a further sum of 200 to 300 millions would be required. The final solution is still pending. By August, 1914, 72 million gold francs had been spent of which the Douai Chamber of Commerce was to supply half; that body, which is supported by twelve great colliery companies, has since the war agreed to contribute another 120 millions provided that the State built and maintained the canal. It is stated that a portion of the canal has been repaired and that the destroyed bridges have been reconstructed throughout, but that despite the expenditure of 75 millions on the bed of the canal, about 450 millions more (of which 150 would be found by the public bodies interested) would still be required to make it utilisable for barges of 350 tons.

St. Quentin Canal.—This vital link between Chauny and Cambrai of the Northern canal system is 58 miles long: it connects with the Seine through the river Oise. Reconstructed after the war damage, it is the busiest canal in France, being fed by the traffic of other canals or rivers. Its equipment has been entirely modernised. Electric tractors have replaced horses, and since 1926 electric haulage has been general: 350-400 tractors running on rails are in use. The towing arrangements on the 12½ mile stretch where there is width for only a single line of traffic have been electrified; and the lock gates have been provided with automatic electric control. These innovations are calculated to have increased the annual capacity of the canal from 36,000 to 60,000 barges.

The Oise-Aisne Canal was reopened to navigation in December, 1931. The distance of transport from the Northern coal mines to the East of France is thus reduced by 55 kilometres, and the boats avoid the river Aisne stretch, which in time of torrential rain formed a serious obstacle to the movement of boats. As a consequence of the reopening of this canal coal freight rates to the East were reduced by 6 francs a ton.

Geneva-Rhone-Mediterranean Scheme.—The ambitious scheme for the development of the Rhone from the Swiss frontier to the Mediterranean from the threefold point of view of making the Rhone navigable from Geneva to Arles, for obtaining about one million horse-power from a number of power stations on its

banks, and for irrigating the land on both banks, made a step forward in 1931. A law of the 27th May, 1921, provided that the scheme should be carried out by a single concessionaire or, if that proved impossible, by separate concessionaires for each of the six sections defined therein. Administrative regulations of the 13th January, 1931, laid down that there should be a single concessionaire, the *Compagnie Nationale du Rhône*, the capital being found by public bodies in the Paris district (City of Paris, Seine County, Chamber of Commerce, etc.) by other public bodies interested (counties bordering the river, communes, chambers of commerce and chambers of agriculture), the P.L.M. Railway Company, public utility enterprises, manufacturers and private persons. The company was formally constituted in October, 1932, with a capital of 240 million francs in 240,000 registered shares of 1,000 francs each. The cost of the first part of the programme for the development of the river is estimated at 2,400 million francs and it will, so it is stated on very good authority, be carried out without the need for any financial assistance from the Treasury. The first part of the work, the widening of the Rhone as far as Seyssel, upstream from Lyons, is estimated at 1,200 millions. From Lyons to Arles it is proposed to make a lateral canal which would allow the creation of electric energy: from Arles to Marseilles the canal would go via Port de Bouc and the Etang de Berre.

Atlantic-Mediterranean Ship Canal.—The very old scheme, dating back even beyond the days of Louis XIV, under whom the *Canal du Midi* (from Toulouse to the Mediterranean) was achieved by the engineer Riquet, has again come to the fore, namely, that of the establishment of an adequate waterway for sea-going vessels between the Bay of Biscay and the Mediterranean, to remove the necessity for sailing round Portugal and Spain. The revival is partly due to private initiative with much Parliamentary support, and partly to the casting about for profitable national development schemes in connection with the national equipment proposals before Parliament for the last few years. The distance by waterway between the Atlantic and the Mediterranean is about 500 kilometres, or from Bordeaux to Sète about 430 kilometres. The *Canal du Midi* from Toulouse to Sète which, with 65 locks, is 240 kilometres long, and the *Canal latéral de la Garonne* from Toulouse to Castets near Langon, which, with 53 locks, is 211 kilometres, already provide a waterway for barges. These two canals apparently require a good deal of repair (new bridges, new lock gates, dragging, etc.), but to make them navigable for boats of 300 tons' freight a parliamentary paper quotes the estimate of 112 millions in 1914, or if multiplied by the present prices levels, 672 millions. No estimate is available for the proposal for ensuring navigability up to 600 tons. The recent projects relate to a ship canal of far higher tonnage: some propose providing for boats of 8,000 tons,

others for those of 1,500 to 2,000 tons. The builder of the new Kembs undertaking estimates the cost of making this ship canal, 150 to 200 metres broad and $15\frac{1}{2}$ metres deep for an annual traffic of 100 million tons, at $26\frac{1}{2}$ milliards, without including the equipment of the ports along its banks: and he adds as a caution that Suez cost threefold, and Panama fivefold the original estimates. The Minister of Public Works consulted replied that estimates of projects of 1905 and 1910, converted into present values, for making the canal of the same model as the Suez would be about 31 milliards. Despite the cost, opinion recognises generally that such a short cut to and from the Mediterranean and the Atlantic would be of inestimable advantage. It is calculated that from Brest to Marseilles about 2,500 kilometres would be saved, that ordinary Welsh colliers to Marseilles and Genoa would gain in time 4 days each way. The ship canal idea has its appeal also from the national defence viewpoint, as it would enable moderate sized war craft to pass securely from one sea to the other and increase by one-third the defensive power of the Navy. Other benefits put forward are the giving of employment for half-a-dozen years to 150,000 workers to whom the State need not in that case pay dole, the preservation of the southern ports in the Garonne watershed from the ever-present menace of inundation, the improved trade of the whole area traversed, the gain of the shipping tolls for the passage of the canal (calculated to be from 800 to 1,000 million).

IV. PORTS

1. GENERAL SITUATION

State Aid.—The French State and Parliament have devoted much attention and large resources since 1919 to the improvement and development of the ports, both maritime and river. In 1926, the National Economic Council sketched the broad lines of the policy that should be followed in their regard. Subsequently, its recommendations were approved by the Finance Commission of the Chamber of Deputies and in a parliamentary report on the Public Works Budget estimates for 1930, the total expenditure required on the chief ports was estimated at nearly seven milliard francs, including German deliveries in kind and the share to be borne by the Chambers of Commerce and other collectivities (half would in fact be borne by the Chambers of Commerce and other bodies concerned). In order to finance this programme, a regular annual appropriation of 250 millions was at first suggested but the proposal was not approved. Subsequently, the two National Equipment Acts of the 19th March, 1931, and 28th December, 1931, allocated 75 millions and 530 millions respectively for seaports. The former allocation was intended solely for work of special importance at

the five ports classed as great ports (*grands ports*), namely, Dunkirk, Havre, Rouen, Bordeaux and Marseilles (fifteen others are classed as secondary ports, viz., Boulogne, Calais, Dieppe, Fécamp, Caen, Cherbourg, Le Lège, St. Brieuc, Brest, St. Nazaire, Nantes, Les Sables d'Olonne, La Rochelle, Mortagne-sur-Gironde, Bayonne), whereas the latter allocation, on account of the economic crisis and the need to reduce unemployment, was distributed as follows:—

	Million francs
(a) The five great ports	300
(b) Fifteen secondary ports	175
(c) Small fishing ports	25
(d) Lighthouses and beacons	30

Further appropriations were voted in the 1932 Budget (April-December), viz. 33,750,000 francs for the ordinary upkeep of seaports and 67,500,000 francs for their extension and improvement.

A new National Equipment Bill, which was tabled in November, 1932, earmarked 650 millions for seaports and 40 millions for the extension of the port of Strasbourg, both allocations being spread over the two years 1933 and 1934. Of the total of 650 millions, 180 millions represented the ordinary budgetary appropriations for the two years and the balance of 470 millions was for extraordinary work that would not normally have been financed by the budget. The programme includes improvements and extensions not only at the five great ports mentioned above, but at fourteen other ports as well as at fishing ports.

Total Public Expenditure on Ports, 1919-1933.—The great efforts of the State since the war may be gauged by the fact that from January, 1919, up to April, 1932, it had provided for the seaports no less than 3,586 million francs. "Since the war and more especially since the financial restoration of 1926, the Ministry of Public Works has realised remarkable efforts for the development of our commercial seaports, utilising all manner of resources put at its disposal: normal budget allocation, advances of local bodies repayable by the State, deliveries in kind, exceptional grants for the development of national equipment, funds contributed by local collectivities. In these ways there has been employed from the 1st January, 1919, to the close of financial year 1931-32 (*i.e.* till April 1st, 1932), a total sum of 3,586 millions, not including the investments made by the maritime Chambers of Commerce and the autonomous ports on their handling equipment and on their warehouses." (Senate Budget report No. 303, 1932). The same report notes that, owing to the variations in the value of the franc, the figure of 3,586 millions of francs represents in effect a figure far superior, as the present franc is the result of the law of June, 1928, fixing the gold value at one-fifth of the previous rate. In 1932 (9 months) and in 1933 the State budgets provided 132 and 165 millions for ports.

The investments by public collectivities like the Chambers of Commerce have reached large totals, especially in more recent

times, as the State has only agreed to provide half or less than half of recent programmes. In the Tardieu programme of 1927, out of a total estimated cost of 1,578 millions, the State was to find 749 and the local bodies 829 millions; and for the Rove Tunnel scheme the State contributed about 90 millions, whereas the Marseilles Chamber of Commerce, the City of Marseilles and the County together contributed about 150 millions. To the 3,586 millions of the State should probably be added about 1,500 millions of these collectivities, thus making the total expenditure since 1919 on ports about 5,100 millions.

Predominant Allocation of Improvements Expenditure.—

Owing to the rapid increase in the dimensions of ships, the bulk of the resources have been devoted to the financing of works "not directly productive," *i.e.*, on permanent basic works like deepening of channels and improvement of approach to ports, but "indispensable to allow the ports to receive the most recently launched great vessels of commerce. The investments were all the more considerable because our ports were particularly backward from the point of view of the depth of the channels of access thereto and of their principal basins, and because, save at Marseilles, we had not, at the declaration of war, any port capable of receiving at all tides the largest boats then afloat." It is mentioned as regards Havre that the putting into service of the super Ile-de-France (the *Normandie*, which was launched in October, 1932) will involve the enlargement of the outer port at Havre by the displacement of the southern jetty, and the improvement of the channel by deepening it to 10 metres below the water level (*sévo hydraulique*) and by widening it to 350 metres; and that these works will cost 350 millions. It is likewise mentioned that the large swing bridges required for the modifications of the *Canal de Tancarville* (connected with the Havre harbour) to allow the easy passage of petrol from the port to the refinery will cost 50 millions. The improvement of the Seine estuary, in order to allow better access to Rouen, which was declared to be a matter of public utility by an Act of January, 1932, will cost 430 millions, apart from another 170 millions for the portion of the Seine between the estuary and the port of Rouen itself. Attention is called to the same "not directly productive" expenditure entailed at Marseilles by the construction of the great Rove Tunnel and the Mirabeau basin, at Bordeaux by the deepening of the estuary channel and of the river course (Bordeaux is 60 miles up river).

Large-Scale Improvements in Ports Equipment.—Despite the major expenditure necessitated on such basic preliminary works, French ports have been able vastly to improve their general equipment since 1919. Thus, *inter alia*, Rouen has made repairing docks for ships, built 600-700 metres of quays at Petit-Couronne and Grand-Couronne on the south or left bank of the Seine, has procured through German reparations two floating

docks of 8,000 tons and two of 4,000 tons, all electrically worked, has since 1919 a floating pontoon, electric, capable of moving 60 tons; apart from privately-owned cranes, the Chamber of Commerce has 130 cranes of which 93 electric, 58 electric capstans, a slip of 1,200 tons, etc. In private ownership but under obligation of public service are 94 floating cranes, 17 transfer elevators: whilst mainly in recent years newly-settled undertakings have provided 76 cranes, etc., at the port for their use. Bordeaux has built at Le Verdon a large mole for the biggest ships, reconstructed in masonry the war-built wood quays of Bassens, remade the left bank quays at Bordeaux itself, contributed to the establishment of the petrol port at the Bec d'Ambès, procured through German reparations a 25,000-ton floating dock and installed much other new equipment of various kinds. At Havre, new quays and a new graving dock, floating dock (from Germany), two new warehouses, new electric handling and other equipment of various kinds have come into being. A concessionary firm has dredged a basin 230 metres by 91 capable of receiving at one time two large tankers of 18,000 tons: hard by have been built 33 reservoirs with a total capacity of 125,000 cubic metres; 3 new wet docks about 80 metres long are being undertaken, and 19 more tanks (26,000 cubic metres capacity). At Cherbourg, where a new mole, new dry dock, large maritime station, have all been constructed, work is still proceeding on a large scale. At St. Nazaire a new entrance enabling the largest vessels to enter in the Penhoët dock, said to have cost 70-80 millions, was opened in October, 1932; and largely through German reparations in kind, shore and shipyard equipment on a substantial scale have been installed in the last few years. (It was reported in January, 1932, on official authority, that German deliveries in kind had permitted the realisation of improvements in French ports to the value of one milliard francs, or £11.8 million sterling, at 85 francs to the £). Nantes has also recently executed various port works of importance: a new quay 800 metres long is being constructed, the channel of the Loire has been deepened, 30 new electric cranes are being erected by the Chamber of Commerce and seven 6-ton cranes by the State, so that there are now 64 steam cranes and 125 electric cranes of various capacity. A floating dock of 4,200 tons capacity has been obtained through German reparations in kind, and a slipway (for ships up to 100 metres long) has been installed. In fact it would seem that nearly all the ports of consequence have in the last five years executed considerable improvements of various kinds.

fig. 1. Notable Developments for dealing with Oil Imports.—
of July no single development has been more marked at the
In 1932 such ports in recent years than the increase in the pro-
165 million the receiving, storing, or other handling of oil pro-
The investment in the progress in the use of the motor-
Commerce have passenger vehicles was 1,385,146,

and of goods vehicles 449,400 in 1933 against 473,000 and 245,000, respectively in 1925, whilst sidecars and motorcycles increased from 170,000 to 523,700) and in the employment of oil fuel for marine and other industrial and domestic engines, the imports have grown apace; those of petrol from 1,036 thousand tons in 1925 to about 2,136, 1,979 and 1,715 thousand tons in 1931-33, those of crude petrol from 2.6 to 519, 1,035 and 2,740 thousand tons respectively. The consumption of oil products in France, which was already 3.8 million tons in 1931, will probably have reached nearly 4½ millions in 1932. The State policy of promoting oil refining within France, which was legislatively formulated in an Act of 1928, has speeded up the establishment of refineries, which have very naturally tended to seek sites near the seaports. Besides the Pechelbronn refinery in Alsacé at the seat of the native production of 65,000 to 70,000 tons annually, there have been constructed, or planned, thirteen refineries in France, only one of which, (Courchelettes, near Douai) existed in 1925. Since that date have been constructed on the Seine: one refinery at Gonfreville near Havre with a reported capacity of dealing with 750,000 tons a year, two will soon be working at Port Jérôme about 40 kilometres up stream from Havre, having together a reported capacity of 1 to 1.2 million tons, and to be connected with Havre by pipe-lines and motor barges; and one at Petit-Couronne on the left bank nearly opposite the main part of the city of Rouen, reported capacity of 4,000 to 500,000 tons. At Dunkirk a new refinery of 300,000 tons capacity was inaugurated in September, 1932. One is being erected at Donges on the Loire between Nantes and St. Nazaire. Two have been built on the banks of the Gironde, one on the left bank at Pauillac (30 miles from Bordeaux) and one on the right bank at the Bec d'Ambès (15 miles from Bordeaux, at the junction point of the rivers Garonne and Dordogne). Two very large refineries have been completed on or near the Etang de Berre, near Marseilles: that at Martigues is reported (January, 1933) to be proceeding to enlarge its capacity of treatment to 2 million tons yearly. A refinery is being completed at Frontignan, near Sète, on the Mediterranean. The thirteen refineries are calculated eventually to be able to deal with 4 million tons of crude petrol annually.

Considerable provision has been made for the handling of oil products in these and other ports without refineries. At the present time the predominant oil port is Rouen, whose imports have risen from an annual average of 596,000 tons for 1922-25 to one of 1,360,000 for the years 1929-33. There is the new petrol dock at Petit-Couronne beside the new (October, 1932) refinery, and numerous tanks have been installed: the already existing petrol basin, the greatest in France, is 1,800 metres long, with 8 wharves for sea-going vessels, and the oil storage capacity exceeds 500,000 cubic metres. Port-Jérôme, farther down the Seine, which is attached to Rouen port, will have also its large equipment for

handling and storage. But since its two large refineries came into operation in the late summer of 1933, oil supplies reach Port-Jérôme mainly by pipe-line from Havre. The actual receipts of crude petrol at Havre, including those despatched thus by pipe-line, seem likely to make Havre the port of France receiving the largest oil tonnage. In 1931 it received 502,000 tons, but with the extensive special petrol dock equipment and tank provision, either completed or undertaken, and with the advantages of the pipe-lines into the two Port-Jérôme refineries (instead of its transport up stream) as well as with the needs of the great *Raffineries de Normandie* at Gonfreville near Havre, connected by water with Havre port, the quantities received at Havre for utilisation at these three refineries alone will no doubt considerably exceed the imports of 1932 into Rouen (over 1,500,000 tons).

Dunkirk proposes to create a new petrol dock, the site in view being next the new refinery previously mentioned. Seven petrol concerns having depots at the port received in 1932 over 200,000 tons. Brest, which has plans for the construction of a petrol harbour and works for dealing with 300,000 tons, has already tank depots. The Mediterranean ports have also made special provision for the petrol, fuel oil, etc., traffic. Marseilles, which has imported about 400,000 to 500,000 tons annually in recent years, is destined to receive perhaps three or four-fold that quantity at the out-ports on the Etang de Berre when the two great refineries come into full operation. At Sète, the already large provision for oil will be greatly augmented by the natural development in oil uses as well as by the building of the projected refinery at Frontignan a few miles distant. Pauillac, an outer port of Bordeaux, already receives yearly over 200,000 tons: the recently-built refinery and the other companies there should shortly cause the doubling of that importation figure. On the opposite bank of the Gironde there have long been oil depots at Blaye, whilst in 1931 was terminated the construction of the refinery at Bec d'Ambès (capacity 300,000 tons annually) and, at the same point, of the petrol port which can receive boats of 180 metres in length. Large depots having capacity of 30,000 metres have been erected at this junction point of the two great rivers of the Garonne and the Dordogne. At Strasbourg the State built the Petroleum Basin in 1924-27. At Lyons, the chief port of the Rhone, the reservoirs of Port Rambaud with a storage capacity of 100,000 tons of petrol, are already deemed inadequate, and plans for further storage capacity are under consideration.

II. POSITION OF LEADING PORTS

Marseilles.—The greatest port in France as regards shipping tonnage entered and cleared, with 27.3, 28.8, 30.1, 29.6, 28.9 and 29.7 million tons in 1928-1933. Marseilles has practically a monopoly of goods and passenger traffic with the Mediterranean

seaboard, with East Africa, India and the Far East, is the greatest Colonial port and is the pre-eminent port in France for oil seeds, Egyptian and Indian cotton, Roumanian and Soviet Union cereals and Greek products. In weight, the cargoes entered and cleared in 1928-33 amounted to 7.36, 7.25, 7.81, 8.69, 6.6 and 6.3 million tons. In the same years for Rouen these cargo figures were 6.90, 9.37, 10.0, 8.8, 8.1 and 8.41 millions tons, whereas the shipping tonnage figures were 6.9, 9.0, 9.7, 8.9, 8.8 and 9.2 million tons. The cause of the far higher ship tonnage figures of Marseilles is the large amount of passenger shipping, *e.g.*, those of French, English and other boats to Africa and the Far East. In 1913, 1932 and 1933 passengers numbered 566,000, 669,000 and 668,000. At present the quays of the port have a length of 18 kilometres to handle some eight million tons of goods and it is estimated that within 20 years at least 9,000 metres of new quays will be required. The new Mirabeau dock, started in 1928, now in course of construction, will include three graving docks and an oil basin 500 metres in length and 120 metres in breadth, but will only provide 6,000 metres. As the port cannot be extended to the north beyond the Mirabeau dock, an extension to the south has become necessary, and the scheme for the new Pharo dock has been adopted, which contemplates an outer port with a water surface of 40 hectares and the dock proper with a water surface of 45 hectares, 35 hectares of land for goods, etc., and quays 4,150 metres in length. The estimated cost is 420 millions, of which half is to be borne by the Marseilles Chamber of Commerce. The Senate Committee reported in March, 1932, that with the financing proposed the Pharo scheme may be realised in 20 to 25 years, with the simultaneous improvements and works in the Joliette and Mirabeau basins. The completion of the Joliette, of the Marseilles-Rhone Canal, of the approach to the Etang de Berre, are reckoned to cost 150 millions: the first stage of the Mirabeau basin, 320 millions, the Pharo 420 millions, of other works 100 millions, or a total of 890 millions. The Mirabeau scheme is being executed, and in September, 1932, the first stone of the new mole of the Joliette Basin was laid: a decree promulgated 25th January, 1933, estimated the cost at 73 millions, of which the State is to bear half. An important extra space for warehousing, the creation of a large goods station and other purposes is being provided by the reclaiming now in progress of the waste land at Moureplane, which will provide 40,000 square metres and will be in direct communication with the new basin Mirabeau. The completion of the Joliette, Pharo and Mirabeau schemes with that at Moureplane will increase by over 4 kilometres the length of quays, and by nearly 240 acres the land spaces.

Perhaps the most noteworthy fact in Marseilles port history in recent years has been the systematic development of the outer ports on the Etang de Berre, Etang de Carente, Port de Bouc:

their cargo traffic, 100,800 tons in 1913, was 1,300,000 tons in 1930. The Etang de Berre, which is a land-locked sheet of salt water opening into the Etang de Carente and the Port de Bouc and then into the sea, has a surface of 37,000 acres, is 9 metres deep over one-third of its surface, and is separated from the Mediterranean on its southern side only by the Nerthe hills, through which was made the great Rove Tunnel, 7.2 kilometres long, 22 metres wide and 4 metres deep. The latter was opened to traffic in 1927. Along the Etang side of the Nerthe hill a canal, 8 metres draught for boats, runs to Martigues and the Port de Bouc, and along the Mediterranean shore a protected channel from the Tunnel exit runs into the Marseilles docks. Near Carente, the Port de Bouc and the Etang de Berre have already been established large chemical works, oil refineries, shipbuilding yards. Ample spaces exist in these outer ports of Marseilles for numerous warehouses and factories. About 40 kilometres of quay or wharves, or about $1\frac{1}{2}$ times more than at Marseilles proper, are available; and about 4,400 acres of space, or five or six times more than at Marseilles, can be gained in the shallow parts of the Etang de Berre, apart from the spaces suitable for factories or warehouses on the borders. The main railway system, the Paris-Lyon-Méditerranée, has its line from Miramar to l'Estaque near Marseilles running into the centre of the port at Carente. As the site of Marseilles, lying on folds of hilly ground close to the Mediterranean, does not permit of much extension for storage or business sites in convenient proximity to the sea, it is thought that the spaces in the Etang de Berre region will prove especially useful for the storage of heavy goods destined both for distribution in the Rhone Valley up to Lyons and for consumption or transformation in the Marseilles undertakings. Coal, heavy chemicals, timber, and similar commodities might find particular advantage in this respect, as would industries working up sea-borne raw materials of bulky nature.

Rouen.—Situated on the Seine about midway between Paris and Havre, Rouen, always an important cotton centre, which since the war has greatly developed its manufactures notably chemicals, paper, engineering, has seen its port advance rapidly in recent years. Its traffic in goods has more than trebled since 1913, rising from 3 million tons to 9.4 and 10 million in 1929 and 1930: for weight of cargo handled it is the first port: in 1931-33 the figures were 8.80, 8.09 and 8.41 million tons. The coal quota and the reduction of the importable quantity by varying percentages (firstly, in July, 1931, by 20 per cent., then by 30 and 40 per cent., then by 30 per cent. with reservations) of the average imports of 1928-29-30, naturally affected Rouen as the chief coal importing port. Oil imports have, however, greatly increased. Coal showed 5.18, 5.35, 4.45, 3.47 and 3.49 million tons in 1929-33; mineral oils (1.56 million tons in 1933), phosphates and ores (0.64), wines and spirits (0.73), paper pulp and papers (0.53) and timber (0.32

million). As the seaport of Paris, Rouen tranships much of these imports into motor barges of 800 to 1,500 tons for delivery in the capital. Its importance as the chief oil port of France has already been noted. Its export trade is comparatively small in weight; in the eleven years 1920-30 it ranged from 201,000 in 1920 to 885,000 tons in 1930 (when imports totalled 9,050,000 tons). Principal exports are building material (to United Kingdom), metallurgical and engineering goods (North Africa) and oils and chemicals (French ports). The port equipment is now very complete. The 'instantaneous hoisting power' has been raised from 435 tons in 1913 to 1,100 tons in 1931 (of which 717 on shore and 384 afloat): there are now about 200 shore cranes, 90 floating, 19 large portal or gantry cranes of 8 to 12 tons, with an hourly capacity of up to 200 tons: to this system was joined in 1931 an electric crane of 20 tons. Each of two industrial concerns has also added a gantry crane of 20 tons. In 1932-33 will proceed the equipment of the new quays Petit-Couronne, Grand-Couronne, and Grande Carne, for which gantry cranes of 12 tons and other types and sizes have already been ordered. It is claimed that colliers carrying 3,000 tons of coal can discharge easily within the 24 hours. Provision has been made for ship repairing at the basin at Petit-Couronne where the four floating docks already mentioned are in service.

In the four years 1927-30 the expenditure on port improvements averaged 33 million francs a year. Owing to the vital importance of Rouen during the war very much had been then done in the way of crane and warehouse equipment by the Allies using the port; and between 1920 and 1928 an average of about 12 millions a year had been devoted to improvements. A law of January 11, 1932, declared of public utility a scheme for the improvement of the Seine estuary below the Risle at an estimated total cost of 430 millions, half to be borne by the Rouen Chamber of Commerce. The said scheme, estimated to require ten or twelve years for its execution, represents the completion of the general programme, in course of realisation, to render the port accessible at any state of the tide to vessels with a draught of eight metres. Work is proceeding on the improvement of the channel of the Seine above the Risle. In 1931 and 1932 a number of important extensions were undertaken. In the small Petrol Basin three new wharves were built, also a new mole in the Bassin St. Gervais. Near the harbour of the four floating docks the quay was lengthened by 140 yards. As the oil refinery decided to double its capacity, at the end of 1931 the making of a new basin was started. The new quay of 160 yards for the potash trade, the new quay of 335 metres ("Grande Carne") next to the preceding, the new quay of 295 metres for the paper and other trades contiguous to the new wharves of the Small Petrol Basin—all these, already either completed or in an advanced stage, will form the new Annex (Rouen-Couronne) of the Rouen port.

The other annex, Port-Jérôme, opposite Quillebeuf, which aims almost exclusively at serving the two great refineries already alluded to in this section and which were to be put into operation in 1933, will have a harbour 650 by 216 yards, together with a basin for siding or laying vessels up temporarily. There will be a lock with sluices, and the harbour will be linked to the Seine by a channel forming an outer harbour. Work was started in 1931 with the excavation of the latter, which will serve, pending the construction of the harbour proper, as a wet dock for the loading of refined products into motor barges for distribution in the interior.

Bordeaux.—The Port of Bordeaux comprises not only the port proper of that city on the river Garonne, but also five outer ports: Bassens, a few miles down stream on the right bank; Bec d'Ambès 14 miles farther on the same bank, at the meeting point of the Garonne and the Dordogne to form the Gironde; Blaye 14 miles farther; Pauillac on the Gironde, just half way (30 miles) between Bordeaux and the sea at the Pointe de Grave; and the new deep-water port of Le Verdon, less than two miles from the Pointe de Grave, and 58 miles from Bordeaux. The port became autonomous, like Havre and Strasbourg, in 1924: that is, it passed from the management of the Bordeaux Chamber of Commerce and the supervision of the Ministry of Public Works into an independent legal body with separate finances, whose board of management was entrusted to twenty-one representatives of the Chambers of Commerce of the Bordeaux region, of the State, of the city, of other users, and of its employed persons. The head official and chief engineers, who are paid by the State, are nominated by the Ministry of Public Works from a list put forward by the Board. Colonial products from West and North Africa, the Congo, Martinique, and the West Indies, wines from Spain and Portugal, coal from Great Britain, oil from various sources, phosphates from North Africa, form the major part of its imports. Exports consist principally of wines, pit-props, engineering and agricultural products. In its hinterland the chief industrial centre is Limoges (porcelain, boots), other towns being Périgueux, Toulouse, Mazamet (wool pulling). At Bordeaux itself there are several large engineering or shipbuilding concerns and miscellaneous trades, but apart from wine, pit-props, turpentine, and food trades, few appear to be outstanding or to furnish much seaborne traffic.

At the end of 1930, the oil port of the Bec d'Ambès was completed: it can receive the largest tank steamers. At the same point there was completed early in 1932 the large oil refinery mentioned in this section. A storage for oil supplies has been provided. Parliamentary sanction was given in 1932 for the construction of a branch railway from the Bec d'Ambès to Bassens, about 3 miles from Bordeaux, on the main line from Bordeaux to Paris. Since 1929, great progress has been made with the creation of a deep

water transatlantic port at Le Verdon, on the left bank : the mole, 317 metres by 36 metres, for berthing liners, was completed in the spring of 1933. Vessels can berth at each face of this mole, which is equipped with a harbour station and is connected with the shore by a viaduct carrying two railway lines and a road. With the completion of the mole, Bordeaux is provided with an outer port with a depth exceeding 14 metres at low water, to which liners will have access at any state of the tide by means of a new western entry, that is to have a depth of at least 11 metres below dead low water and a uniform breadth of 600 metres, gradually to be increased to 1,000 metres. Between Le Verdon and Bec d'Ambès are the port of Pauillac, 50 kilometres from Bordeaux and 50 from the sea, and that of Blaye (37 kilometres from Bordeaux and 63 from the sea). The latter deals mainly with coal, pit-props and petrol. The former having deep water was designed originally for the large boats unable to navigate up to Bordeaux, and has a public wharf and other private equipment for dealing with oil and coal. With the completion of the building of the large new refinery at Pauillac and the presence there of other importers of oils, its importance is bound to grow considerably. At Bassens, below Bordeaux, arrangements have been made for the discharging and storing especially of various heavy merchandise arriving in bulk, and notably of cereals. In 1931, 265,000 tons out of 330,000 tons of cereals consigned to Bordeaux were handled at Bassens.

The equipment of the Port of Bordeaux comprises 172 electric, 38 steam and six locomotive cranes as well as four aspirators, two for cereals and two for ground-nuts, with a total capacity of 420 tons an hour. Since 1924, the Port has been very active in getting rid of hydraulic and reducing steam cranes. Private concerns also possess 11 cranes with obligation of public service, so that the total 'instantaneous hoisting capacity' of the 227 cranes is about 850 tons. These include 58 special apparatus for coal, 13 for pit-props, and 13 for colonial timbers. Among the equipment obtained from reparations in kind are the three floating docks of 25,000, 8,000 and 2,500 tons respectively : that of 25,000, which is kept at Pauillac, is to be increased to 35,000 tons.

The total cargo handled by the Port in 1929-32 averaged 4.4 million tons.

Boulogne.—Boulogne is the first fishing port of France and even perhaps of Continental Europe; in 1931 the quantity of fish landed amounted to 72,700 tons as against 65,600 in 1930. It also ranks second to Marseilles among French ports for passenger traffic, mainly cross-Channel. Great improvements were made in the port between 1920 and 1930 at an estimated cost of some 175 million francs and a further programme was authorised by a law of the 27th July, 1930, which provides for the lengthening of The Carnot sea-wall by 525 metres; the construction of a north sea-wall about 2,000 metres in length and the installation within the

south part of the surface thus protected of a mole and two wet-docks for transatlantic, cross-Channel and cargo vessels. The harbour station will be transferred eventually to the mole and boat trains will then pass through the Ave-Maria tunnel, built since the war, to the main line to Paris without slowing down as at present when they pass from the existing harbour station to the town station. Dredging operations are also to be undertaken to improve the access to various parts of the port. The cost of this programme is estimated at nearly 400 millions. Boulogne handled an average of 1.17 million tons in 1929-33.

Havre.—Havre, like Bordeaux, has since 1924 been an autonomous port and is managed by an independent authority. It is, if not the most important, certainly one of the most important ports in Europe for coffee and cotton: about 75, 50 and 55 per cent. respectively of French requirements of coffee, cocoa and of cotton are imported through Havre, which is also the leading French port for colonial woods, and a considerable port for fruits (bananas and apples). The Rochambeau Dock has been especially equipped at a cost of 2.6 million francs for handling bananas: 75,000 stems were unloaded in 1930, but 1½ million in 1931. Canadian and United States apple imports rose from an insignificant amount to several hundred thousand tons. Havre is destined to become a great oil port owing to the erection of the three great refineries at Gonfreville and at Port Jérôme (see earlier paragraphs). It is the terminal port of the *Compagnie Générale Transatlantique* or French Line, and among other lines which have recently made it a port of call may be mentioned the *United States Line*, the *Red Star* and *Atlantic Transport* and the *Baltimore Mail Steamship Company*. A new harbour station was completed in 1933, new deep water quays are being constructed at the tidal basin, and new docks for oil tankers are proposed, work having already begun. The entrance channel is to be deepened and widened in view of the increase in the size of transatlantic liners. The autonomous Port is also following an industrial policy: the meadow lands created south of the Tancarville Canal by the silting up of the estuary are being developed so as to provide suitable industrial sites. The Canal is being deepened to 9 metres, new swing bridges are being installed. A petrol basin for barges and a quay for a large oil company are also being constructed in connection with the Canal. The total cargo handled at Havre averaged 4.62 million tons for 1929-33.

Dunkirk.—Special efforts have been made in recent years by the Port and the railway companies concerned to attract to Dunkirk the large volume of exports of metallurgical and engineering products from the East of France and Lorraine, which has tended to pass through Antwerp. Dunkirk, as the port in close proximity to the predominant centres of the wool, cotton, linen and jute trades, handles these materials in their raw state. A notable im-

portation is linseed, seed crushing being carried on by three Dunkirk firms, one of them normally employing 800-1,000 people. It is also a port of call for a number of French and foreign (German, Norwegian, Japanese, etc.) liners. The docks cover an area of more than 66 hectares and are served by 12 kilometres of quays. The warehouses can easily hold and handle 60,000 tons of goods. There are four floating cranes and four grain aspirators, which can discharge cargoes of cereals at the rate of 100 tons an hour. In April, 1932, a floating dock of 11,000 tons was put into operation, which had been constructed by the *Ateliers et Chantiers de France* at Dunkirk. It was the first time that a large dock of the kind had been built by a French firm, as hitherto such orders had been placed abroad. The definite programme for the improvement of the port to be completed about 1936, and which is very far reaching, includes; (1) the construction of a new outer port; (2) a new western pier and extension of the present eastern pier; (3) a new sea lock; (4) two new sea moles; (5) a new evolution basin; (6) a new dock, No. 6; (7) a new petrol dock; (8) a new barge or lighter dock with a canal linking up the new oil refinery with the inland canal system; (9) a new 11,000 tons floating dock; (10) another floating dock of 20,000 tons, and (11) demolition of the town and port ramparts so as to permit of extension of both: suppression of the existing overflow canal and construction of a new overflow canal to the east of the town. This scheme entails the abandonment of old roads and bridges, and the construction of new, and the filling in of the old canal bed.

These schemes have been already partially realised. Dredging has begun for the new outer harbour works: the new western pier has been begun and the new eastern pier is well advanced: the new lighter dock and branch canal are completed. On the new sea lock (of 280 metres, 40 broad and 8 metres sill) the reinforced concrete is completed on one side and is being begun on the other side: the new evolution basin and the new No. 6 dock are both in an advanced state, but work on these as well as on the graving of the new petrol dock has been suspended. The 11,000 tons floating dock (as mentioned above) was launched in April, 1932: but the proposed 20,000 tons dock has not been yet begun. A large proportion of the cost of these schemes was debited to the German reparations in kind; from the same source was derived much of the new port equipment. The port extension contracts were carried out by three German firms so far as those on reparations account were concerned. From Germany were obtained the numerous cranes, including the two new floating cranes of 120 and 50 tons lifting weight. The port at the end of 1932 possessed 133 electric cranes of $1\frac{1}{2}$ to 10 tons, 53 hydraulic cranes of $1\frac{1}{2}$ to 3 tons, and two (other than the two German) floating cranes of 40 and 10 tons respectively. The Northern Railway has recently installed a new siding of 23 lines. The main siding can now deal with 3,500 trucks daily. The service Dunkirk-Tilbury-London was altered in the

autumn of 1932, when the boats were diverted to Folkestone. The local Chamber of Commerce has been authorised to utilise a part of the yield of the port dues for the building of a harbour station for this service. The cargo handled by the port in 1929-33 averaged 4.62 million tons.

Nantes.—The imports of Nantes, which lies on the Loire 35 miles from the sea, averaged 1.82 million tons in 1929-33, and the exports 0.49 million tons. The former consist mainly of coal (from Great Britain), phosphates, petrol, wines, sugar, timber and various requirements for the agricultural region of both sides of the Loire Valley as far as Tours: the exports consist mainly of iron ores, building materials and agricultural products. Owing to the shallowness of the channel from the sea, the total traffic had sunk in 1886 to 354,600 tons: a maritime canal of 15 kilometres was opened in 1892 and by 1900 the traffic had reached 998,000 tons. The canal in turn became inadequate, and since the beginning of the century the navigable channel has been substantially deepened. Work is being constantly pursued, so that the present navigable depth of 6.50 metres at all tides and of 7.70 metres at good tides may be maintained or increased. Ships drawing 6.50 metres can reach the port of Nantes on 350 days of the year. The channel tends to be particularly unstable below Paimboeuf (27 miles from Nantes, on the Loire and about 9 miles from St. Nazaire), but work on a new channel to give one metre more depth was begun in 1933. The cost is estimated at 60 millions. Nantes port has two separate sections, the river and the maritime sections. Great improvements have been made in recent years *e.g.* reconstruction in reinforced concrete in 1925-27 of two maritime quays (Fernand-Crouan and des Antilles): on the north bank of Pirmil for 1,715 metres quays with a depth of water of 7.50 metres and with full modern equipment were completed in 1928; other quays on the right bank of the Loire, such as Roche Maurice, which has 500 metres for coal, and those of the *Usine Brûlée*, which has 420 metres for petrol products. Above Nantes the Loire has been made navigable up to the river Maine. A tidal basin scheme above Nantes is also being carried out at an estimated cost of 83 millions. Down stream towards St. Nazaire, the port of Nantes has two outer ports: Paimboeuf, used mainly for heavy chemicals and metal goods, and Donges, with deep water, which receives coal for the Paris-Orleans Railway, and oil supplies.

Modern equipment in considerable quantities has also been acquired in recent years, partly through the reparations in kind deliveries. The head of the Public Equipment Department of the Port notes that two new portal cranes of 12 tons each can load in $4\frac{1}{2}$ hours 3,000 tons of ore. In 1931, was provided by the Chamber of Commerce a total of 109 cranes of which 37 were electric: of 30 more electric cranes on order, twelve were installed in 1932. In 1932, the Ministry of Public Works installed 4 new 6-ton cranes: three more were added in 1933. Private concerns have 45 more

cranes in operation at the port. The new floating dock (4,200 tons), and the new dredger with a capacity of 750 cubic metres an hour, were supplied under German deliveries in kind arrangements. The average weight of cargo handled in 1929-33 was 2.3 million tons.

Cherbourg.—Cherbourg, formerly a naval port, has become perhaps the greatest transatlantic port of France. The passenger arrival and departure figures in 1931-33 were 122,350, 83,000 and 58,900; but in 1927-30 they averaged 193,000. In 1932 and 1933 the tonnage entered and cleared was 16.3 and 15.2 against 25.5 million tons in 1930. The financial losses to the port through economic depression in the United States of America have been considerable, the annual tolls having fallen from 14½ million francs in 1927-29 to 8½ and 5½ million in 1931 and 1932. Its importance as a port is likely to be much enhanced on the completion of two deep-water quays (14 metres below the lowest tide mark) of 600 metres each in length, which will allow the largest vessels to berth alongside at any state of the tide. The building of the new and up-to-date harbour station has been completed. Legislative sanction was promulgated by decree of 26th January, 1933, for the State to take over one-third of the cost estimated at 170 millions, for the completion of the Flamand jetty, for the railway to connect the town and harbour station, for the deep-water quays above mentioned at the existing mole, for a second mole with 600 metres of deep-water quays, for certain dock walls, for various dredging operations and laying out of terre-pleins.

La Rochelle - La Pallice.—In order to make La Pallice available as a port of call for transatlantic liners, a mole is being constructed (although work, it is understood, is suspended for the moment) which will provide quay accommodation for a length of 300 metres. A harbour station for transatlantic passengers is to be constructed on the mole, which is to be connected with the land by a metal viaduct 1,120 metres in length and 10 metres in breadth. The cost of the work, exclusive of the necessary equipment, is estimated at 134 millions, to be borne in equal shares by the State and the Chamber of Commerce. It is scheduled for completion in 1937. In order to encourage traffic in cereals, the Chamber of Commerce is reported to have decided, in principle, to build grain silos and to acquire an aspirator for unloading cereals. Cargo handled in 1929-30 averaged 1.03 million tons.

Saint-Nazaire.—At Saint-Nazaire, on the northern bank of the Loire where it joins the Bay of Biscay, have been situated since 1861 two leading French shipyards, at one of which were launched the *Ile-de-France* in 1926 and the *Normandie* (75,000 tons) in 1932. To meet the requirements of such vessels at the port there was undertaken in 1929 and inaugurated in October, 1932, a new entrance consisting of a lock 600 metres in length (350 metres in utilisable length, *i.e.* between the gates) by 50

metres in breadth, closed by two revolving steel gates of 1,250 tons each and capable of serving as a careening dock. Into this dock was brought the *Normandie* after its launching in October, 1932. This work was met to the extent of four-fifths of the estimated cost of 80 millions by the State and of one-fifth by the Chamber of Commerce, and it was carried out by a Hamburg firm under the deliveries in kind arrangements. Full new equipment (cranes, etc.) has been provided for this dock. Dredging operations have also been carried out in order to provide enough water for the new liner *Normandie*. The Saint-Nazaire shipyards are stated to have taken advantage to a substantial degree of the facilities of the Reparations scheme to renew and increase their plant and equipment. It may be noted that hopes are entertained that Saint-Nazaire, which for many years has been the starting point of certain services to Central America, may become a centre of commercial aviation, as it has been for some years a centre for the construction of aircraft. The cargo handled in 1929-33 averaged 0.71 million tons.

Lorient Kéroman-Hennebont.—The imports of Lorient (*L'Orient*) created under Louis XIV. in 1666 as the head port and warehousing centre of the French East Indian Company, are mainly coal from Great Britain (about 230,000 tons in 1930). Its activity relates largely to its shipbuilding and to its old-time character of naval port. A completely new fisheries port, Kéroman, a mile from Lorient on the right arm of the entry to the latter, was constructed on a large scale since the war with protected space for 150 steam trawlers, with three quays, a slipway, cold storage and railway connection. About eight miles up the Lorient estuary is the old port of Hennebont, from which are exported pit-props to Wales.

Strasbourg.—The sole port in the East of France, opposite Kehl on the right or German bank of the Rhine, Strasbourg, which became like Bordeaux and Havre an autonomous port in 1924, has developed in a remarkable manner its traffic and its port equipment since the return of Alsace to France. In 1913 its total goods traffic was barely 2 million tons: in 1921 it had risen to 3.57 million and in 1930 to 5.70 million tons. The last figures placed the port third in France, after Rouen and Marseilles. Imports consist mainly of coal, cereals and oils: out of 3.06 million tons in 1930 they represented respectively 2.05, .53 and .16 million tons, or nine-tenths of the total. Iron ore, potash and soda form nine-tenths of the exports, having been in the same year respectively 1.52, .65 and .11 million tons in a total of 2.63 millions. In 1931-33 the total traffic fell somewhat—having been 5.52, 4.92 and 5.20 million tons respectively: imports of coal and exports of iron ore and potash had greatly declined. Great efforts have been made since 1920 to extend the area and the equipment of the port: they have aimed at enabling it to handle a

traffic of 10 million tons, *i.e.* fivefold the pre-war figures and double the highest figures yet attained (in 1930). Fortification ditches were transformed between 1921 and 1926, at the joint cost of the State and the town, into the Ramparts Basin with 1,300 metres of waterside, which links the two canals known as the Marne-Rhine and Rhone-Rhine; and the new Petroleum Basin, built by the State, was opened in 1927. The Vauban Bassin, 95 metres broad and 2,500 metres long, with over 60 acres of water surface and 5 kilometres of quays, the most important work undertaken, was built by the State between 1927 and 1932. At other parts, such as at the Bassin de Jonction and the Austerlitz Basin, both originally built by the city between 1892-95, transformations were undertaken in 1930. In 1932 the expenditure on all work being executed or to be executed was estimated at about 250 millions, 170 for the port and 80 for the railway lines.

Brest.—Situating on its splendid roadstead, which is five miles long and three miles broad, Brest is essentially a naval port, dependent on the various naval services, the naval arsenal and dockyard, where war craft are built and repaired. Its remote situation at the Land's End of France, at the edge of a thinly populated agricultural area, with other ports such as Nantes, St. Nazaire, Lorient, Roscoff, St. Malo tapping approximately the same hinterland, militates against its commercial development. Its imports, which with 599,000 tons reached their highest figure in 1931, are predominantly coal (225,000 tons), wines, largely from Algeria (104,000 tons), building materials (102,000 tons); and its exports, which have exceeded 174,000 tons but once in the last decade and were 136,000 in 1931, are mainly wines (in 1931, 32,600 tons) and coal (29,000 tons). In 1932 imports were 545,000 tons and exports 152,000 tons: the decrease by 55,000 tons in imports was due to the coal import quota restriction. The chief permanent improvement contemplated is the establishment of a separate section of the port east of the present commercial port (which is itself east of the naval port) which would comprise 40 acres of utilisable open spaces and a petroleum basin. At present the principal work seems to be the creation of extensive utilisable open spaces for future harbour traffic, railway lines, etc., which are being made along the hillside which skirts the roadstead. But its mechanical equipment has been entirely transformed and augmented: thus, from three in 1914, the number of cranes has become 43, of which 33 are electric.

Paris.—In point of tonnage handled, the port of Paris takes easily the first place: in 1930-33 the weight of goods unloaded was 5.1, 5.6, 5.5 and 5.0 million tons respectively, and that of goods loaded 2.3, 1.7 and 1.9 million tons. In the deliveries, coal, building materials, wine, metals, fertilisers, show the largest shares: in the exports, building materials form over half, followed by fertilisers and metals. This traffic is derived not

only from the Seine proper, but also from the Marne, Yonne and other tributaries of the Seine and from the network of waterways, canals and other, which connect the capital with the industrial north and east as well as with other areas. In 1931, of the cargo delivered at Paris Port, 45.2 per cent. came from the Seine between Havre and Paris, 17.1 per cent. from the Oise and the northern canals, 26.5 per cent. from the central counties of the Loire, Allier, etc., 5.2 per cent. from the River Marne. The series of ports which together form the Port of Paris is stated to have a quay length of nearly 70 miles. It includes the Canal St. Denis ($6\frac{1}{2}$ kilometres long), Canal St. Martin ($4\frac{1}{2}$ kilometres), Bassin de la Villette, the Canal de l'Ourcq. The maintenance of the Seine and the Marne and the execution of works thereon for the Port is in the hands of the State, but the City contributes about half of the expense of the improvements (for bridges, ports, barrages, etc.), and owns and operates the Ourcq, St. Denis and St. Martin canals. In general, few sea-going vessels proceed up the Seine beyond Rouen, which is in effect the port of Paris for overseas imports destined for Paris.

Toulon.—An essentially naval port with the most extensive naval services, arsenal, and dockyard, Toulon has little developed its commercial activities. The near propinquity of the great port of Marseilles with its great hinterland of the Rhône Valley and a certain separation of Toulon from its own immediate hinterland by hilly country have not favoured commercial shipping. Toulon has, however, endeavoured in recent years to develop the export of bauxite of which the centre is Brignoles, not far inland from Toulon. The sum of 20 million francs has been voted for port improvements: the P. L. M. Railway is extending its line down to the port, so as to serve the coastal towns between Toulon and St. Raphael.

V. SHIPPING

I. FRENCH MERCANTILE MARINE

Tonnage.—The total tonnage of the French Mercantile Marine, which has not appreciably altered in the last five years, is approximately a million tons more than on August 1st, 1914. The figure then was 2,555,775 tons, of which 561,373 tons represented sailing vessels: the State in that year had no registered commercial tonnage. At the end of 1927 the total was 3,440,616, and in the five years 1928-32 was 3,435,900, 3,447,509, 3,558,064, 3,562,000 and 3,484,000 tons respectively. At the beginning of July, 1933, it had increased slightly to 3,513,000 tons. The sailing vessel tonnage, which was 561,373 tons in August, 1914, and was still 330,109 tons in 1922, had sunk by 1927 to 158,056 tons, and by the middle of 1933 to 43,000 tons. The State-owned commercial tonnage, which in 1920 reached 780,487 tons, but fell in 1921 to 401,491 tons and in 1922 to 105,886 tons, was 42,808 at the end of 1927: for 1929-33 it ranged from 51,365 to 60,800 tons. The State vessels mainly carry goods (coal, etc.) for the State railways, but 15,000 tons are on Colonial service.

In 1931 were added 204,060 tons to the French mercantile fleet, of which 128,411 tons were built in France, 35,470 tons built abroad, and 27,664 tons purchased abroad: in the same year there was a reduction of 143,641 tons, of which 77,150 tons were broken up and 36,919 tons sold abroad. Out of a total of 4,054 vessels on December 31st, 1931, 1,505 were of timber, 173 of iron, 25 composite and 1,482 of steel. The fleet included 1,976 steamers, 183 motor ships, and 1,504 sailing vessels.

According to a parliamentary paper issued at the end of 1931, the French mercantile marine on the 30th June of that year ranked sixth among world fleets after Great Britain, the United States, Japan, Germany and Norway, but slightly in front of Italy and Holland. France also ranked sixth as regards oil tankers (205,222 tons) but second as regards trawlers (128,126 tons) after Great Britain, being followed by Germany. She only stood tenth in the case of motor ships, with 187,803 tons. In the matter of age, the latest returns published in Lloyds Register show that the percentage of French vessels less than five years old in July, 1933, was 16.7, as compared with 14.7 in the United Kingdom, 28.2 in Norway and 20.4 in Holland. According to another authority the French merchant fleet represented 5.09 per cent. of world tonnage in 1931 as compared with 4.72 in 1913. The French percentage of world tonnage for vessels of at least 5,000 tons gross, less than 25 years old and with a minimum speed of 12 knots, was 6.25: for those of at least 10,000 tons, less than 10 years old and with a minimum speed of 15 knots, 5.85: and for those of at least 15,000 tons, less than 5 years old with a minimum speed of 18 knots, 5.65. The corresponding German percentages in 1931 were 5, 5.78, 10.70 and 15.98 respectively. These figures are an indication of the large proportion of older units in the French merchant fleet, particularly as regards cargo vessels.

Tonnage Idle.—From the beginning of 1931 there was a steady increase in shipping laid up in French and Algerian ports, which from 229,111 gross tons on the 15th January of that year rose to 1,092,889 tons on the 1st September, 1932, or nearly a third of the whole merchant fleet. Of the 392 ships lying idle at that date 29 (252,798 tons) were liners, 226 mixed passenger and cargo or cargo vessels (813,272 tons), 42 sailing ships (11,280 tons), and 95 other craft (15,539 tons). From January 15th, 1933, to January 15th, 1934, the French tonnage laid up in French and Algerian ports declined from 1,015,074 to 887,000 tons; at the latter date, of the 373 vessels, 30 (232,00 tons) were liners, 185 (624,370 tons) mixed cargo and passenger, and 42 (10,100 tons) sailing boats. The idle tonnage represented therefore at the beginning of 1934 no less than 24 per cent. of the total French tonnage.

Subsidies.—The following State subsidies for the carriage of mails by French shipping companies were voted in the 1934 Budget Law, the sums voted for 1913, 1928, 1931-32, 1932 (nine months only) and 1933 being given for comparison:

STATE SUBSIDIES FOR THE CARRIAGE OF MAILS.

(Amounts in thousand francs).

	1913	1928	1931-1932	1932 (Apr.-Dec.)	1933	1934
A. Corsica— (Cie. Fraissinet)	550	7,500	15,000	10,000	12,400	12,300
B. Far East, Australia, New Caledonia, East Africa and Eastern Mediterranean— (Services Contractuels des Messageries Maritimes)	15,018	51,500	114,000	107,500	143,300	143,300
C. New York— (Cie. Gén. Transatlantique)	6,000	7,500	4,000	16,902	160,000	150,000
D. West Indies and Central America— (Cie. Gén. Transatlantique)	4,878	8,000	9,500	19,000		
E. Brazil and the Plate— (Cie. Sud-Atlantique)	2,578.85	14,500	48,645	50,000	48,000	44,000
F. Algeria	1,563.6	nil.	nil.	nil.	nil.	
Total	30,588.5	89,000	191,145	203,402	263,700	349,600

Shipping Companies.—On the 31st December, 1931, there were 14 companies owning more than 50,000 tons of shipping, five of which owned more than 100,000 tons and two (the *Compagnie Générale Transatlantique* and the *Messageries Maritimes*) over 600,000 and nearly 500,000 tons respectively. The following table shows the tonnage of the fleets of the fourteen leading companies at the end of 1931 as compared with the end of 1930 and 1921; October, 1932, figures are inserted for the chief companies:—

	(In 1,000 tons)			
	1932 (Oct.)	1931	1930	1921
Cie. Gén Transatlantique	673	619	612	473
Messageries Maritimes & Soc. de Services Contractuels	487	487	475	356
Chargeurs Réunis	327	327	310	251
Cie. de Navigation Paquet	—	107	91	49
Cie. Gén de Transports Maritimes à Vapeur	—	103	110	91
Cie. Auxiliaire de Navigation	—	75	75	38
Cie. Française de Navigation à Vapeur Cyprien Fabre	—	74	74	78
Cie. de Navigation Sud-Atlantique	—	73	38	83
Cie. Havraise Péninsulaire	—	67	62	80
Cie. du Chemin de Fer P.L.M.	—	65	65	58
Cie. P.O.	—	56	56	68
Soc. Navale de l'Ouest	—	55	55	64
Cie. Algérienne de Navigation	—	50	44	—
Cie. Fraissinet	—	50	55	30

In 1932 the three largest companies controlled, therefore, directly a total of 1,487,000 tons, or, as the 73,000 tons of the *Sud-Atlantique* are worked directly by the *Chargeurs Réunis*, a total of 1,560,000 tons. The *Transatlantique* appears to have or have had participation in other concerns having fleets of 150,000 or more tons in all, so that its general influence extended over more than 820,000 tons. The March, 1928, formal working agreement with the *Chargeurs Réunis* under the title of *Union Française d'Armement* increased moreover that general concentration influence, seeing that this agreement of mutual support was announced to be one which would allow them, from the commercial and industrial point of view, to exercise common action, whilst retaining entire financial and administrative independence. The *Chargeurs Réunis* in their turn made an agreement with the *Messageries Maritimes* as regards a main line of traffic, that to Indo-China. The intertwining of directorate relationships of navigation companies appears most intricate, and probably indicates the carrying into effect of understandings on general or specific policy between so many undertakings that a very high

degree of concentration is achieved. The *Messageries* appears closely linked with the *Compagnie Fraissinet* in that the latter has on its board three directors of the former: the *Chargeurs Réunis* has on its board the president of the *Fraissinet* board, whilst its managing director is a director of the *Transatlantique*, and the said managing director is a director of the *Compagnie Paquet* on whose board is a director of the *Transatlantique*. The *Société Marseillaise de Trafic Maritime* shows two directors from the *Chargeurs* and two from the *Fraissinet* board. On the board of *Les Armateurs Français* are directors of the *Transatlantique* (two), of the *Chargeurs Réunis* and of the *Services Contractuels des Messageries*, the last-named, which is run by the *Messageries Maritimes*, having on its board a director of the *Transatlantique*. Co-operation is carried out on a considerable scale also as regards working in Paris. In the Paris offices of the *Chargeurs Réunis* are found the *Sud-Atlantique*, the *Compagnie Fraissinet*, the *Fabre Lines (Société Générale de Navigation à vapeur)*: in those of the *Messageries Maritimes* are the *Services Contractuels des Messageries Maritimes*, the *Compagnie de Navigation Paquet*, the *Société de Navigation à vapeur France-Indo-Chine*.

Close Connections of Shipping and Shipbuilding Concerns.

—The shipping and shipbuilding companies appear to maintain very close relations. Thus, the *Transatlantique* was in fact up to 1900 the possessor of the yards at St. Nazaire known as Penhoët, which then became a separate concern under name of *Société des Chantiers et Ateliers de Saint-Nazaire* and in 1901 also acquired the *Chantiers de Normandie* near Rouen. This company, having now the greatest yards in France at Penhoët, has remained in closest relations with the *Transatlantique*, and built its greatest boats (*Ile-de-France*, *Normandie*, etc.). Mutual influence was maintained by mutual exchange of directors. Certain financial difficulties were reported to have affected the shipbuilding company as a result of the financial failure of the *Transatlantique*, which owed it 141 millions. *Penhoët* has as its president the vice-president of the *Transatlantique*, one other director being vice-president of *Sud-Atlantique* and director of *Chargeurs Réunis*. Other shipbuilding companies, like the *Chantiers et Ateliers de Provence*, *Société Provençale de Constructions Navales*, *Société des Ateliers et Chantiers de la Loire*, *Ateliers et Chantiers de France*, have on their boards one or more directors of the biggest navigation companies.

As Carrier of French Overseas Trade.—The latest official statistics available show that in 1932 imports and exports combined amounted to 78 million tons, of which 47.08 per cent. were carried by sea and 51.92 per cent. by land (railways, inland waterways, etc.). As regards sea-borne goods, 89.64 per cent. were carried in French and 60.86 in foreign bottoms. The percentage carried under the French flag was much higher in the

case of exports than of imports, viz., 63.92 as against 35.59. In 1929 the percentages were 57.62 and 37.49 respectively. French shipping is in a more favourable position as a carrier of goods from and to France's overseas possessions, since in 1932 out of total imports of 5.4 million tons, 75.85 per cent. were borne in French bottoms and out of total exports of 4 millions 86.76 per cent.

Since 1930, the general economic crisis, the fall in freights, high customs duties and, more recently, restrictive measures adopted in France in the form of import quotas and exchange compensation surtaxes, have combined to cause a grave crisis in the French shipping industry. The decline of France's export trade is particularly serious for shipowners. No class of shipping is more affected by the general depression than the fleet of tramps, which are chiefly used to convey United Kingdom and other foreign coal to France and French and Algerian ore to Great Britain, Holland and Germany. Both outward and homeward freight is scarce on account of the depression; French industry consumes a smaller quantity of coal and bunkers are less needed in consequence of the number of vessels laid up. Thus, the fleet of French colliers, which numbers 154 units with a gross tonnage of 413,000 tons or 12 per cent. of the whole mercantile marine, was doing fairly well until the beginning of 1931. In 1930 it carried to France 5.2 million tons of coal out of a total of 15.0 millions introduced by sea, although it should be observed that the percentage of seaborne imports of coal carried by French colliers has fallen steadily from 58.91 in 1926, the year of the coal stoppage in the United Kingdom, and 43.43 in 1927 to only 33.73 per cent. in 1930 in spite of a no less steady increase during the same period in the total quantity imported by sea. During the whole of 1931, the situation grew worse, particularly after the publication on the 10th July of a decree establishing an import quota for foreign coal. Further difficulties arose in September with the suspension of the gold standard in the United Kingdom and in November when the French Government imposed on goods imported from Great Britain and other countries with depreciated currency an exchange compensation surtax, assessed on the value of the goods at the port of discharge including freight, even if they were carried in French bottoms. The result may be illustrated by the fact that as early as October, 1931, all but two of the 20 colliers registered at the port of Nantes were laid up. It is widely claimed by French opinion that the most patent single cause for the decline of French shipping traffic has been the depreciation of sterling, which has made French freight rates relatively too high, and worked to the advantage of the United Kingdom and of those other nations whose currencies have followed in its wake and which are sea carriers. As regards coal freights, however, other causes have operated: the ordinary coal importer does not want single loads of more than 1,500 to 2,500 tons at a time, but

it would appear that there are few French colliers of such dimensions, their tonnage being say from 3,000 to 4,000 or more tons.

Changes in Shipping Services.—In 1929 the *Cie. Générale Transatlantique* started a Baltic service from Havre to Riga and Gdynia in Poland, but it was given up in 1931 on account of the stoppage of Polish emigration to America and France. The same company has also suspended its North Atlantic service of cargo vessels to New York, Philadelphia and Baltimore and its line from Bordeaux to New York. Since 1930 the company has worked its Havre-North Pacific service with modern mixed passenger and cargo vessels. Results have been satisfactory and even in 1931 there was a decided increase in the number of passengers carried to or from Europe. In October, 1932, the company decided to take passengers on the six cargo vessels running to Gulf ports either direct or via Cuba and Mexico. The chief ocean companies have also followed English and other example in establishing extensive "cruises" services (*e.g.*, North of Europe, Atlantic, Mediterranean, Africa). Connections with Corsica have been improved by the *Cie. Fraissinet*, which in June, 1929, and May, 1930, put into service two fast mail boats built in Germany on reparations account. A regular steamship service between Nantes and Portugal with calls at Oporto, Lisbon and Setubal was started in January, 1931, by the *Cie. Nantaise de Navigation à Vapeur*. In 1932-3 various curtailments or suppressions of sailings have been effected on the main Transatlantic French lines whether to North or South America, as well as on the main services to Africa and Asia, as a consequence of the paucity of passengers and the shrinking of goods traffic. In Cross-Channel traffic changes and reductions of services have been numerous. The Dunkirk-Tilbury service became the Dunkirk-Folkestone, and in the latter part of the year ran only thrice weekly. The Havre-Southampton likewise curtailed its services in both directions from six to three per week. The Nord Railway reduced its Paris-London services via Boulogne.

II. SHIPPING COMPANIES

The serious financial situation of the leading company, the *Compagnie Générale Transatlantique* (share capital: 279 million francs), caused the introduction at the beginning of July, 1931, of a Government Bill whereby the State guaranteed a loan of 160 million francs to be issued by the company in consideration of 56,512 shares with plural voting power, which gave it control. The Bill not having been also passed by the Senate before the recess, a repayable advance of 160 million francs was granted on the 31st July to the company by presidential decree, and the shares mentioned above were transferred to the State. On the 3rd August,

1931, at a general meeting of share-holders the reorganisation of the board of directors was accepted and a new board appointed, who had virtually been selected by the Government. Two government commissioners were also appointed to supervise the company. The Senate declined to pass the Bill voted by the Chamber of Deputies, but an agreement was finally reached between the two Houses on the terms of a law promulgated on the 3rd March, 1932, which authorised the Minister for Finance to grant the company, in the form of guaranteed advances within the limit of 110 million francs for six months as from the 1st January, 1932, but subsequently extended to the 28th February, 1933, by a law of the 13th January, 1933, the sums required for the working of its lines. A later law of the 9th April, 1932, authorised the Minister for Finance to guarantee on behalf of the State the service (interest and redemption) of a loan to be floated by the company within the maximum limit of 66,748,000 francs in order to complete ships building (i.e. the liner *Champlain* and two cargo vessels). In consideration of the guarantee the real property and ships of the company were mortgaged to the State. It should be mentioned that the great liner, the *Normandie*, building at St. Nazaire, did not come within the scope of the law, as work on her was being financed in accordance with the terms of a previous enactment of the 16th April, 1924. The accounts of the company for 1931 showed a loss of 368.9 millions, a sum which with the loss for 1930 of 30.4 millions made a total debit balance of 399.4 millions.

On the 20th July, 1933, two laws were enacted, one for the reorganisation of the company and the other to approve a new convention between it and the State. The former authorises the Minister for Finance to guarantee on behalf of the State the service of a loan to be floated by the company to a maximum amount of 150 million francs, in consideration of which the State is to be given a mortgage on the buildings or vessels of the company and to receive the securities held by it as security. Further, the company's articles of association are to reserve for the State the right to appoint a number of directors in proportion to its share of the capital, but in no case less than one-third of the total. The State is also to be represented on the committee of management. Lastly, the Minister for Finance is authorised to accept a reduction in the State's claims on the company *pari passu* with that made in other claims with the same rank and to agree to the claim being converted into new preference shares or founders' shares (*parts bénéficières*). The other law approves a convention to remain in force for fourteen years as from the 1st January, 1933, which provides that the State subsidy may in no case exceed 150 million francs, nor fall below 50 millions. The sums actually voted in the Budgets for 1933 and 1934 were 60 and 150 millions respectively.

The scheme for reconstruction is on the following lines. The liabilities of the company, which amounted on the 31st July last

to 1,707 millions, are to be written down to about 1,000 millions, the capital disappearing altogether and the bonds being reduced from 362 millions to 143 millions. The redemption of and interest on these liabilities at their new figure in future years will require an annuity of about 95 millions. The capital of the reorganised company, fixed at 160 millions, will not consist of new money, but of so-called preference shares allocated to badly secured creditors, who will be treated as follows: 40 per cent. of their claims are lost altogether, 20 per cent. will be paid in the new preference shares and the balance in "parts bénéficiaires A." The old shareholders—the share capital was 279 millions—will receive "parts bénéficiaires B." The holders of either class of "parts" are to have no vote at the general meetings. Like the holders of the preference shares, they will only be remunerated when the State subsidy of 150 millions is not entirely absorbed by the financial charges (95 millions) and the deficit on working (estimated at 55 millions). The holders of the preference shares will be paid a dividend of 5 per cent. as soon as possible, and this would occur if the total deficit was not more than 142 millions. If the total deficit fell to 134 millions, the State would still pay the subsidy of 150 millions and the eight additional millions would be used to pay an additional dividend of 2 per cent. to the preference shareholders, absorbing 3,200,000 francs, and the balance (4,800,000 francs) would go to the holders of A. and B. "parts," treated on the same footing. From the moment when the total deficit together with the 16 millions distributed to the shareholders and holders of "parts" was less than 150 millions, the State would not pay the whole subsidy of 150 millions, but the amount required to cover the deficit and the distribution. The proposed reconstruction of the company, which is of a very drastic kind and involves heavy sacrifices for the creditors and shareholders, was voted in October, 1933. The Minister for Mercantile Marine, who drafted the proposals, defended this solution of the problem on the ground that the shareholders should be aware that it was far better than the risks attending the liquidation of the company. The present share capital is 216 millions.

The two other principal shipping groups, the *Messageries Maritimes* and the *Chargeurs Réunis* have also suffered heavily from the grave economic depression that has affected not only the French overseas possessions but also the other areas—the Far East and Central and South America—with which their main passenger and goods traffic is conducted. Both one and the other have also suffered cruel disasters in the loss in 1932 by fire of their most splendid and modern vessels, the *Georges Philippart* and the *Atlantique*. As regards the financial situation of the *Chargeurs Réunis*, whose capital is 100 millions and debentures 260 millions, receipts have gradually dwindled from 502 millions in 1926-1927 to 425, 408, 407, 351, 253 and 214 millions in the six following financial years: the last 1932-33, was therefore only 42½ per cent.

of that of 1926-27. The years 1928-30 showed net annual profits of about 25 millions, but in the three succeeding years only 3.8 millions, 6,400 francs and 26,600 francs (in 1932-33 nevertheless expenses were reduced by 96 millions compared with 1930-31). The *Messageries Maritimes* (capital 80 millions, own debentures 84 millions) which works mainly with Africa, India, Oceania, Indo-China and the Far East, showed for 1931 an excess of expenditure over receipts of 3.8 millions against an excess of receipts in 1930 of 4.4 millions. The company, which reduced working costs in 1931 by 14 per cent., suffered loss like others, from the considerable freight rate reductions, as well as from shrinkage of cargo and of passenger traffic: 1932 resulted in 326,000 francs profit.

VI. AVIATION

State Furtherance of Aviation.—In 1926 the Ministry of Commerce had taken from the Air Department, which formed part of the Ministry of Public Works, the general control of civil aviation, but in October, 1928, an independent Ministry of Air was established with the control of naval, military, colonial, and civil aviation. Since that event State furtherance, which in France as in other European countries had been energetic since the war, assumed greater dimensions. From 1920 to 1932 the total budgetary appropriations amounted to 12,011 millions, of which 9,043 were assigned to military, naval, and colonial, and 2,968 millions to civil aviation. For the eight years 1920-27 the total amount of allocations averaged 612 millions, within which the civil aviation figures averaged 145: for the five years 1928-32 these averages, so far as ascertainable, appear to have become 1,817 and 470 millions respectively. The 1933 and 1934 budgets provided 1,996 and 1,654 millions, respectively, for the Air Ministry. In recent years the home services allocations include large sums for development purposes: *e.g.*, in those for 1931-32, 126 millions for research, experiments, manufacture of prototypes, 171 millions for installations. The civil aviation appropriation then included 196 millions for subsidies for air transport companies; for the nine-months budgetary period April-December, 1932, and in the years 1933 and 1934, these subsidies were entered at 156, 192 and 160 millions respectively.

State Aid to Air Transport Companies.—The following five air navigation companies received State subsidies in 1932:—

- (a) *Compagnie Air Union*, capital: 14 million francs, operates the Paris-London, Paris-Marseilles, Marseilles-Tunis and Tunis-Bône services: has a ten-year contract with the State, signed in 1925.

- (b) *Compagnie Aéropostale*, capital: 45 millions: had a ten-year contract with the State, signed in 1924, and worked the Toulouse—Casablanca—South America and Marseille—Algiers services, but as a result of the financial difficulties, which are described below, it filed its petition, and the contract terminated. The lines are being operated under the charge of the liquidator.
- (c) *Compagnie Internationale de Navigation Aérienne*, or *C.I.D.N.A.*, capital: 8,250,000 francs—has a contract with the State, dating from the 30th April, 1931, and valid for three months but renewable by tacit consent. It works the Paris-Istanbul, Prague-Warsaw, Belgrade-Sofia-Istanbul and Paris-Basle-Zurich services.
- (d) *Compagnie Air-Orient*, capital: 22,400,000 francs: works the Marseille-Bagdad, Bagdad-Saigon, and Bangkok-Saigon services: like the *C.I.D.N.A.*, has a three-month renewable contract, dated the 9th May, 1931. Under a convention approved by decree of the 12th August, 1932, the Government General of Indo-China undertook to subscribe 24,000 registered shares of 250 francs each out of the 110,400 shares to be issued so as to increase the capital by 27,600,000 francs.
- (e) *Société Générale de Transport Aérien*, capital: 10,000,000 francs, which has also a three-month renewable contract, dated the 18th May, 1931, works the Paris-Amsterdam service jointly with the Dutch *K.L.M.* company, the Paris-Cologne-Berlin and Paris-Saarbruck-Frankfurt-Berlin services jointly with the German *Lufthansa* and the Cologne-Malmö service with the Belgian *S.A.B.E.N.A.* Since December, 1932, merged in the Air Union.

New Legislative Regulation respecting State Aid.—

In 1929, the then Minister for Air proposed to reorganise French civil aviation by constituting four great air systems, Eastern, Continental, South American and Trans-African, each of which was to be worked by one company, enjoying a monopoly in its section. Bills to give effect to this scheme were either tabled or drafted, but none of them has been discussed in Parliament. Two Government Bills were subsequently (November, 1930, and February, 1931) introduced in Parliament, one fixing the terms on which the Air Minister may subsidize air navigation companies and the other providing for the foundation of a company under the style of the *Société Africaine d'Aviation Marchande* (*S.A.D.A.M.*) to work a service between France and her more distant African possessions, such as Madagascar. These two proposals were combined by the Chamber of Deputies and the Bill, thus passed, was considered by a special commission of the Senate; and after subsequent amendments by the Chamber and the Senate was passed into law on the 6th December, 1932. Its essential features are the following:

- (a) The State reserves the right to work air lines itself and to subsidize others without debarring non-subsidized companies from starting lines.
- (b) The amount of the appropriations for the payment of the subsidies to air companies provided for in the different conventions with the State, as well as of the State's participation in their capital, is to be fixed every year by the budget law.
- (c) Conventions may not be concluded for a period of more than 15 years but are renewable for the same maximum period during the five years previous to their expiry. They are concluded after appeal to competition, but the Air Minister may treat with a company already holding a concession when it expires.
- (d) Subsidized air lines may only be worked by joint stock companies, formed under French law, of which the chairman of the board, the

managing-directors and general managers must be of French nationality and approved by the Air Minister, and at least two-thirds of the directors must also be French. All the shares are to be registered and their transfer is subject to the approval of the Air Minister.

- (e) The State is represented on the board of directors or managing committee, if one is instituted, by a number of directors corresponding to the number of capital and founders' shares which it holds in ratio to the total number of such shares. In the event of the capital being increased later, the proportional number of the State's representatives is to be at least equal to what it was when the convention was put into force.
- (f) The State in consideration of the various advantages which it gives to subsidized companies is to receive founders' shares equivalent to 25 per cent. of the total number of shares. It may also, if authorised by law, subscribe to the capital shares and participate in increases of capital.
- (g) The subsidies are to be given in a lump sum and fixed separately for each line. The rate may be reviewed at the end of five years in the case of contracts for more than five years, and at the end of the second year in the case of contracts for five years or less.
- (h) No issue of bonds may be made by a subsidized company without the permission of the Ministers for Air and Finance.
- (i) Subsidized companies may not take or keep an interest, whether direct or indirect, in any enterprise or contract relating to aviation in France or French overseas possessions, but with the Air Minister's permission they may take and keep an interest in enterprises or contracts connected with their own activities and for the sole object of ensuring the good working of their concession.

State Encouragement of Touring Aviation.—In order to encourage the development of touring aviation two orders were issued by the Air Ministry in 1930, one for the foundation of a touring aviation commission, the main duties of which are to distribute and control the bounties referred to below, and the other fixing the terms on which bounties for the purchase and upkeep of touring machines would be granted. These bounties, also applicable to the Colonies, which are fixed by rules taking account of the number of seats in the machine, the power of the engine, the strength of the construction and of the materials used, and, lastly, whether the order is given by a club or a reserve pilot, cover about 50 per cent. of the cost of the machines, and, as from the hundredth hour of flight, 30 per cent. of the hourly cost. This means that the purchaser pays for a 100 h.p. two-seater from 25,000 to 30,000 francs, according to the type, and spends about 200 francs per hour of flight.

The result of this scheme was that in November, 1930, 135 machines had been ordered from French manufacturers, entailing the allocation of bounties to the amount of 4,600,000 francs out of 5,000,000 francs voted in the budget. The appropriation, which is now voted every year, amounted both in 1932 (Apr.-Dec.) and in 1933 to nine million francs, part of which was to be devoted to aeroplanes for medical purposes. In October, 1933, the total number of machines that had been acquired with the help of these bounties was 671, viz. 441 by individuals and 230 by clubs.

International Co-operation.—In January, 1932, it was officially announced that a transport committee had been set up by the Franco-German commission of co-operation to consider the best means of improving by collaboration the economic yield of the French and German air lines, and that the French Government were prepared to consider with the British and Italian Governments the conclusion of similar understandings. It has been suggested that economies might be realised by Franco-German co-operation in the case of French lines covering the same routes as German internal lines, and that an agreement might prevent competition between the two countries in South America. A Franco-Czechoslovak agreement concluded in May, 1925, and completed by an additional protocol signed in June, 1930, which have been ratified by the Czechoslovak and by the French Parliament, settled questions concerning air navigation from France to Central and South-Eastern Europe via Prague. It provides that up to the 31st December, 1935, both Governments shall subsidize a single company, in fact the *C.I.D.N.A.* (see above), for the services Paris-Prague, Prague-Bucharest via Vienna, Budapest and Belgrade and Prague-Warsaw. The company holding the concession is bound to order a certain proportion of its material in Czechoslovakia. Reference has been made in other parts of this section to the practical co-operation in the operation of French air connections in South America, Italy, Belgium, Holland and elsewhere.

Fusion of French Aviation Companies.—Since the compilation of the notes on separate companies, which appear in this section, a revolutionary reform has been introduced into the structure of the French commercial aviation system: the five aviation companies were merged on the 19th August, 1933, in a new air transport company *Air France*, with a capital of 120 million francs. With the unification of working methods and the adoption of a policy of rationalisation, it is to be expected that great improvements will be effected. It will be possible to allocate aeroplanes to the different lines in accordance with the varying requirements of the traffic, to provide greater comfort and facilities for passengers, and to effect considerable economies through the elimination of overlapping services or departments and the grouping of orders for materials and equipment. All the trading departments are now centralised in the offices of the former *Air Union* company, thus enabling passengers to make their arrangements with a minimum of displacement. One important facility provided by this new dispensation is the mass production of machines of standardised types. The recent period of intense experiment has enabled the establishment of many fundamental improvements; and it is considered that the corollary to the centralisation of the commercial side of aviation will be the concentration within a brief period of the manufacture of aircraft in the hands of half-a-dozen great firms.

French Air Traffic.—For transport within France itself the air services do not appear to be utilised to the same extent as in

certain other countries, nor would it seem that individual ownership of aircraft for private use has become the hobby of many. Perhaps the internal service most utilised at present by passengers is between Paris, Lyons, and Marseilles. The Air Union, which runs this service, as well as the Paris-London, Paris-Geneva, Marseilles-Ajaccio-Tunis, and (formerly) Tunis-Bône, amalgamated in December, 1932, with the *Société de Transport Aérien* (Farman line), which operated, in some cases in conjunction with native concerns, the three services Paris-Brussels-Amsterdam-Hamburg-Copenhagen-Malmö, Paris-Cologne-Berlin, and Paris-Sarrebruck. Both the *Air Union* and the *Société de Transport Aérien*, as well as others cited in this paragraph, are now, of course, merged in *Air-France*. On the line Marseilles-Ajaccio-Tunis about 1,000 passengers were carried both in 1931 and 1932, and from Marseilles to Paris 3,000 and 4,300 respectively. The Air Union in the year ended March 31st, 1932, carried on all its services 26,861 passengers as against 22,339 in 1930-31 (a financial year of 15 months): of these 13,950 and 11,202 respectively had been carried on the Paris-London route. In weight, goods rose from 1,229 to 1,490 tons, but mails fell from 73 to 55 tons. In 1932 this company carried a total of 31,106 passengers and 1,354 tons of goods. The Farman Company carried 15,262 passengers in 1931 (14,094 in 1930), 642 tons of goods (629 tons) and 57 tons of mail (58 tons). The *Compagnie Air Orient* carried a total of 234, 382 and 640 passengers in 1930, 1931 and 1932 respectively. In the same three years 3.2, 7 and 25 tons of goods and 3, 10.5 and 11.3 tons of mail.

Certain French Lines into Foreign Lands.—A new weekly air line from Paris to Madrid with calls at Bordeaux and Biarritz, operated by the *Compagnie Générale Aéropostale*, was run for a time but was suppressed in 1930. The same company has been working since August, 1928, a regular line between Marseilles and Algiers under a convention with the State, which provided for a tri-weekly service in both directions. In 1931 thirty passengers used the service and the quantity of freight and mail carried was 5.7 and 12.8 tons respectively, a substantial increase in the case of mail on the figures for the previous year. There is a considerable saving of time by this air route, as the distance between Marseilles and Algiers is covered in five or six hours as compared with twenty-six by the ordinary fast mail steamer.

The two lines from Oran to Alicante and from Casablanca to Oran were suppressed in 1928 for financial reasons, and a line from Bône to Ajaccio, connecting there with the Antibes-Tunis service, was abandoned in November of the same year for want of public support. At the annual conference of North African governors held at Tunis in June, 1931, a resolution was passed recommending the opening of an air line from Tunis to Casablanca with three flights a week in each direction, which would be an extension of the service from Tunis to Bône that has been worked by the Air Union since July, 1929.

Since the beginning of June, 1929, the *Société Anonyme Air Orient*, known until July, 1930, as the *Air Union (Lignes d'Orient)*, has been carrying mail from Marseilles to Beirut (Syria) via Naples, Corfu and Athens, under a convention with the State of the 7th February, 1929, and at the beginning of 1930 the service was thrown open to passengers and freight. An agreement between France and Italy empowered French aircraft to use Naples and Castellorizo, an island off the south-west coast of Anatolia, as ports of call for this service. In January, 1931, the company started a regular mail service in each direction between France and Indo-China, which was fortnightly until May, 1932, and thereafter weekly. In the fine season the journey takes seven and in winter eight days. The terminus will probably be moved from Saigon to Hanoi towards the middle of 1934. In order to carry on its service to Indo-China, the company raised its capital to 22,400,000 francs and, as authorised by a presidential decree of the 11th September, 1931, the Government-General of Indo-China in August, 1932, participated to the amount of six millions in a further increase.

The *Compagnie Internationale de Navigation Aérienne* works a daily service from Paris to Constantinople via Strasbourg, Nuremberg, Prague, Vienna, Budapest, Belgrade and Bucharest, with branch lines from Prague to Warsaw (daily) and Belgrade to Constantinople via Sofia (tri-weekly). From Constantinople an extension runs to Aleppo and Colombo. In May, 1931, the company opened a new line from Paris to Zurich via Basle, worked in conjunction with a Swiss air company.

Air Connections with the Far East.—The *Compagnie Air-Orient* is contemplating the extension as far as Hong Kong of its services, which already reach to Indo-China. It was stated by the Reporter in the Senate on the Civil Aviation Bill in December, 1932, that it was all the more necessary for the Company to prolong definitely its line at least as far as Hong Kong, because the air connections by way of Siberia were interrupted, and China was no longer connected with Europe by air. With this object, the Company had increased its capital from 22 to 50 millions. Its entire material would be renewed, and the Fokker machines, which were stated no longer to meet its requirements, would be replaced by the new French models Wibault and Dewoitine.

Proposed Franco-Belgian Trans-African Line.—In 1929 a Franco-Belgian agreement was signed for the joint working of a Trans-African air line as from the 1st October, 1932, by a French and a Belgian company, but hitherto the scheme has not materialised. The Belgian company, the Sabena, already exists, 51 per cent. of the capital being held by the State, and has acquired the necessary material, but the French company has not yet been designated by the Air Minister. A Bill providing for the foundation of a company under the style of the *Société Africaine*

d'Aviation Marchande (S.A.D.A.M.) was tabled in 1931 and passed by the Chamber of Deputies after it had been combined with the more general Bill to settle the status of air transports companies (see above), but the Senate considered that the question of the African line should be reserved for a separate proposal and at the time of writing no further progress has been announced as regards French participation in the scheme.

French Aviation to and in South America.—The South American air line worked by the *Compagnie Générale Aéropostale* runs from Toulouse via Tangiers and Casablanca to Dakar, where the mail and freight are transferred to despatch boats and thus conveyed to Natal in Brazil, whence they are carried by air to Rio de Janeiro and Buenos Aires. It is hoped eventually to replace the despatch boats by flying-boats. The line from Dakar to Buenos-Aires was opened for traffic on the 1st March, 1928. In 1931, 256 passengers, 6.3 tons of freight and 31 tons of mail were carried on the France-French West Africa-South America service. Receipts from the carriage of mail rose from 2.8 million in 1928 to 9.5 millions in 1929 and 19.9 millions in 1930. The service is weekly in both directions: its duration, at first 16 days from Toulouse to Buenos Aires, has now been reduced to a few hours over seven days. At present the crossing of the Atlantic by despatch boat requires 96 hours, but it will be made in about 21 when flying-boats are put into commission. In May, 1930, an experimental flight was made from St. Louis du Sénégal to Port Natal in Brazil in 20 hours. The flying-boat carried 200 kilos. of mail. The South-American service was extended to Chile in November, 1928, letters taking eight to nine days from Paris to Santiago instead of about twenty-five to thirty.

The French company concluded mail contracts with the Argentine, Chilean and Uruguayan Governments. Through auxiliaries it worked air services from Buenos Aires to Ascension (Paraguay) and to Patagonia (Tierra del Fuego) and from Santiago (Chile) to Lima (Peru) with a branch to La Paz (Bolivia). It also contemplated a line from Natal (Brazil), where the main line reaches South America, to French Guiana and the French West Indies. A line across Venezuela from Maracaibo to Ciudad-Bolivar and Maturin was already being operated at the moment of the crisis in the company's affairs, which is mentioned below.

In 1931 the company met with serious financial difficulties and in March it was put into liquidation. The Government intervened and by a law of the 31st March, 1931, in order to allow the operation of the company's lines to continue, a special credit of six million francs was granted, the Air Minister being also authorised to make advances not exceeding one-fifth of the subsidy paid during the twelve months previous to the promulgation of the law. In June the board of directors delegated its powers to a managing

committee of four, which was to work in conjunction with a committee appointed by the Government to exercise technical and financial supervision and which was to remain in office until the liquidation had been terminated. In October, 1932, the Government appointed a commission to investigate the existing situation of the air service between France and South America via Morocco and French West Africa and to recommend the best measures to be taken to ensure its future working.

Remarkable Flights by French Airmen.—In 1929, the French pilot, M. Costes broke two world records, one for the longest non-stop flight in a straight line and the other for the longest non-stop flight in a closed circuit. The former, accomplished in September, 1929, from Le Bourget, near Paris, to Moulard, in China, a distance of 7,905 kilometres. This distance was increased to 9,105 kilometres in August, 1933, by another French pilot (Codos). In the flight in a closed circuit, which was made in December, 1929, a distance of 8,028 kilometres 800 metres, was covered in 52 hours 37 minutes. The latter record, broken almost immediately by two Italian pilots, was recovered for France in March, 1931, with a distance of 8,805 kilometres by M. Boussotrot and M. Rossi, who at the same time beat the record for duration without taking in supplies with 75 hours 23 minutes. The closed circuit record was subsequently raised by M. Mermoz and M. Paillard to 8,950 kilometres, in June, 1931, to 10,372 kilometres by M. Doret and M. Le Brix, of whom the latter lost his life in Siberia in September, 1931, and in March, 1932, by M. Boussotrot and M. Rossi to 10,605 kilometres. In September, 1932, M. Signuin beat the height records with 500 and 1,000 kilos load, the altitude reached being 10,400 and 9,400 metres respectively.

Two successful flights were made in the autumn of 1929 from France to Madagascar in view of the future mail service. In the one case the distance out and home of 11,730 kilometres, was completed in 10 days 8 hours and 40 minutes. Another remarkable African flight was made in April, 1932, when M. Goulette and M. Salel covered the distance from Paris to the Cape of Good Hope in 3 days 17 hours.

In January, 1930, two pilots, Messrs. Givier and Weiss, flew from France to Pondicherry in twelve days and in September M. Costes and M. Bellonte crossed the Atlantic from Paris to New York (6,700 kilometres) in 37 hours 17 minutes. In January 1932, Messrs. Codes and Robida flew in seven days from Paris to Hanoi (Indo-China) and returned in 3 days 14 hours, at an average speed including halts of 145 kilometres an hour: in April, 1928, the corresponding speed of Messrs. Costes and Le Brix was 98 kilometres and in November, 1929 of Messrs. Costes and Bellonte, 102 kilometres.

Air Ports. Notable Developments Envisaged.—A scheme was elaborated in 1932 for making a loan of 2,000 millions for carrying out a programme for the equipment of airports in two instalments of three and five years, but budgetary difficulties prevented the execution of what was described as an admirable scheme by a leading official. It would have allowed the recovery of the time lost in the proper equipment of air ports such as Ronchin (near Lille), Strasbourg, Marseilles, Algiers and Tunis. In a parliamentary paper issued in February, 1932, the Air Minister was stated to have drawn up a programme of ground installations, aerodromes, lighting, etc., which would cost about 1,000 millions; and in order to carry out this scheme, recourse should be had to a loan, the service of which should be met partly by the State and partly by counties, towns and chambers of commerce interested in the progress of aviation. The competent Senatorial Commission recommended that the execution of the programme should be entrusted to a public body constituted by the Chambers of Commerce and Economic Regions concerned (France is divided into eighteen Economic Regions) and that the practice of letting the airports be managed by chambers of commerce (as is already done at Lyons, Marseilles and Bordeaux) should be made general.

In the National Equipment Bill tabled on the 8th November, 1932, a sum of 125 million francs was allocated for expenditure on aviation over the years 1933 and 1934. Among the civil aviation objects, on which State funds were to be spent, may be noted: grants to public authorities for laying out private aviation sites with hangars, 5 millions; on aerodromes at Biarritz (800,000 francs), at Cherbourg (1.4 millions), on emergency sites at 11 other places at 175,000 francs apiece; grants to three Chambers of Commerce, Lyons (150,000 francs), Bordeaux (1 million) and Marseilles (1.45 millions) which already had taken over air stations; other grants include those to aerodromes at Marseilles (6 millions), Strasbourg (3 millions), Grenoble (1.4 millions), Aix-les-Bains with Chambéry (2.5 millions), Nîmes (1.2 millions), etc. Still further grants are entered as subsidies to public bodies already holding concessions of State airports—to Bordeaux (2 millions), Marseilles (8 millions), Le Havre (9 millions), La Rochelle (2 millions), and to public bodies for the creation of airports of local interest—to Cannes (2.5 millions), Boulogne, Limoges, Lille (1 million apiece), Deauville and Montpellier (.5 million apiece), and to others. Large sums were assigned for works and installations at Algiers (25 millions), Ajaccio, Aspretto (15 millions), Tunis-Carthage (10 millions), St. Raphael for seaplane trial centre (16 millions).

Airports Created or already Financed.—Some notes are here given respecting the management and the financing of airports created in the last few years.

Lyons-Bron.—This airport, operated by the Lyons Chamber of Commerce, was opened on the 14th December, 1929. Its estimated cost is five million francs, the State's contribution being 1,800,000 francs. *Bordeaux-Teynac.*—The estimated cost of this port, conceded to the Bordeaux Chamber of Commerce, is 17 millions, of which the State's share is 13.7 millions. In 1932 the Air Ministry sanctioned work on the port, including the construction of a metal hangar 150 metres by 50. The period for which the concession is granted is 50 years, but the Chamber of Commerce may renounce their right at the expiry of ten years and it may be withdrawn by the State at any time. The State guarantees the Chamber during the first five years a subsidy intended to cover a possible working deficit. To defray their expenditure, the Chamber obtain the yield of certain taxes on users of the airport. *Marseilles-Marignane.*—Similar arrangements have been made with the Marseilles Chamber of Commerce. *Nantes (Château Bougon).*—Nine kilometres from the east of the town. Metal hangar to receive ten touring machines. Was opened in October, 1932. *Dieppe.*—The Dieppe Chamber of Commerce was accorded a grant of 333,000 francs towards the cost of an airport, to which the Chamber decided to contribute 337,500 francs. *La Rochelle.*—The local Chamber of Commerce is stated to have undertaken to make a contribution towards the installation of an airport. *Toulouse.*—The Chamber of Commerce decided in May, 1932, to carry out a convention of the 27th December, 1927, with the Air Minister, which provided that it should contribute up to one million francs for the installation of an airport at Franczal, and to apply to the Minister for Commerce for authority to float a loan to this amount at a maximum interest of francs 5.30 per cent. *Amiens.*—In October, 1932, the local Chamber of Commerce was authorised to float a loan of 400,000 francs in order to enable it to participate in the cost of installing an airport. *Lamothe (Gers).*—The Auch Chamber of Commerce was authorised in October, 1932, to float a loan of 450,000 francs for a similar purpose. In November, 1932 the Saumur Chamber of Commerce was authorised by decree to borrow 350,000 francs for the acquisition and equipment of an airport.

VII. POSTAL, TELEGRAPHIC AND TELEPHONIC SERVICES AND RADIO

I. POSTAL SERVICES

Postal Traffic.—Postal traffic, which had risen by about two per cent. a year in 1928, 1929 and 1930, only rose by 0.42 per cent. in 1931, a very noticeable fall in receipts being recorded in the last quarter of the year. The number of despatches by post of

all kinds, which was 4,253 million in 1926, rose to 6,281 million and 6,308 million in 1930 and 1931 respectively. Receipts therefrom in 1930 and 1931 were 1,744 millions and 1,766 millions. The volume of mail sent by air was 93½ tons in 1931 as against 83 in 1930, a rise of 13 per cent.

Postal Cheques.—The postal cheque system, which was instituted by the law of the 7th January, 1918, has made great progress. Ten central postal cheque offices were created in 1918 : at present there is one in each of the eighteen separate postal regions (save one) into which France is divided. They are situated at the leading cities. The number of accounts, which amounted to 41,803 with credit balances of 294 million francs at the end of 1919, and to 316,823 with 3,357 millions credit balance at the end of 1926, had risen to 572,869 with credit balances of 4,583 millions at the end of 1932, and to 604,682 accounts at the end of 1933. The total amount of credit and debit transactions in 1932 was 111 millions (108 and 99.6 millions in 1931 and 1930), equivalent to a movement of 478 milliard francs (471.7 and 438 milliards in 1931 and 1930). In 1933 the number of transactions grew to over 113 millions, but there was a small decline (to 466.4 milliards) in the total movement of funds). In August, 1929, postal cheque services were established between France and Poland, by which holders of such accounts in either country may remit without limit to holders in the other. But even without any special arrangement of this kind the system may be used for international payments without limitation of the amount, since the holder of an account has only to address an ordinary postal cheque marked "international" to the office, where he has his account. The sum transmitted may be in francs or in the currency of the country of the payee. In the latter case the post office collects the amount due in foreign currency to the drawee. A fee is charged at the rate of 50 centimes per 500 French francs. A Government Bill has been tabled to bring the postal cheque within the scope of the regulations relating to the issue of ordinary cheques without funds to meet them.

II. TELEGRAPHS

For some years there has been a decline in the volume of telegraphic traffic and it was more marked in 1931 than in 1930, the number of messages being lower by 4.39 per cent. This fall, apart from the competition of the telephone, is considered by the Post Office to be mainly due to the economic crisis and partly to the bad weather in the summer of 1931, which curtailed touring traffic. In 1931, the total of private internal telegrams was 28.3 million and of private international telegrams 11.6 million. Increasing use is made of the telephone to convey messages to the telegraph office from the sender or from the office to the addressee, as is shown by the fact that in 1931 the number of messages telephoned to an office was 5.3 million and from an office 4.0 million

as compared with 4.2 million and 2.3 million in 1924. In October, 1931, a second submarine cable from Marseilles to Bizerte in Tunisia was put into operation, and in August, 1932, a new cable from Marseilles to Oran in Algeria was completed. It has been announced that a second cable is to be laid to connect France with Morocco, as the only direct connection at present is provided by a cable from Brest to Casablanca, which dates from 1909. The new cable will run from Marseilles to Saïdia on the border between Morocco and Algeria. In French West Africa the contract for a cable from Dakar to Konakry has been awarded to a British firm.

iii. TELEPHONES

Steady progress is being made with the construction of long-distance underground telephone cables and the installation of the automatic system in Paris and other large towns. In Paris, between September, 1928, and October, 1932, nineteen district exchanges with 182,000 lines were converted to automatic operation, serving on the 15th October 118,000 subscribers out of a total of about 200,000. Two further exchanges with 10,000 and 4,000 lines respectively were to be converted in the last months of 1932 or the beginning of the following year, and the new system is scheduled for installation in nine more with 72,000 lines during 1933. The programme will be completed in Paris itself in 1934 and 1935, while between 1934 and 1937 the change will be carried out in the immediate suburbs. The whole Paris system will then be equipped to serve automatically 373,000 subscribers with the possibility of expansion up to 433,000. In 1930 new underground telephone cables were put into operation between Tours and Limoges via Angers, Nantes and Angoulême, between Marseilles and Mentone via Nice, and between Nancy and Thionville via Metz and Saarbrück. In the following year cables from Rouen to Deauville and Caen, Bordeaux to Toulouse, Thionville to Longwy, Lille to Dunkirk and Lyons to Geneva with a branch to Grenoble were brought into service. A large number of new circuits were installed both for internal and international communications. The total number of telephone subscriptions of all kinds was estimated in 1931 at 1,185,000, an increase of 282 per cent. on the figures for 1913. The number of telephones per 100 inhabitants on the 1st January, 1932, was 2.90 in the whole of France as against 2.83 on the 1st January, 1931. In Paris the number was 14.66 at the end of 1931. Traffic is steadily increasing, the number of communications in 1931 being higher than in 1930 by 2.29 per cent. in the case of local messages, 9 per cent. in that of inter-urban messages and 11.4 per cent. in that of international messages. The corresponding increases in 1930 over 1929 were 5.6, 11.77 and 10.5 per cent. respectively. The more rapid expansion of international than internal traffic in 1931 is attributed to improved connections and the extension of the services to new countries.

iv. RADIO

The colonial and far distance radio chain has been improved by the creation of a service in both directions with New Caledonia since December, 1928, Bangkok since February, 1931, and Shanghai since August, 1928. A new station for the exchange of radio telephone messages was opened at Saïgon in Indo-China in April, 1930. In addition to the important station at Bamako in French West Africa, a short wave intercolonial station at Dakar has been completed. There are a number of stations in North Africa, Morocco and French Equatorial Africa.

CHAPTER VII.—EXTERNAL TRADE

I. COURSE OF IMPORT AND EXPORT TRADE, 1927-33.

The abounding prosperity of the foreign trade of France, both visible and invisible, from the moment of recovery, early in 1922, after the world economic crisis of 1920-21, persisted without a break till the first months of 1927, when for a brief while some setback occurred in certain branches. Unprecedented development in her industry and commerce followed in 1928: and indeed that year and 1929 yielded the highest figures ever reached in French foreign trade, notably in the export trade. Save for the tourist industry and the trades in its wake, intense activity may be held to have endured almost unabated till the first months of 1931, when the world crisis, which had assailed most other lands as from the close of 1929, fell upon most branches of the French economy. In the survey undertaken in this chapter of French foreign trade for the six complete years 1928-32, which witnessed, and unhappily did not see the last of, the most serious and widespread economic depression in living memory, detailed observations on the trade movements between France and individual foreign countries or French dependencies, would lack positive value in view of the profound alterations in price levels, of the manifold and multifarious impediments, aggravated since 1930, to the free play of supply and demand between nationals of different States through commodity quotas, currency quotas, higher duties, or surtaxes of different kinds, and other forms of restriction or prohibition. The usual comments are accordingly reduced to a minimum; and figures for the five years are given when required in tabular form. The general collapse of prices since 1929 deprives statements in currency values of a great part of their normal significance: and regard should therefore be paid to weights rather than to value when comparing trade movements in separate years.

Tonnage of Foreign Trade in 1927-33.—The marked expansion in the volume of French foreign trade, which had advanced apace in the years 1922-28, attained its maximum in 1929, when the combined weight of imports and exports was 99.4 million tons, exceeding by 10 per cent. the total for 1928 and by 14 per cent. that for 1927. Visible foreign trade in 1930 remained almost on the same level, the returns showing a decline of 1.8 per cent. only, but in 1931 and 1932 with the deepening of the world crisis, the coming into force in many countries of quota systems, for commodities and currency, and of other artificial restrictions on trade, there ensued a pronounced shrinkage in the

volume of exchanges, which in these two years attained respectively only 88.4 and 71.3 million tons, or 11 and 28 per cent. less than the record figures of 1929. Imports continued to increase until 1930, rising from 49.4 million tons in 1927 and 49.3 in 1928, to 59.5 and 60.9 millions in 1929 and 1930. A decline of 4.7 per cent. in 1931 and another of 22.3 per cent. in 1932 reduced the total imports for those years to 58.1 and 47.6 million tons, respectively. Exports reached their highest figure in 1928 with 41.1 million tons, or 8 per cent. more than in 1927. In the next four years there was a continuous decline, the figures for 1929-32 being 39.9, 36.7, 30.3 and 23.6 million tons.

In 1928 occurred therefore the turning point in the trade tide. In weight, imports into France have always exceeded exports, but the adverse balance had been reduced gradually from 37,677 thousand tons (or three times the total weight of all exports) in 1920 to 8,212 thousand tons (or one-fifth of total exports) in 1928. With the shrinkage in exports since 1928, this adverse balance has swung back to 27,761 thousand tons in 1931 and to 24,026 thousand tons (or slightly more than the total weight of exports) in 1932. The returns for 1933 show an adverse balance of 23,460 thousand tons; imports, at 48,515 thousand tons, being 866,500 tons greater than during 1932, and exports, at 25,055 thousand tons, showing an increase of 1,432,000 tons.

Value of Foreign Trade in 1927-33.—In value, France had a favourable balance of visible trade exceeding two milliards of francs in three of the four years 1924-27, and a deficit of only 384 millions in the other year (1926); but the value of exports has dwindled at an accelerating pace since 1926 without a correspondingly large decrease in imports, with the result that the four years 1930-33 have shown adverse balances averaging nearly 10½ milliards. The value of imports grew from 53 milliards of francs in 1927 to 53.6 and 58.2 milliards in 1928 and 1929, afterwards declining to 52.5, 42.2, 29.8 and 28.4 milliards in 1930-33. Exports, which attained their highest value in 1926 (59,243 millions), have since shrunk by more than two-thirds, the values recorded in the six years 1927 to 1932 being 55.2, 52.1, 42.8, 30.4, 19.7 and 18.4 milliards of francs. From the following tables, showing the total values of imports and exports divided into the three main groups of commodities, it will be seen that the reduction has been most marked in the group of raw materials :—

IMPORTS.

(Values in millions of francs).

	1909-13 Average	1922-26 Average	1928	1929	1930	1931	1932	1933
Food and drink	1,601	8,616	12,612	13,167	11,822	14,001	10,979	9,601
Raw materials	4,548	26,275	33,101	35,125	29,325	19,036	13,222	13,847
Manufactures	1,478	5,404	7,931	9,928	11,364	9,169	5,607	4,977
Totals	7,627	40,295	53,644	58,220	52,511	42,206	29,808	28,425
Totals in millions of £ sterling	302	427	432	469	424	365	334	336

EXPORTS.

(Values in millions of francs).

	1909-13 Average	1922-26 Average	1928	1929	1930	1931	1932	1933
Food and drink	822	3,650	6,318	6,078	5,886	4,301	2,920	2,521
Raw materials	1,852	10,848	13,102	12,568	9,992	7,179	4,553	4,737
Manufactures	3,650	25,592	32,684	31,493	26,957	18,956	12,232	11,175
Totals	6,324	40,090	52,104	50,139	42,835	30,436	19,705	18,433
Totals in millions of £ sterling	251	425	420	404	346	263	221	218

Calculated on a sterling basis, at the average daily rate for each separate year, it is observed that the value of post-war imports, after having been in 1929 56 per cent. greater than in the five years 1909-13, showed in 1932 and 1933 only increases of 10.6 and 11.3 per cent. over pre-war figures; while that of exports, which in 1927 and 1928 was 70 to 80 per cent. higher than in 1909-13, fell back in 1932-33 to 88 and 86.8 per cent. of the pre-war value. In the year 1933 imports (28,425 millions) were lower in value by 1,383 millions, or 4.64 per cent. than in 1932, and exports (18,433 millions) were lower by 1,272 millions, or 6.46 per cent.

Main Categories (a) Imports : (b) Exports.—The proportions borne by foodstuffs, raw materials and manufactures in the total value of imports have undergone substantial modifications in recent years. Raw materials, which for long had normally constituted two-thirds of the total value, have declined from 61.7 per cent. in 1928 to 45.1 and 44.4 per cent. in 1931 and 1932, their value decreasing from 33.1 to 19 and 13.2 milliards. No reduction in quantity, however, occurred until 1932; their weight advanced from 42 million tons in 1928 to 52.2 in 1930, afterwards declining to 46.9 and 37 million tons. In 1933 there was an appreciable recovery, the percentage advancing to 48.7, the value to 13.85 milliards, and the weight to 39.9 million tons. Imports of foods and beverages in the same years grew from 23.5 to 33.2, 36.8 and 33.78 per cent., with values of 12.6, 14, 11 and 11 milliards, the corresponding weights being 5.8, 9.1, 8.6 and 6.9 million tons. Manufactures showed, up to 1931, a marked increase in the proportion that they bore to total imports, their percentage of the value in the years 1928 to 1931 being 14.8, 17.1, 21.6 and 21.7 per cent., corresponding to values of 7.9, 9.9, 11.4 and 9.2 milliards, while their weight grew from 1.5 million tons in 1928 to 2.1, 2.4 and 2.1 million tons in the succeeding years; but in 1932 and 1933 there was a decline to 18.8 and 17.5 per cent., corresponding to values of 5.6 and 5.0 milliards and weights of 1.98 and 1.76 million tons.

Exports reveal very little change in the percentages of the three main categories, though the decline in values was much greater than in the case of imports. Manufactures, the most important group, advanced from 62.7 per cent. in 1928 to 62.9 per cent. in 1930, falling back to 62.3, 62.1 and 60.6 per cent. in 1931-33. Values fell from 32.7 to 11.2 milliards, and weight from 5.3 to 3.1 million tons. Raw materials, which in 1928 represented 25.1 per cent. of the total value, declined slightly to 23.6 and 23.1 per cent. in 1931 and 1932, with a shrinkage from 13.1 to 7.2 and 4.6 milliards of francs and in weight from 34.1 to 24.8 and 19.7 million tons; but in 1933 the percentage increased to 25.7, the value to 4.74 milliards and the weight to 20.8 million tons. Foods and beverages increased their percentage from 12.1 in 1928 to 14.1 and 14.8 in 1931 and 1932 respectively, falling back to 13.7 per cent. in 1933; the respective values were 6.3, 4.3, 2.9 and 2.5 milliard francs and the respective weights 1.7, 1.6, 1.17 and 1.2 million tons.

Foreign Trade in 1933.—French foreign trade in 1933 continued to be unsatisfactory, though the adverse balance in the visible trade was slightly reduced. Imports exceeded exports by 9,992 millions (28,425 against 18,433); in 1932 this excess was 10,103 millions (29,808 against 19,705). Imports were lower in 1933 by 1,383 million francs, or 4.64 per cent., and exports lower by 1,272 million francs, or 6.46 per cent. The application of higher duties and a further reduction of the amounts allowed under the quota system, especially as regards agricultural commodities, were the predominant causes of the decrease of imports in foodstuffs and manufactures from foreign countries, which were lower by 1,753 and 655 millions, respectively, though such imports from the French colonies were higher by 375 and 25 millions. Four-fifths of the decline in exports were due to the shrinkage in exports of manufactured goods to foreign countries: the continued world depression, coupled with the maintenance of the further extension of handicaps to international trade in the shape of higher duties and quotas both as regards quantities and as regards foreign exchange facilities, sufficiently account for the further shrinkage.

As to purchases by the United Kingdom, they fell from 1,962 to 1,676 million, or to 24.6 per cent. of the average for the four years 1928-31. Imports from the United Kingdom declined from 2,458 to 2,167 million, and represented 43 per cent. of the average imports in the corresponding period of 1928-1931.

IMPORTS

Volume of Imports.—There were substantial increases in imports in 1929 and 1930 as compared with 1928, exceeding 50 per cent. in the case of manufactures and nearly 25 per cent. in that of raw materials. With the introduction of the quota system in 1931 this tendency was arrested, and an appreciable reduction was secured in imports of both raw materials and manufactures, largely offset, however, by a marked increase in imports of foodstuffs, due almost entirely to greater quantities of cereals (4.1 as against 2.1 million tons) and wines (1.8 as against 1.5 million tons). The same two commodities served in 1932 to keep the total imports of foods and beverages close to the 1931 level, but the full effect of import restrictions was felt in the case of raw materials and manufactured goods. Comparing 1932 with 1928, there was a decrease of 12 per cent., or 4,961 thousand tons, in imports of raw materials (largely due to coal and to ores, respectively 3,121 and 1,170 thousand tons less), an increase of 31 per cent., or 468 thousand tons, in that of manufactures (products of the chemical industries showed an advance of 555 thousand tons, but this was partly offset by decreases in most other categories within the manufactures group), and an increase of 48 per cent., or 2,803 thousand tons, in the foodstuffs group.

The following table shows the average figures for the five-yearly periods 1909-13 and 1922-26, and those for each year 1928-33:—

IMPORTS.

(Thousands of metric tons).

	1909-13 Average	1922-26 Average	1928	1929	1930	1931	1932	1933
Food and drink	4,725	5,337	5,825	6,712	6,376	9,102	8,628	6,894
Raw materials	32,845	44,362	42,007	50,630	52,170	46,930	37,046	39,860
Manufactures	1,274	1,443	1,507	2,119	2,374	2,065	1,975	1,761
Totals	38,844	51,142	49,339	59,461	60,920	58,097	47,649	48,515

In 1933, imports (48,515 thousand tons) exceeded those for 1932 by 866,500 tons, or 1.8 per cent., resulting from an increase of 2,814 thousand tons in imports of raw materials, partly offset by a decline of 1,733 thousand tons in those of foodstuffs and of 214 thousand tons in imports of manufactured goods.

The tables given in previous reports, drawing attention to notable changes in the imports of different classes of products, are maintained in this report for the four years 1928 to 1931, as they form a useful criterion of upward or downward movements in particular commodities. The writer has refrained from comments on the years 1932 and 1933 as in those years freedom of importation was checked by quotas which eventually affected over 2,000 items on the tariff, by higher customs and analogous charges and by the general restriction in consumption of the French population.

Principal Commodities showing Increases by Weight.—

Numerous commodities in each of the three main classes contributed to the increase of 8,758 thousand tons in the weight of imports in 1931, as compared with 1928. Among foodstuffs (increase, 3,277 thousand tons), the most striking increases were : cereals 2,222 thousand tons, or 120 per cent. ; wines 422 thousand tons, or 30 per cent. ; table fruit 285 thousand tons, or 67 per cent. ; and the meat group, 218 thousand tons, or over 200 per cent. increase. Raw materials, which increased on the whole by 4,923 thousand tons, included a large advance of 7,616 thousand tons in the case of coal and coke ; one of 1,415 thousand tons, or 54 per cent. in that of mineral oils of all kinds ; an increase of 574 thousand tons, or nearly 25 per cent., in the case of common timber ; and one of 129 thousand tons, or over 100 per cent., in that of iron and steel. The advance of 558 thousand tons in imports of manufactures was largely due to the development in tar distillation products (339 thousand tons, or 232 per cent. increase) ; other less pronounced increases being phosphatic fertilizers, 96 thousand tons ; tools and metal wares 72 thousand tons ; engines and boilers 67 thousand tons ; though numerous other kinds of manufactured goods showed substantial advances, as will be seen from the following table :—

[TABLE]

INCREASES IN IMPORTS.

Commodities	Quantities Thousand metric tons					Values Million francs				
	1928	1929	1930	1931	1933	1928	1929	1930	1931	1933
(i) <i>Food and drink</i> :—										
Increase, 3,277 thousand tons.										
Flour, vegetables and fruits ...	3,298	4,034	3,615	5,968	3,779	4,782	5,448	4,328	5,451	3,213
of which :										
Cereals ...	1,843	2,518	2,134	4,065	1,885	2,464	3,016	2,081	3,000	1,341
Table fruit ...	428	437	601	713	718	1,001	1,028	1,192	1,315	947
Potatoes ...	373	423	250	445	96	221	247	136	270	58
Pulse ...	148	159	145	178	231	295	351	217	186	193
Vegetables: fresh, salted or preserved ...	96	118	128	154	159	175	220	191	235	215
Wines ...	1,410	1,427	1,536	1,832	2,013	2,271	2,137	2,156	2,939	3,154
Spirits and liqueurs... ..	61	91	66	66	56	373	596	457	432	294
Meats ...	104	84	208	322	127	742	600	1,400	1,889	559
of which :										
Cattle ...	33.6	28.9	96.4	152	55	194	165	592	821	230
Meat : fresh, chilled and salted ...	52.7	37.2	80.8	112	43	398	267	587	742	188
Preserved meats, paté de foie, etc. ...	6.4	6.4	8.4	11.1	7.6	70	78	101	109	59
Poultry and game ...	4.8	5.7	8.4	13.7	6.9	35.2	44.4	63	104	44
Dairy produce ...	39.5	49.6	59.6	100.6	52.3	373	467	517	822	348
of which :										
Cheese ...	19.8	23.2	29.7	37.6	20.9	188	212	252	292	182
Butter ...	2.6	4.4	5.9	18.5	9.2	47.5	83	96.6	268	64
Eggs ...	13.8	18.7	20.3	38.9	17.6	122	154	148	240	90
Coffee ...	165	170	179	194	195	1,776	1,652	1,121	976	878
Cocoa ...	39.8	41.5	42.8	45.6	44.7	346	270	236	173	103
Fish, fresh ...	22.8	27.8	32.5	39	26.8	73	75	99	116	65
Shellfish ...	23.8	22.1	25.3	27.7	15	60	60	103	95	95
Jams, confectionery and biscuits ...	8.8	12.9	16.4	17.3	13.9	57	71.7	73.3	76	47
Totals ...	5,803	5,960	5,781	8,611	6,323	10,853	11,377	10,490	12,969	8,756
Grand total of all food and drink imports...	5,825	6,712	6,376	9,102	6,894	12,612	13,167	11,822	14,001	9,601

INCREASES IN IMPORTS—continued.

(ii) Raw materials :—										
Increase, 4,923 thousand tons.										
Coal, coke and patent fuel	20,439	30,418	30,713	28,057	21,302	3,256	4,288	4,439	3,629	2,246
Mineral oils, crude and refined	1,676	1,950	2,530	2,868	4,568	1,633	1,986	2,246	1,363	1,302
Heavy oils and petroleum residues	944	1,094	1,079	1,188	1,297	636	671	691	540	432
Pig iron	40.4	40.4	171	88	92	23.6	25	98	43.4	27.5
Iron and steel	118	181	208	247	235	205	300	399	278	147
Lead	84	92	137	119	134	231	282	354	219	156
Zinc	46.4	37.7	49.6	62.3	56.6	146	123	119	105	85
Nickel	4.8	6.3	5	5.4	7	63.8	93	68	67.3	85
Oleaginous seeds and fruits	1,117	1,185	1,193	1,238	1,351	2,579	2,544	2,091	1,458	1,177
Common timber	1,897	2,161	2,872	2,474	1,594	1,156	1,309	1,549	1,156	506
Cellulose pulp for paper-making	496	608	622	525	659	518	606	599	435	353
Crude rubber and gutta-percha	51.9	72.4	82	54.4	71	527	645	468	174	154
Tobacco, unmanufactured	30.8	38.8	70.3	50.7	38.9	227	264	453	327	225
Nitrate of soda	352	578	281	374	212	434	679	313	405	170
Organic fertilizers	37.5	42.1	47.3	40.1	48.8	11.3	20.9	19.7	18	19.5
Seeds for sowing	11.1	20.2	16	12.4	30.5	48.6	67.4	55.8	41.3	63
Fodder and bran	115	198	74	150	76	96	163	46	87	35
Oilcake and malt	80.4	65	57.7	92.6	157	47	58.5	39	58.6	67.4
Horses and mules	5.2	5.1	6.5	7.6	2.9	61.6	58.1	61.9	61.8	20.6
Totals	27,547	38,793	40,304	37,633	31,933	11,900	14,183	14,109	10,466	7,270
Grand total of all raw material imports	42,007	50,630	52,170	46,930	39,860	33,101	35,125	29,325	19,036	13,846
(iii) Manufactures :—										
Increase, 558 thousand tons.										
Engineering products	324	505	712	544	211	2,696	4,156	5,286	4,052	1,805
of which :										
Engines and boilers	105	172	231	172	76	1,476	2,311	2,717	1,998	943
Tools and metal goods	44.5	114	153	118	53	449	752	928	738	405
Machinery spare parts	23.7	39.3	61.2	58.5	28.6	329	540	681	568	288
Ships	119	144	212	166	43.4	120	178	489	441	54

Commodities	Quantities Thousand metric tons					Values Million francs				
	1928	1929	1930	1931	1933	1928	1929	1930	1931	1933
(iii) <i>Manufactures—continued</i>										
Chemical products	721	1,018	1,073	1,000	1,190	953	923	864	684	621
of which :										
Tar distillation products	146	536	537	485	600	82	158	171	146	225
Copper sulphate	26.3	22.3	28.4	32.5	42.2	77.9	69.8	76.3	70.5	50.6
Phosphatic fertilizers	25.1	39.4	47.2	121	230	10.3	17.7	22.9	39.3	64.4
Sodium chloride	60.1	62.3	78.5	76.4	96.5	8	9.4	11.9	10.5	11.5
Potassium chloride	—	0.3	1.4	4.6	4.8	—	0.1	0.6	2.6	2.2
Unenumerated chemicals	230	222	272	243	210	457	471	440	363	252
Textiles	51.9	65.9	68.3	56.6	43.7	930	1,141	1,383	973	470
of which :										
Silk and rayon yarns	1.4	0.9	1.3	1.4	2.0	103.2	74.7	92.5	57.1	50
Woolen yarns	0.8	1.0	1.1	1.1	0.7	41.4	48	45.2	37.9	22.9
Jute yarns	2.9	5.9	7.9	6.3	7.7	18.1	33.9	44.6	25	16.4
Silk and rayon fabrics	0.4	0.6	1.4	1.3	0.7	148	188	326	236	93
Woolen „	1.5	1.8	2.4	2.1	1.7	185	229	256	200	114
Cotton „	1.7	2.3	4.2	3.2	1.5	113	162	253	169	66.4
Underwear and ready-made clothing	0.6	2.2	2.1	4	2.6	50	76	91	125	74.6
Hats and caps	0.4	0.6	1.2	1.5	1	40.5	51.3	58.8	53.7	25.1
Prepared furs	1	0.8	1	1.5	1.4	469	368	357	324	184
Skin and leather goods	1.5	1.9	3	5.1	1.9	100	114	149	182	66
Pottery, porcelain and glassware	146	183	214	175	113	376	410	483	413	265
of which :										
Bricks, tiles, etc.	118	149	170	133	84	89	108	123	94	52.7
Glass and crystal	19.5	22.2	27.9	27.7	17.8	193	214	249	217	151
Earthenware and porcelain	6.2	8.1	11.6	11.6	9.1	55.4	71.7	90.8	87.4	49.2
Rubber and gutta-percha manufactures	4.5	6.8	9.6	10.1	8.3	149	201	245	201	108

INCREASES IN IMPORTS—*continued.*

Manufactured tobacco	1.4	1.9	2.2	2.5	2.1	148	154	172	199	115
Furniture and wooden articles	20.5	22.8	29.2	31.4	17.5	121	135	150	141	65
Scientific instruments	0.4	0.7	1	1.1	0.8	48.7	87.9	108	95	70
Toys, fancy goods and fans	1.3	1.6	2.1	2.3	1.9	67.6	81.1	93.2	92.2	58
Musical instruments	1.6	2.4	3.1	2.3	1.6	47.6	74.2	94.6	65.6	36
Cinematograph films	0.2	0.3	0.5	0.4	0.3	51.4	52.7	75.9	66.5	59.6
Cork manufactures	2.9	4.4	5.4	4.4	4.8	35.4	59.2	66	45.5	36.8
Totals	1,279	1,818	2,128	1,838	1,602	6,283	8,084	9,677	7,712	4,059
Grand total of all manufactured imports	1,507	2,118	2,374	2,065	1,761	7,931	9,928	11,364	9,169	4,977

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Principal Commodities showing Decreases.—It will be observed in the following table showing notable cases of decrease for the years 1928 to 1931, that the movement downwards only became accentuated in 1931, and that it was the most serious in the main importing group, namely raw materials. Within this group the outstanding cases were those of : ores, 502 thousand tons, or 25 per cent. ; stones and earths 412 thousand tons, or nearly 20 per cent. ; raw cotton 97 thousand tons, or 28 per cent. ; raw wool 24 thousand tons, or 8½ per cent. ; tropical timber 60 thousand tons, or 22 per cent. Prominent among the few food-stuffs that declined were sugar and molasses, 114 thousand tons, or 25 per cent., and edible fats, 23.2 thousand tons, or 54 per cent. ; while the chief decreases among manufactures were : sulphate of ammonia, 194 thousand tons, or 90 per cent. ; dressed hides, 1,600 tons, or 20 per cent. ; motor-cars, 2,100 tons, or 12 per cent.

DECREASES IN IMPORTS

Commodities	Quantities Thousand metric tons					Values Million francs				
	1928	1929	1930	1931	1933	1928	1929	1930	1931	1933
<i>(i) Food and drink :—</i>										
Sugar and molasses	456	544	424	342	424	794	812	583	425	463
Sago, tapioca, etc.	61.7	72.2	56.2	54.3	51.7	93	103	60.5	52.1	40.8
Oatmeal, semolina and alimentary pastes	38.3	28	33.5	37	45.4	90.7	63.3	75.8	90.4	82.7
Edible fats, animal and vegetable ...	42.9	34.6	29.8	19.7	19.2	205	175	132	69	48.2
Totals	599	679	543	453	540	1,183	1,153	851	636	635
Grand total of all food and drink imports	5,825	6,712	6,376	9,102	6,895	12,612	13,167	11,822	14,001	9,601
<i>(ii) Raw Materials :—</i>										
Textile raw materials	950	1,035	1,038	763	942	12,992	12,442	8,631	4,444	3,863
of which :										
Raw cotton and cotton waste	345	384	390	248	367	4,184	4,483	3,280	1,501	1,574
Raw wool and wool waste	290	324	323	266	319	5,305	5,146	3,180	1,801	1,545
Silk and silk floss	16.5	14.8	10.1	8.2	5.3	2,274	1,681	963	509	241
Flax and hemp	75.7	88.6	103.1	63.7	62.5	639	628	530	209	202
Jute	122	120	106	92	96	464	460	306	177	126
Phorium tenax and similar fibres ...	59	56.8	62.3	49.7	58.3	238	218	204	121	83
Bamboo, esparto grass, cocoanut fibre, &c.	36.2	39.1	36.4	29.4	28.3	90.6	82.9	74.3	58.5	41.6
Raw hides and pelts	85.2	65.3	73.4	66.2	58.7	1,729	1,158	1,047	701	484
Ores	2,010	2,225	2,084	1,503	1,304	521	572	494	287	175
Copper	155	176	184	149	137	1,255	1,740	1,456	798	412
Sulphur and pyrites	982	1,143	1,078	776	727	182	233	204	158	126
Stones and earths for arts and crafts ...	2,221	2,597	2,522	1,808	1,744	379	468	455	301	253
Marble	52.8	57.5	65.8	48.5	49.4	37.4	38.6	41.8	25.1	19.8
Tropical woods	274	283	288	214	98	225	235	218	137	47
Rags for paper-making	115	116	114	100	125	174	160	137	79	79

DECREASES IN IMPORTS—*continued.*

Commodities	Quantities Thousand metric tons					Values Million francs				
	1928	1929	1930	1931	1933	1928	1929	1930	1931	1933
(ii) <i>Raw Materials—continued</i>										
Fixed vegetable oils (other than olive) ...	49.5	44.4	55.1	39.2	46	186	172	196	111	82
Volatile oils and synthetic perfumes ...	1.7	1.8	1.6	1.4	1.5	170	177	119	71	53.6
Vegetable wax, resins and gums ...	22.4	23.6	21.8	18.3	19.1	128	152	118	67	43.4
Tar, bitumen and asphalt ...	189	167	118	157	220	110	87.8	53.2	65.2	69.5
Medicines and drugs ...	17.2	16.6	13	11.9	11	88	91.2	69.6	57.8	40.2
Pearls ...	—	—	—	—	—	579	554	350	196	111
Precious stones ...	—	—	—	—	—	871	980	465	237	115
Totals ...	7,125	7,933	7,657	5,665	5,484	19,940	19,656	14,055	7,735	5,974
Grand total of all raw material imports	42,007	50,630	52,170	46,930	39,860	33,101	33,125	29,325	19,036	13,847
(iii) <i>Manufactures :—</i>										
Motor-cars ...	17.6	28.5	27.5	15.6	8.5	214	300	324	207	96
Dressed hides ...	7.6	5.4	5.8	6	4.4	316	262	256	209	114
Sulphate of ammonia ...	217	117	92.6	22.8	—	266	138	100	24	—
Cotton yarns ...	2.5	3.4	4	2.2	0.6	102	123	106	49	11.7
Jute fabrics ...	35.4	43.8	40.4	33.8	25.6	122	168	154	109	48.5
Linen and hemp fabrics ...	4.4	4.4	3.9	2.7	1.5	39.2	37.8	34.8	25.2	11.2
Paper ...	159	226	167	143	86	346	475	376	318	155
Totals ...	443	428	341	226	127	1,405	1,504	1,351	941	436
Grand total of all manufactured imports	1,507	2,118	2,374	2,065	1,761	7,931	9,928	11,364	9,169	4,977

EXPORTS

Volume of Exports.—The total decline in French exports since 1928, when they attained their highest point with 41,126 thousand tons, amounted by 1932 to 17,503 thousand tons, or 42.6 per cent. (their value has declined by 64 per cent. since 1927), but as a consequence of the slight recovery in 1933, the decline as compared with 1928 was reduced to 16,071 thousand tons, or 39.1 per cent. The shrinkage was proportionally greatest in the case of manufactures, 41.6 per cent., or 2,201 thousand tons, practically all categories of manufactured articles being affected in similar proportions, though ceramic products and wearing apparel suffered somewhat more heavily than other commodities. Exports of raw materials declined by 39.2 per cent., or 13,386 thousand tons, the principal contributors to this reduction being ores (7,000,000 tons less), pig iron, iron and steel (2,330,000 tons), coal and coke (1,723,000 tons), timber (1,471,000 tons) and stone, earths and building materials (1,176,000 tons). Exports of food-stuffs and beverages declined by 28.8 per cent., or 484 thousand tons, attributable largely to potatoes (264,000 tons less) and wines (77,360 tons less). A particularly striking case is that of eggs, exports of which dropped from 40,618 to 1,056 tons between 1928 and 1932. In spite of these substantial reductions in the last few years, it will be seen from the following table that exports of manufactured goods were still, in 1933, 43.2 per cent. greater than in the average of the last five *pre-war* years, and those of raw materials 45.6 per cent. greater:—

[TABLE]

EXPORTS.

(Thousands of metric tons).

	1909-13 Average	1922-26 Average	1928	1929	1930	1931	1932	1933
Food and drink	1,407	1,342	1,683	1,513	2,144	1,602	1,167	1,199
Raw materials	14,264	22,942	34,150	33,033	29,730	24,805	19,748	20,764
Manufactures	2,159	3,691	5,293	5,360	4,806	3,929	2,708	3,092
Totals	17,830	27,975	41,126	39,906	36,680	30,336	23,623	25,055

In 1933, exports (25,055 thousand tons) exceeded those for 1932 by 1,432 thousand tons, or 6.1 per cent., resulting from an increase of 1,016 thousand tons in exports of raw materials, of 384 thousand tons in those of manufactures and of 31.8 thousand tons in those of foodstuffs and beverages.

As in the case of imports, all consideration of the year 1932 has been omitted from the following tables and commentaries upon noteworthy increases or decreases in exports, in view of the profoundly accentuated depression, which affected practically all branches of the national economy, and of the fact that the figures for that year would have provided no lesson.

Principal Commodities showing Increases by Weight.—

—In all three groups increases were few in number. The existence of large surplus stocks of cereals in 1930 and 1931 is reflected in the exceptional proportions of the exports in those years, which were ten and five times, respectively, as great as in 1928. Exports of oatmeal, semolina, macaroni and similar pastes also took on vastly increased proportions, the figure of 92 thousand tons in 1931 being 51 times as great as in 1928. Among raw materials, oilcake and malt increased by 50 thousand tons, or nearly 25 per cent., exports of lead were about 150 per cent. greater, and those of ferro-alloys advanced by 8 per cent. in weight, but nearly doubled in value. The principal increases among manufactured goods were: silk yarns (mainly artificial silk) 3,300 tons, or 47 per cent.; tar distillation products, 10.1 thousand tons, or 25 per cent.; celluloid, 631 tons, or 140 per cent.; and a twelvefold growth in the exports of starch, from 2.1 to 24.9 thousand tons. The following table indicates the principal commodities, the exports of which increased in the period 1928-31:—

[TABLE]

INCREASES IN EXPORTS.

Commodities	Quantities Thousand metric tons					Values Million francs				
	1928	1929	1930	1931	1933	1928	1929	1930	1931	1933
(i) <i>Food and drink</i> :— (Group decrease of 81,000 tons).										
Sugar... ..	257	301	280	270	280	757	717	602	511	413
Cereals	75	15.6	773	370	275	102	22	910	371	143
Oatmeal, semolina and alimentary pastes	1.8	2	51	92	81.4	7.2	7.7	101	144	74
Preserved meats, paté de foie, etc.... ..	2.9	4.3	4	3.8	3.1	46.2	67.6	61.2	51.4	36.4
Olive oil	8.6	6.5	12.5	10.9	10.5	71.6	53	81	69.5	46
Edible vegetable fats	4.4	3.1	1.4	5.3	5.8	22.4	14.5	6.9	20.7	15.9
Milk, natural or condensed	14.9	15	15.8	17.2	10.2	27.2	27.4	27.7	28.2	17.4
Totals	365	347	1,138	769	666	1,034	909	1,790	1,196	746
Grand total of all food and drink exports	1,683	1,513	2,144	1,602	1,199	6,318	6,078	5,886	4,301	2,521
(ii) <i>Raw Materials</i> :— (Group decrease of 9,345,000 tons).										
Fixed vegetable oils... ..	64	72	60	69	57.5	328	347	260	220	141
Oilcake and malt	216	189	274	266	184	256	229	228	165	90
Ferro-alloys	10.3	10.2	9.8	11.1	7.5	26.2	28.5	34.5	47.8	21.7
Lead	1.8	2.6	6.5	4.6	3.2	8.2	11.6	19.2	11	5.9
Tin... ..	1.8	1.9	2.3	1.9	0.9	26.9	25.7	26.1	18.6	7.4
Nickel	0.4	0.4	0.6	0.9	0.6	6.5	6.5	11.1	12.3	5.5
Phorium tenax and similar fibres	4.6	5.4	4.4	5	2.8	32.7	35.2	25.6	24.1	10.3
Jute	1.5	2	1.9	1.9	1.8	2	3.1	3.3	2	1.7
Cellulose pulp for paper-making	8.6	14.9	9.4	9.3	2.6	20.4	35.7	20.4	15	5.8
Totals	309	298	369	370	261	707	722	628	516	289
Grand total of all raw material exports	34,150	33,033	29,730	24,805	20,764	13,102	12,568	9,992	7,179	4,737

(iii) <i>Manufactures :-</i> (Decrease of 1,365 thousand tons on group as a whole).										
Silk and rayon yarns	7.1	8.3	9.7	10.4	11.3	488	494	535	419	284
Aeroplanes and their parts	1.72	2.63	2.16	1.86	0.81	140	217	212	167	72
Tar distillation products	40.1	49.5	43.1	50.2	33	57.6	64.1	65.2	56.5	54.3
Casein	10.6	12.6	12.4	12.4	9.5	76.1	86.5	61.3	33.5	23.6
Celluloid	0.5	0.9	1.4	1.2	1.0	13.2	25.7	46.8	32.3	17.4
Starch	2.1	1.6	7.6	24.9	35.6	6.2	4.4	11.5	26.8	34.6
Books and printed matter	16.9	19.1	20.3	17.5	15.7	239	261	253	198	152
Totals	79	95	97	118	107	1,026	1,151	1,189	936	638
Grand total of all manufactured exports	5,294	5,360	4,806	3,929	3,092	32,684	31,493	26,957	18,956	11,175

Commodities showing Decreases by Weight.—Seven-eighths of the 10,791 thousand tons, by which the weight of exports in 1931 fell short of that in 1928, was attributable to raw materials, and one-eighth to manufactured goods. Although the decline in the case of foodstuffs was a relatively small one of 81 thousand tons, or under 5 per cent., a number of important commodities within this group suffered high percentage decreases: for instance, cattle 49.4 thousand tons, or 95 per cent.; eggs 34 thousand tons, or 83 per cent.; rice 73.5 thousand tons, or 63 per cent.; potatoes 160 thousand tons, or 46 per cent.; wines 64 thousand tons, or 40 per cent.; and so on. Raw materials, with a decline of 9,345 thousand tons, included a fall of 4,656 thousand tons, or 27 per cent., in the case of ores; 1,064 thousand tons, or 20 per cent., in that of coal and coke; 1,023 thousand tons, or 25 per cent., in that of iron and steel, and 212 thousand tons, or 33 per cent., in that of pig iron. Exports of raw wool declined by 7.1 thousand tons, or 10 per cent., those of flax by 115 thousand tons, or 66 per cent., while timber, aluminium and zinc each showed a decline of about one-half. The weight of manufactured exports was lower by 1,365 thousand tons, or 26 per cent., and many of the leading classes of manufactured articles suffered decreases individually of 33 to 50 per cent. Exports of textiles declined by over one-third, those of engineering products by 30 per cent., those of chemical products by 21 per cent., those of ceramic wares by almost 50 per cent. For the weights and values of individual components of these groups, the reader is referred to the following table:—

[TABLE]

DECREASES IN EXPORTS.

Commodities	Quantities Thousand metric tons					Values Million francs				
	1928	1929	1930	1931	1933	1928	1929	1930	1931	1933
(i) <i>Food and drink</i> :—										
Decrease, 81 thousand tons.										
Beverages	280	284	243	194	167	1,902	1,965	1,596	1,205	824
of which :										
Wines	158	160	125	94	83	1,123	1,177	887	665	477
Brandies and spirits	34.9	33.8	31.3	25	17.3	597	596	533	390	238
Liqueurs	6.3	6.6	5.7	4.9	3.3	83	88.6	79	66	40.6
Mineral waters	58.8	60.5	58.4	51.3	46.5	60.4	71	67	59	48
Beer	20.2	21.2	20.2	16.9	14.2	26.5	26.4	24.3	20.6	17.6
Vegetables and fruits	770	638	582	504	276	1,362	1,322	1,070	884	329
of which :										
Potatoes	344	237	206	184	64.7	258	160	120	182	30.3
Vegetables: fresh, salted & preserved ...	136	133	138	126	43	325	364	301	254	82
Table fruit	140	148	130	127	118	535	577	456	359	169
Rice	116	99	86.3	42.5	35	180	160	135	48	22.7
Pulse	23.6	11.7	14.8	18.5	13.6	56.8	43.2	45.2	32.9	20.6
Dairy produce	86.7	68.1	60.2	44.9	25.7	716	600	472	335	192
of which :										
Eggs	40.6	26	20.5	6.9	0.4	311	216	143	41.3	2.3
Cheese	19	18.4	17.7	15.1	11.4	199	226	212	178	124
Butter	11.3	7.6	5.5	5	3.1	174	125	86	75	44.3
Meat	78.8	79	34	17	12.6	589	567	337	190	124
of which :										
Cattle	52.1	55.1	13.9	2.7	1.2	282	273	92.6	16.9	7
Meat: fresh, chilled or salted	10.2	7.4	5.7	4	3.5	104	83	73.5	54.3	42.4
Poultry and game	9.1	7.5	6.9	3.9	1.6	108	97.4	83.2	49	16.4
Casings	4.5	4.6	3.5	2.7	3.2	49	45.6	26.4	18.9	21.5

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DECREASES IN EXPORTS—*continued.*

Commodities	Quantities Thousand metric tons					Values Million francs				
	1928	1929	1930	1931	1933	1928	1929	1930	1931	1933
<i>(i) Food and Drink—continued</i>										
Fish	58.6	53.2	41.2	34.8	18.5	276	284	233	174	76
of which:										
Dried, salted or preserved	39.5	36.2	28.6	21.3	11.7	207	217	176	126	54.4
Fresh	16.3	13.6	9.6	10.7	4.7	51.9	47.7	37.7	33.6	12.3
Lobsters and crayfish	0.6	0.6	0.4	0.3	0.1	7.4	7.8	6.8	3.8	1.4
Confectionery, jams, biscuits, etc.	26.1	25.8	27.2	21.6	18.7	180	189	178	143	100
Edible animal fats; margarine, etc.	18.7	18.1	18.8	16.9	10.9	76	72.6	66.8	47.1	26.4
Totals	1,319	1,166	1,006	833	529	5,101	5,000	3,953	2,980	1,671
Grand total of all food and drink exports	1,683	1,513	2,144	1,602	1,199	6,318	6,078	5,886	4,301	2,521
<i>(ii) Raw Materials:—</i>										
Decrease, 9,345 thousand tons.										
Metals and ores	22,225	20,873	19,550	16,334	14,026	3,891	3,695	3,532	2,666	1,711
of which:										
Ores	17,341	16,689	15,463	12,632	11,317	527	522	539	418	302
Pig iron	635	563	527	423	172	260	242	223	144	42.4
Iron and steel	4,068	3,360	3,243	3,045	2,445	2,611	2,390	2,182	1,785	1,238
Copper	29.5	33.1	41.3	24.3	13.8	265	339	382	178	53.6
Aluminium	5.6	4.2	5.1	2.5	2.6	74.5	54.6	60.4	26.1	20.9
Zinc	20.9	19.8	18.2	10.7	5.3	69.3	66.3	42.5	19.2	9.9
Textile raw materials	294	262	194	165	155	3,056	2,773	1,727	1,166	977
of which:										
Raw wool and wool waste	66.9	70.1	58	59.8	65	2,180	2,032	1,200	875	810
Raw cotton and cotton waste	29.4	25.3	29.8	25.8	17.6	250	172	187	99	47
Flax and hemp	182	150	93	67	64	253	158	78	39.3	35.6
Silk and silk floss	2.5	3	2.2	1.3	1.1	194	238	147	68	25.6
Hair and bristles... ..	4.2	4.5	3.1	2.1	2	132	125	79	52	43

<i>(ii) Raw Materials—continued</i>										
Coal, coke and patent fuel	5,221	5,897	4,658	4,157	3,320	753	812	649	541	362
Raw hides and pelts	47.1	53.1	47.5	40.6	49.6	1,054	927	599	366	292
Stone, marble and building materials	2,927	3,203	2,790	2,215	1,903	485	558	497	363	264
Timber, common and tropical	1,939	1,690	1,377	900	346	526	465	334	212	77.4
Vegetable wax and resinous products	77.3	65.6	61.6	55.4	30.8	204	170	134	93	37.6
Volatile oils and synthetic perfumes	1.77	1.77	1.78	1.63	1.3	190	186	178	120	83.7
Rags for paper-making	103	107	73.6	58	65.3	197	210	122	74.5	60.6
Fodder and bran	369	289	359	270	184	195	127	139	78	90
Crude rubber and gutta-percha	9.8	9	5.7	1.2	3.2	44	31.2	20	5.2	3.9
Medicines and drugs	8.8	10.7	7.6	6.2	5.7	47	47	34.8	31.3	19.6
Tar, bitumen and asphalt	85.4	67.3	52.9	55.6	29.7	37.7	25.8	22	24	10.5
Sulphur and pyrites... ..	47	35	18.8	27.2	20.5	22.4	25.3	23.5	28.8	16.5
Pearls	—	—	—	—	—	602	660	407	293	108
Precious stones	—	—	—	—	—	540	584	451	240	116
Totals	33,355	32,563	29,197	24,287	20,140	11,844	11,296	8,869	6,302	4,230
Grand total of all raw material exports...	34,150	33,033	29,730	24,805	20,764	13,102	12,568	9,992	7,179	4,737
<i>(iii) Manufactures :—</i>										
Decrease, 1,365 thousand tons										
Textiles	228	202	171	147	117	12,392	11,120	9,010	6,306	3,093
of which :										
Woollen yarns	28	26.2	24.7	22.8	15.6	1,456	1,275	1,010	746	385
Cotton	23.6	16.2	11.5	8.7	6.5	669	559	453	348	229
Linen and hemp yarns	13.8	13.4	8.3	8	5.2	262	245	142	94	49
Silk and rayon fabrics	10.1	10.3	9.4	9.8	6.9	3,819	3,439	2,866	1,989	872
Cotton	73.2	67.2	53.6	43.1	43	2,903	2,713	2,145	1,414	966
Woollen	27.4	25.2	22.5	18.5	8.2	2,339	2,045	1,572	1,099	347
Jute	23.8	18.5	19.1	13.6	13	162	144	120	79	47
Linen and hemp fabrics	3.1	3.2	2.9	2.2	1.5	107	96	80	55.3	26.2

DECREASES IN EXPORTS—*continued.*

Commodities	Quantities Thousand metric tons					Values Million francs				
	1928	1929	1930	1931	1933	1928	1929	1930	1931	1933
(iii) <i>Manufactures—continued</i>										
Clothing and accessories	18.3	20	16.1	10.8	7.9	2,981	2,622	2,247	1,127	314
of which: ...										
Underwear and ready-made garments ...	9.6	9.6	8.3	6.8	5.9	2,097	1,844	1,662	691	181
Prepared furs	1.8	1.6	1.3	1.2	0.5	513	475	360	310	87
Hats and caps	3.9	6.1	4.8	1.8	0.8	130	146	107	45	12.7
Millinery	0.6	0.3	0.3	0.2	0.1	94.7	59.3	57	44.7	15.6
Artificial flowers; umbrellas; buttons...	2.4	2.4	1.4	0.8	0.6	123	97.6	61.4	35.6	17.6
Engineering products	1,251	1,337	1,087	875	713	6,205	6,328	5,522	3,981	2,493
of which: ...										
Tools and metal goods	796	785	702	542	437	1,993	1,850	1,733	1,253	787
Engines and boilers	142	163	146	118	81	1,255	1,291	1,216	950	563
Machinery and spare parts	89	96	87.2	61.6	37.8	785	902	891	603	294
Motor-cars	86	92.3	63.6	48	50.4	1,541	1,608	1,123	837	689
Railway wagons and other vehicles ...	32	29.3	29.7	21.3	7.5	269	221	213	138	66
Ships	105	169	56.3	82.5	99	222	239	134	32.3	22
Chemical products:	2,856	2,862	2,749	2,248	1,712	1,610	1,691	1,676	1,308	931
of which: ...										
Chemicals not separately designated ...	522	560	518	424	359	771	766	732	601	463
Chloride of potash	650	795	781	482	414	329	382	409	281	191
Phosphatic fertilizers	1,344	1,219	1,222	1,121	728	288	280	289	240	131
Potassium tartrates (wine lees, etc.) ...	11.4	13.2	11.4	8.9	8.3	66.8	85.4	66.3	37	21.3
Common salt	219	163	148	130	133	24.3	19.4	18.5	14.2	12.7
Sulphate of ammonia	20.5	5.6	9.2	17.1	21.7	22.7	6.7	8.1	15.3	18.4
Perfumes and soaps	87.9	88.6	82.4	76.4	64	879	935	788	576	286
Dressed hides	17.9	16.8	15.5	12.7	8.8	871	882	776	491	204
Skin and leather goods	6.3	7.1	6.4	4.8	3.6	438	487	457	323	130

<i>(iii) Manufactures—continued</i>											
Works of art and luxury goods	17.6	17.6	16.2	11.1	7.3	943	941	804	504	281	
of which :											
Toys and fancy goods	13.1	13.2	11.8	8	5.5	368	358	311	202	101	
Clocks, watches and jewellery	3.2	3.3	3.4	2.4	1.5	307	304	224	136	74	
Objects for museums and collections	1.3	1.1	1.0	0.7	0.3	268	279	269	166	109	
Ceramic wares	417	409	296	220	160	890	892	716	408	261	
of which :											
Glassware and crystal	187	186	97.6	72	52	481	482	364	230	138	
Earthenware and porcelain	39.4	40.9	31.5	21.7	16.5	213	209	174	104	70	
Bricks and tiles	180	171	160	121	87	140	140	134	102	56	
Mirrors	10	11	7.3	5.3	4.4	56	61	44	32	17	
Rubber and gutta-percha manufactures	30.9	27.8	23.1	20.6	15.5	770	636	580	388	226	
Paper	66.3	63.9	63.5	56.1	55	572	536	539	409	288	
Cardboard and articles thereof	14.1	12.6	10.5	8.4	7	107	96	83	59	40	
Furniture and wooden manufactures	51.2	60.4	54.4	42.3	30.6	424	499	440	285	147	
Firearms and ammunition	7.3	7.6	7.4	3.5	5	244	259	195	78	222	
Scientific instruments	2.2	2.4	2.4	1.8	1.0	87	107	110	84	44.6	
Totals	5,072	5,135	4,601	3,738	2,908	29,353	28,000	23,918	16,334	8,981	
Grand total of all manufactured exports	5,294	5,360	4,806	3,929	3,092	32,684	31,493	26,957	18,956	11,175	

II. TRADE WITH INDIVIDUAL COUNTRIES

Rank of Principal Customers.—The following table indicates, for the years 1909-1913 and 1922-1932, the relative importance of the principal customers of France, expressed in terms of percentages of total exports: the territorial units are set in the order of the value of their purchases in the five pre-war years. Algeria is seen to have advanced in 1932 to the head of the customers and to second place among suppliers: she took slightly more than twice her percentage in the last five *pre-war* years. Compared with the same period, the proportion taken by the United Kingdom in 1932 declined by 50 per cent.: it is observed that until that year the United Kingdom was consistently far the best customer. Both Belgium and Germany show a reduction of approximately one-third in 1932 compared with 1909-13, but they both retain high proportions.

In 1933 the percentages taken by Algeria, Belgium and Germany increased further, while that taken by the United Kingdom declined, so that the United Kingdom has now receded to fourth place in the list of France's best customers, with purchases lower by 27 million francs than those of Germany.

[TABLE]

PERCENTAGE OF TOTAL EXPORTS AND IMPORTS.
(Arranged in order of value in 1909-1913).

EXPORTS.

Country	Average		1928	1929	1930	1931	1932	1933
	1909-13	1922-26						
United Kingdom...	20.6	18.9	15.1	15.1	16.0	16.6	10.0	9.1
Belgium and Luxembourg	16.3*	17.2	15.3	14.4	12.7	11.8	11.4	11.6
Germany ...	12.6	7.6	10.8	9.5	9.7	9.0	8.6	9.2
Algeria ...	7.7	6.4	7.6	9.0	10.6	13.0	16.6	17.9
United States ...	6.7	7.2	5.8	6.6	5.7	5.1	4.9	4.7
Switzerland ...	6.1	6.2	6.2	6.7	7.2	7.6	7.7	7.2
Italy ...	4.8	4.2	4.1	4.4	3.9	3.3	3.0	2.7
Argentina ...	2.7	1.9	2.2	2.2	2.0	1.7	1.6	1.8
Spain ...	2.2	2.9	3.3	3.2	2.6	2.3	2.0	2.0
Tunisia ...	1.5	1.4	1.7	2.0	2.1	2.6	3.8	3.6
Turkey ...	1.2	1.0	0.9	0.7	0.4	0.5	0.5	0.4
Brazil ...	1.2	0.9	1.0	0.9	0.7	0.5	0.6	0.9
Netherlands ...	1.2	2.6	2.6	2.5	2.9	3.0	3.1	3.5
French Indo-China	1.2	1.9	2.1	2.0	2.1	1.8	2.3	2.4
U.S.S.R. ...	1.1†	0.1	0.3	0.5	0.4	0.2	0.2	0.2
French West Africa	0.9	1.4	1.5	1.2	1.3	0.9	1.1	1.2
Egypt ...	0.9	1.6	1.6	1.3	1.3	1.1	0.8	0.8
Austria ...	0.7‡	0.3	0.4	0.4	0.5	0.6	0.4	0.4
Morocco ...	0.7	1.9	2.4	2.6	2.6	2.9	3.6	3.2
Mexico ...	0.6	0.3	0.3	0.3	0.4	0.2	0.3	0.4
British India ...	0.6	0.9	1.0	0.9	0.8	0.8	0.8	0.6
Chile ...	0.6	0.5	0.3	0.5	0.5	0.2	0.1	0.2
Madagascar ...	0.5	0.6	0.8	0.8	0.6	0.8	1.1	1.2
Denmark ...	0.5	0.6	0.6	0.6	0.9	1.1	0.6	0.7
Portugal ...	0.4	0.4	0.4	0.5	0.6	0.4	0.5	0.4
Canada ...	0.3	0.8	1.3	1.2	1.1	1.0	0.8	0.6
Uruguay&Paraguay	0.3	0.3	0.4	0.4	0.4	0.3	0.2	0.2
Colombia ...	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2
Greece ...	0.3	0.8	0.9	0.8	0.6	0.7	0.4	0.3
China ...	0.3	0.5	0.8	0.5	0.4	0.5	0.5	0.7
Sweden ...	0.2	0.4	0.5	0.5	0.8	0.9	0.7	0.7
Japan ...	0.2	0.5	0.5	0.5	0.4	0.4	0.7	0.6
British Africa	0.2	0.4	0.5	0.4	0.5	0.4	0.5	0.2‡
Australia ...	0.2	0.4	0.6	0.5	0.4	0.3	0.5	0.4
Cuba ...	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.1
Roumania ...	0.2	0.4	0.3	0.3	0.4	0.4	0.8	0.7
Norway ...	0.2	0.2	0.2	0.2	0.4	0.5	0.4	0.4
Venezuela ...	—	0.1	0.1	0.2	0.2	0.2	0.2	0.2
Poland ...	—	0.5	0.8	0.9	1.0	1.0	1.6	0.9
Czechoslovakia ...	—	0.3	0.4	0.5	0.5	0.7	0.8	1.1
Yugoslavia ...	—	0.1	0.2	0.2	0.3	0.3	0.3	0.2
Syria ...	—	0.5	0.4	0.4	0.4	0.5	0.8	0.8
Other foreign countries	3.3	3.4	2.3	1.9	2.0	2.1	2.7	3.2
Other French colonies	0.3	0.9	1.0	1.3	1.3	1.4	2.1	2.2
Totals ...	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* Belgium only.

† Former Russian Empire.

‡ Austria-Hungary.

§ Union of South Africa only.

Rank of Principal Suppliers.—The relative position of the suppliers of France, placed in the order of the percentage of their total sales over the five years 1909-13, is given in the following table. The part furnished by Algeria therein is observed to have nearly trebled in the space of twenty years. The United Kingdom, which showed for 1909-13 a percentage of 13, shows for the five years 1928-32 one of 9.4: already for the five years 1922-26 it had dropped to 12.3. In 1933 Algeria, the leading customer since 1932, supplied 13.6 per cent. of all imports into France (compared with 11 per cent. in 1932). The order of the next four countries in the list, *viz.*, Germany, the United States, the United Kingdom and Belgium-Luxemburg, remained unchanged, though each of them except the United States furnished a lower percentage of the total imports into France.

IMPORTS

Country	Average		1928	1929	1930	1931	1932	1933
	1909-13	1922-26						
United Kingdom ...	13.0	12.3	9.9	10.0	10.0	8.8	8.2	7.6
Germany ...	12.0	5.9	9.3	11.3	15.1	14.5	12.1	10.7
United States ...	10.4	14.1	11.6	12.3	11.6	9.0	9.7	10.0
Belgium and Luxemburg	6.7*	7.6	7.5	6.7	7.9	8.6	8.2	6.9
U.S.S.R. ...	5.1†	0.9	1.3	1.4	1.7	1.2	1.7	1.8
Algeria ...	5.0	4.1	5.3	5.1	6.3	8.1	11.0	13.6
British India ...	4.7	5.4	5.0	4.7	4.0	2.8	2.6	2.8
Argentina ...	4.4	4.2	4.2	4.1	2.3	3.4	3.6	2.0
Australia ...	3.4	4.0	3.8	4.3	2.7	1.9	1.6	2.4
Spain ...	3.0	1.9	3.0	2.5	2.9	3.3	2.4	2.4
China ...	2.8	2.9	3.1	2.2	1.4	1.2	0.7	0.8
Italy ...	2.5	3.6	2.8	2.6	2.9	3.4	2.1	2.2
Brazil ...	2.1	2.6	2.2	1.8	1.5	1.5	1.8	1.6
Switzerland ...	1.8	1.7	1.8	1.8	2.2	2.1	2.0	2.2
Netherlands ...	1.5	2.9	3.1	2.8	3.4	3.8	3.5	2.9
Japan ...	1.4	0.8	0.7	0.5	0.5	0.5	0.5	0.6
French West Africa	1.3	1.7	1.5	1.4	1.4	1.1	1.1	1.3
Indo-China ...	1.3	1.2	1.3	1.2	1.0	1.0	1.4	2.1
Chile ...	1.3	1.0	1.4	1.9	1.1	1.2	0.2	0.4
Turkey ...	1.3	0.4	0.3	0.3	0.3	0.3	0.3	0.2
Roumania ...	1.3	0.5	0.4	0.4	0.7	1.3	1.5	1.2
Egypt ...	1.1	1.8	1.8	1.8	1.2	0.9	0.8	1.1
Sweden ...	1.1	1.3	1.2	1.4	1.4	1.2	1.0	1.2
Tunisia ...	1.0	0.9	1.1	1.2	1.3	1.4	2.4	1.6
Dutch East Indies	0.9	1.2	1.4	1.3	0.8	0.6	0.9	1.4
Uruguay & Paraguay	0.8	0.6	0.6	0.5	0.5	0.5	0.3	0.3
British Africa ...	0.5	1.4	1.9	1.9	1.7	1.3	2.0	1.1‡
Haiti & Dominica	0.5	0.6	0.5	0.6	0.5	0.5	0.5	0.4
Norway ...	0.4	0.6	0.4	0.5	0.6	0.5	0.7	0.6
Mexico ...	0.4	0.4	0.5	0.4	0.4	0.3	0.2	0.4
Madagascar ...	0.3	0.6	0.8	0.7	0.5	0.6	0.8	0.9
Greece ...	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3
Morocco ...	0.2	0.6	0.8	0.9	0.6	0.9	1.6	1.6
Portugal ...	0.2	0.4	0.5	0.4	0.4	0.5	0.4	0.4
Canada ...	0.2	0.9	1.1	1.4	0.8	2.0	1.8	1.1
Austria ...	—	0.4	0.5	0.5	0.6	0.6	0.4	0.4
Finland ...	—	0.6	0.6	0.6	0.7	0.7	0.5	0.6
Venezuela ...	—	0.1	0.2	0.4	0.5	0.5	0.7	0.7
Czechoslovakia ...	—	0.6	0.4	0.4	0.6	0.8	0.8	0.8
Poland ...	—	0.5	0.4	0.5	0.7	1.1	0.8	0.7
Yugoslavia ...	—	0.3	0.2	0.2	0.3	0.3	0.2	0.2
Denmark ...	—	0.2	0.2	0.2	0.3	0.6	0.3	0.2
Syria ...	—	0.2	0.2	0.1	0.1	0.1	0.1	0.1
Other foreign countries	4.0	4.2	3.3	3.0	3.0	3.6	4.0	5.7
Other French Colonies	1.8	1.7	1.7	1.6	1.4	1.6	2.4	2.5
Totals ...	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* Belgium only. † Former Russian Empire. ‡ Union of South Africa only.

French Trade with Foreign Countries.—The values of French exports to individual countries are given in the following table for the periods 1909-13, 1922-26 and for each of the years 1928 to 1933.

PRINCIPAL CUSTOMERS OF FRANCE.
Arranged in order of importance in 1932.
(Values in millions of francs).

Country	Average		1928*	1929†	1930†	1931†	1932†	1933
	1909-13*	1922-26*						
Algeria ...	489	2,562	3,965	4,501	4,563	3,976	3,271	3,306
Belgium-Luxembg.‡	1,031	6,881	7,955	7,224	5,442	3,582	2,240	2,140
United Kingdom ...	1,303	7,580	7,881	7,573	6,845	5,043	1,962	1,676
Germany ...	795	3,045	5,623	4,743	4,155	2,749	1,699	1,703
Switzerland ...	383	2,478	3,226	3,382	3,095	2,309	1,511	1,330
United States ...	426	2,880	3,033	3,335	2,435	1,543	957	868
Tunisia ...	97	567	909	1,006	915	801	754	665
Morocco ...	42	771	1,243	1,291	1,116	881	721	584
Netherlands ...	74	1,047	1,343	1,257	1,225	927	609	644
Italy ...	301	1,660	2,129	2,209	1,681	992	595	492
French Indo-China	73	779	1,076	1,013	896	537	462	434
Spain ...	138	1,162	1,694	1,588	1,129	685	386	377
Argentina ...	109	753	1,125	1,069	878	514	322	329
Poland ...	—	211	432	469	435	299	322	173
Madagascar ...	36	256	405	407	240	260	222	222
French West Africa	57	562	797	586	549	285	213	215
British India...	37	345	506	450	339	238	166	112
Czechoslovakia ...	—	134	199	233	222	220	161	190
Canada ...	25	327	685	587	459	319	159	110
Roumania ...	10	141	147	150	171	115	153	129
Egypt ...	55	655	838	667	564	329	153	150
Syria ...	—	247	215	179	163	156	147	142
Sweden ...	17	155	283	260	328	269	140	124
Japan ...	13	211	235	236	162	122	136	118
Denmark ...	31	234	299	314	365	332	126	121
Brazil ...	75	373	533	459	309	140	119	162
China ...	16	181	413	242	161	103	99	134
Australia ...	11	146	299	237	182	95	98	68
British Africa ...	12	175	271	214	212	136	97	45 ^h
Turkey ...	79	385	484	347	191	160	93	69
Portugal ...	26	168	225	261	236	128	90	81
Norway ...	8	97	125	99	165	141	89	77
Austria ...	46§	112	202	176	215	178	80	69
Greece ...	18	323	458	422	267	201	79	63
Yugoslavia ...	—	57	78	102	109	97	60	36
Mexico ...	41	125	147	161	194	77	57	66
U.S.S.R. ...	70 ^h	44	161	236	170	59	47	44
Cuba ...	10	114	111	125	95	57	37	26
Venezuela ...	—	41	78	92	84	53	35	32
Colombia ...	19	101	163	136	72	49	32	41
Uruguay & Paraguay	21	120	190	205	188	90	31	37
Chile ...	36	198	180	246	211	68	20	28
Other forgn. countries	217	1,398	1,213	986	831	638	541	405
Other French col. ...	17	338	530	644	571	423	414	405
Totals ...	6,324	40,139	52,104	50,139	42,835	30,436	19,705	18,433

* Based on average values fixed by the Permanent Customs Evaluation Commission.

† Based on declared values.

‡ Economic Union of Belgium and Luxemburg from 1923 onwards.

§ Figures in 1909-13 column relate to Austria-Hungary.

h Figures in 1909-13 column relate to former Russian Empire.

h Figures in 1933 column include only exports to Union of South Africa.

Elsewhere in this chapter will be found observations respecting the trade of France with her colonies and protectorates (pp. 511 to 529), and with Great Britain (pp. 529 to 538); some notes as to the movement of the export trade of France with other important customers are appended here.

Belgium-Luxemburg*.—The Economic Union of Belgium and Luxemburg became in 1928 and 1930 the leading customer of France; and in 1932, though her purchases (2,240 millions) were 32 per cent. lower in value than those of Algeria, they exceeded those of any foreign customer. With the exception of aircraft, which advanced from 24 to 37 tons, and silk (including rayon) fabrics, which were practically stationary (543 and 559 tons, though their value dropped from 204 to under 73 millions), all the principal commodities suffered large reductions in weight between 1928 and 1932. The leading items in 1932 were (1931 and 1928 figures in parenthesis): in the textiles group, value 538 millions, or 24 per cent. of the total value, raw wool 13,764 tons (16,648 and 25,609), woollen yarns 4,988 tons (5,940 and 7,257), silk fabrics (already mentioned), woollen fabrics 853 tons (1,346 and 2,312), flax 93,411 tons (65,888 and 181,629), cotton fabrics 962 tons (1,432 and 3,426); in the minerals and metals group, value 285 millions, or 13 per cent., ores 9,085 thousand tons (10,129 and 12,768), coal 726 thousand tons (1,067 and 1,598), iron and steel 168 thousand tons (377 and 761), pig iron 82 thousand tons (152 and 229). Products of engineering amounted in value to 273 millions, or 12 per cent., including engines and boilers 8,007 tons (14,909 and 28,578), tools and metal wares 14,975 tons (25,916 and 97,403), motor-cars, 1,860 in number (2,440 and 4,227), machinery spare parts 4,243 tons (9,467 and 19,262); while nearly the whole value of chemical products, 262 millions, or 11.7 per cent., was almost equally divided between potassium chloride, 216 thousand tons (383 and 536) and miscellaneous chemicals, 147 thousand tons (193 and 232). Raw hides and pelts, with a value of 48.3 millions, or one-ninth of that of 1928, dropped from 16,760 to 10,197 tons, and rubber manufactures, 1,212 tons, value 20.5 millions, were less by 54 per cent. in weight and 75 per cent. in value than in 1928. Wines also suffered a big decline, from 175 to 68½ millions in value, the quantities being 218 and 95.6 thousand hectolitres. In 1933 the total value of French exports to Belgium-Luxemburg was 2,140 millions.

Germany.—As a customer, Germany steadily declined in the period 1928–32, having bought 5,623 millions in 1928 and 1,699 in 1932; or 10.8 against 8.6 per cent. of all French exports. Iron and steel (292 millions), raw wool (179 millions) and coal and coke (121 millions) headed the list as regards values in 1932. Nearly all the chief commodities greatly declined in quantity, the outstanding

*An important part of the exports to the Economic Union of Belgium and Luxemburg was only in transit to other countries.

exceptions being (1931 and 1928 figures in parenthesis) : raw wool 12,419 tons (11,589 and 10,251); silk yarns 1,522 tons (1,018 and 289); and tar distillation products 26,507 tons (34,272 and 23,136). Coal declined to 1,120 thousand tons (from 1,196 and 1,498); ores to 761 thousand tons (1,621 and 3,253); pig iron to 32.8 thousand tons (80 and 183); and iron and steel to 464 thousand tons (537 and 995). Exports of aluminium, 1,125 tons in 1928, shrank to 53 tons in 1931 and none at all are recorded in the 1932 returns. Among chemical products, phosphatic fertilizers decreased to 359 thousand tons (from 685 and 607) and miscellaneous chemicals to 15,128 tons (from 24,150 and 23,295). In the textiles group the weights were : raw cotton and cotton waste 4,695 tons (5,689 and 8,242); silk and silk floss 76½ tons (27 and 116); woollen yarns 1,831 tons (3,851 and 6,216); cotton yarns 722 tons (937 and 9,216); linen and hemp yarns 822 tons (706 and 1,520); silk fabrics 176 tons (257 and 409); woollen fabrics 276 tons (473 and 798); cotton fabrics 538 tons (1,422 and 7,519). Among engineering products, tools and metal wares declined by nearly four-fifths to 41,105 tons (from 83,957 and 190,105), steam and other engines by over three-fourths to 2,817 tons (from 7,131 and 12,220), and motor-cars were only one-twelfth in number or one-seventh by weight (120 against 421 and 1,176; corresponding to 808, 2,162 and 5,589 tons). Exports of wines shrank to 20.6 thousand hectolitres from 27.5 and 266.8; and brandies and spirits declined likewise to 593 hectolitres (of alcohol) from 1,393 and 4,294. Raw hides and pelts varied little (11,463 tons as compared with 11,545 and 11,772), though their value fell from 238 to 49 million francs; while dressed hides declined by about two-fifths (1,388 tons, against 1,715 and 3,469), and table fruit by rather more than two-thirds (15,335 tons against 25,435 and 50,089). The commodities enumerated above comprised 70 per cent. of the total value of exports to Germany. In 1933 the total value was 1,703 millions, or practically the same as in 1932.

Switzerland.*—Among exports to Switzerland (total value 1,511 millions), all the principal commodities except silk yarns and cereals suffered a decline in weight. The largest items in point of value were : coal, 130.2 millions (971 thousand tons in 1932, as compared with 1,061 and 1,471 thousand tons in 1931 and 1928), and iron and steel, 114.5 millions (232 thousand tons, against 270 and 259). Over one-fifth of the total value was attributable to the textiles and clothing group (340 millions), which included : silk yarns, 104.3 millions (3,414 tons, against 4,444 and 1,370 in 1931 and 1928), silk fabrics, 59.3 millions (454, 636 and 690 tons), woollen fabrics, 53 millions (742, 1,107 and 1,411 tons), cotton fabrics, 29.4 millions (1,023, 2,123 and 5,361 tons), raw wool and wool waste, 24 millions (2,126, 2,821 and 3,002 tons), woollen yarns, 22.4 millions (685, 652 and 791 tons). Products of engineering declined by

* A notable part of the exports to Switzerland was only in transit to other countries.

about 50 per cent. both in value and in weight, the principal components being: motor-cars, 37.8 millions (1,358, 1,831 and 1,790 cars; weights 2,177, 2,978 and 3,498 tons); tools and metal wares, 33.9 millions (15,682, 29,044 and 25,729 tons); steam and other engines, 22.7 millions (2,494, 3,638 and 4,821 tons). Of the remaining items the most important in value were chemical products, 59 millions (97 thousand tons, against 158½ and 174½), in which two-thirds of the weight and one-fifth of the value were due to phosphatic fertilizers; wines, 45.6 millions (134, 112 and 145 thousand hectolitres); and cereals, 35 millions (40.8, 83 and 19 thousand tons); while eight other commodities each represented a value of over 20 millions. Nearly one-seventh of the entire value of exports to Switzerland was due to articles not separately distinguished (196 millions), under the headings "parcel post" and "miscellaneous." In 1933 exports to Switzerland were slightly lower in value, at 1,330 millions.

United States.—Exports to the United States declined from 3,033 millions in 1928 to 957 millions in 1932; cotton fabrics (131 millions), paper and books (97 millions), and raw hides and pelts (53 millions) constituting the only items that individually exceeded 50 million francs in value. In the textiles group, which formed practically one-third of the total value (305 millions), the weight of cotton fabrics increased by 75 per cent. (2,884 tons, as against 1,416 and 1,645 in 1931 and 1928) and that of woollen fabrics by 15 per cent. (1,433 tons against 1,877 and 1,250), but large decreases occurred in the case of silk fabrics, value 66.6 millions, weight 398 tons (547 and 1,029), clothing, value 44.7 millions, weight 231 tons (856 and 824), as well as in silk yarns (a decline from 990 to 107 tons), in raw wool (from 2,365 to 286 tons) and in cotton yarns (from 296 to 191 tons). The leather and fur group (119.6 millions), next after textiles in importance of value, included raw hides and pelts, value 52.8 millions (6,293 tons, as against 6,773 and 6,945), leather manufactures, 41.7 millions (220, 355 and 469 tons) and prepared hides, value 21.3 millions (277 tons, against 293 and 481). Apart from paper and books, with a weight of 9,129 tons (comparing with 10,794 and 11,315 tons), and the commodities already noted, the principal values in 1932 were constituted by: cheese, 30.6 millions, one of the very few items showing an increase (2,608 tons as against 2,614 and 1,986 tons); table fruit, 25.3 millions (3,168, 3,577 and 8,700 tons); volatile oils and synthetic perfumes, 24.4 millions (248, 307 and 256 tons); miscellaneous chemical products, 7,476 tons (12,309 and 14,483). Iron, steel, and all components of the engineering group suffered heavy declines; iron and steel with 33,607 tons (as against 49,018 and 49,030), steam and other engines, with 335 tons (446 and 982), machinery spare parts with 119 tons (117 and 445), and tools and metal wares the heaviest decline of all, with 438 tons (5,479 and 50,870), the value in

this case shrinking from 79.5 to 8.6 millions. In 1933 there was a further decline, to 868 millions, in the total value of exports to the United States.

Holland.—Holland purchased goods to the value of 609 millions (as against 927 and 1,343 millions in 1931 and 1928, respectively), and was one of the few countries to which French exports of numerous commodities were greater by weight in 1932 than in 1928. In the textiles group, exports of silk fabrics (value 59 millions) were more than tripled (662 tons, as compared with 489 and 211); those of woollen yarns (value 40.3 millions) increased 40 per cent. (1,740, 1,392 and 1,254 tons); and those of silk yarns (value 3.1 millions) were seven times as great as in 1928 (186 tons, against 137 and 26.3); while pronounced decreases occurred as regards all other textile commodities—notably woollen fabrics (value 24.4 millions; weights 544, 829 and 937 tons), underwear and ready-made clothing (value 7 millions; weights 60, 124 and 147 tons), cotton yarns (value 8.9 millions; weights 437, 236 and 2,351 tons) and cotton fabrics (value 15 millions; weights 400, 522 and 733 tons). Exports of unenumerated chemical products increased considerably (78,150 tons, as compared with 78,089 and 68,692 tons), whilst suffering relatively little decline in value (from 70.5 to 53.9 millions), but chloride of potash (28.1 millions) dropped by 29 per cent. (61.5, 38.2 and 86.9 thousand tons). Iron and steel (33.5 millions) showed only a small decrease in weight (68.6 thousand tons, against 59.2 and 71.4), and nearly all components of the engineering group showed increases: motor-cars (numbers, 994, 1,136 and 943; weights 1,557, 1,660 and 1,528 tons), tools and metal wares (18,348, 35,657 and 14,287 tons), steam and other engines (1,375, 1,988 and 1,319 tons), aeroplanes (37, 36.6 and 8.3 tons), machinery spare parts (761, 1,277 and 1,189 tons). Pearls and precious stones, which have hitherto formed a large part of the total value of exports to the Netherlands, have dropped to 41.4 millions in 1928 and 24.4 millions in 1932. Other large decreases to be noted are: ores (317, 723 and 994 thousand tons), and wines (19,662, 27,530 and 51,110 hectolitres). In 1933 exports to the Netherlands advanced slightly, to 644 millions.

Italy* received in 1932 French goods to a value of 595 millions, or 397 millions less than in 1931 and 28 per cent. only of the value recorded in 1928. Practically the only increases in quantity were: cotton yarns, 510 tons (against 293 and 100 tons in 1931 and 1928), value 34.1 millions; raw hides and pelts, 2,831 tons (against 2,284 and 2,134), value 12 millions; and ships, 13,990 tons gross (against 47,619 and 4,817). Iron and steel, which heads the list as regards values, dropped from 164½ millions to 63½ millions (239 thousand tons, as compared with 280 and 361

* A part of the goods recorded as having been exported to Italy, was actually only in transit to other countries.

previously), and coal, second in importance with 51.1 millions, declined to 493 thousand tons from 622 and 632. Phosphatic fertilizers showed a particularly large decrease, from 102 thousand tons in 1928 to 29 and 18.6 thousand in 1931 and 1932, while miscellaneous chemicals were less by 50 per cent. (23.4 thousand tons, compared with 42.6 in 1928). All engineering products showed figures: steam and other engines 2,397, 6,190 and 5,562 tons; tools and metal wares 8,878, 18,696 and 12,274 tons; machinery spare parts 812, 1,938 and 6,207 tons; motor-cars 287, 397 and 3,220 tons (number of cars, 26, 42, and 3,926). In the textile and clothing group all components except cotton yarns (already mentioned) suffered large declines: raw silk and silk floss from 618 to 278 and 192 tons; silk yarns from 281 to 170 and 173 tons; silk fabrics from 133 to 126 and 71½ tons; raw wool 4,777, 5,048 and 3,548 tons; woollen fabrics 290, 231 and 127 tons; cotton fabrics 524, 308 and 311 tons; underwear and ready-made clothing 81.4, 37 and 24 tons. The weight of leather goods decreased from 119 to 72 tons and that of prepared furs from 50 to 22 tons. In 1933 total exports to Italy declined by 17 per cent., to 492 millions.

Spain purchased goods to a value of 386 millions in 1932, or roughly 22 per cent. of the value taken in 1928. Motor-cars, though still the leading item in point of value, ceased to display the overwhelming predominance of former years, dropping in value from 185 to 32½ millions in 1928-32 and constituting in the latter year only one-twelfth of the total value of exports. They declined in weight from 10,344 to 2,276 tons, and in number from 6,670 to 1,485. Other products of engineering showed similar decreases: steam and other engines from 82 to 20 millions (from 8,405 to 1,819 tons), tools and metal wares from 62.8 to 11.8 millions (from 13,521 to 1,563 tons), machinery spare parts from 60.2 to 20.7 millions (6,313 to 1,712 tons). Eggs, which in 1928 came next after motor-cars in point of value, suffered an exceptionally large decline, from 150 to only 2.3 millions, the weight decreasing from 15,323 to 517 tons. Within the textiles group, which suffered a decline of 84 per cent. in value and 62 per cent. by weight (from 250 to 40½ millions and from 4,115 to 1,545 tons), the most pronounced decreases were: silk fabrics, from 79.5 to 3.6 millions (190 to 18½ tons), silk yarns, from 53.4 to 15.3 millions (643 to 560 tons), cotton fabrics, from 24.1 to 2.2 millions (629 to 35 tons). Among products of the chemical industries, phosphatic fertilizers decreased almost to vanishing point (from 21.5 millions to 0.7, and from 72,623 to 2,811 tons), prepared medicines were less by half (19.6 and 11.0 millions, corresponding to weights of 484 and 247 tons) and miscellaneous chemicals declined to a similar extent, from 24.5 to 14.3 millions (11,285 to 5,574 tons). Exports of common timber fell from 85 to 10 millions (189 to 26 thousand tons), those of pearls and precious stones from 61 to 7.7 millions, those of manufactured rubber goods from 57 to 14.3 millions (1,859 to 748 tons), those of mules

from 30 to 10.6 millions (from 9,927 to 7,247 head). The only increase of note was in the case of raw hides and pelts, whose value rose from 9.0 to 12.6 millions, and whose weight advanced from 560 to 3,578 tons. Parcel post and miscellaneous articles, at 72.7 millions, formed nearly one-fifth of the total—a proportion $2\frac{1}{2}$ times as great as in 1928. In 1933 total exports to Spain, 377 millions, were practically equal in value to those of 1932.

The Argentine Republic purchased goods to the value of 322 millions in 1932—198 millions less than in 1931 and only 29 per cent. of the corresponding figures for 1928. The proportion represented by textiles and clothing, together with the iron, steel and engineering group, which in 1927 was 62 per cent. of the total value, has declined somewhat, and in 1932 represented only 51 per cent (34 and 17 per cent., as against 48 and 14 per cent.). In the textiles and clothing group, whose total value was 109 millions, all components declined except silk yarns. The leading items were: silk fabrics, 177 tons (as against 407 and 502 tons in 1931 and 1928), woollen fabrics 518 tons (against 869 and 1,325), cotton fabrics 472 tons (779 and 1,898), cotton yarns 378 tons (627 and 608), and silk yarns, 345 tons (177 and 49). Metals and engineering products accounted for nearly 60 millions, large decreases being shown by iron and steel, 26.6 thousand tons (against 35.4 and 90 thousand), tools and metal wares 7,509 tons (12,679 and 24,854), steam and other engines, 1,399 tons (2,327 and 2,015), while motor-cars declined in number from 302 to 16, and in weight from 820 to 58 tons. Ceramic wares declined in value from 37.2 to 10.6 millions, with a decrease of three-fifths by weight (from 30,657 to 12,782 tons), and wines were less by two-thirds (6,476 hectolitres against 17,559). A noteworthy increase occurred in the case of arms, powder and ammunition, which headed the list of values by advancing from 3.5 to 44.7 millions, with an increase in weight from 104 to 259 tons.

During the first eight months of 1933 French exports to Argentina were 16 per cent. greater than in the corresponding period of 1932; but this improvement was not maintained, and the total for the year, 329 millions, represented an advance of 7 millions only.

Principal Suppliers of France.—Since 1927 there has been a certain amount of reshuffling of places at the head of the table; Germany advanced to the first position in 1930 and retained it for three years; Algeria advanced from the fifth position in 1927 to second in 1932, and in 1933 considerably outdistanced Germany for the leading place (3,859 against 3,044 millions); and the United Kingdom has gone down from second to fourth. It is interesting to note the relatively high places of some British Dominions as suppliers to France (*e.g.*, India, Canada, Australia).

PRINCIPAL SUPPLIERS OF FRANCE.
Arranged in order of importance in 1932.
(Values in millions of francs).

Country	Average		1928*	1929†	1930†	1931†	1932†	1933†
	1909-13*	1922-26*						
Germany ...	914	2,388	5,004	6,613	7,937	6,142	3,613	3,044
Algeria ...	380	1,670	2,832	2,990	3,299	3,428	3,291	3,859
United States ...	791	5,696	6,177	7,160	6,148	3,801	2,900	2,851
United Kingdom	995	4,971	5,297	5,828	5,273	3,724	2,457	2,167
Belgium								
Luxemburg† ...	510	3,075	4,040	3,920	4,199	3,633	2,447	1,966
Argentina ...	332	1,686	2,244	2,374	1,203	1,428	1,068	581
Netherlands ...	116	1,174	1,705	1,647	1,756	1,609	1,044	833
British Indian Possessions ...	356	2,171	2,653	2,758	2,103	1,163	790	792
Tunisia ...	75	373	589	704	665	585	725	450
Spain ...	223	773	1,620	1,442	1,509	1,405	717	686
Italy ...	192	1,470	1,525	1,516	1,527	1,437	630	622
Switzerland ...	137	699	934	1,075	1,133	904	607	632
British possessions in Africa ...	39	566	1,017	1,080	883	558	598	308*
Canada ...	12	342	604	843	447	830	542	318
Brazil ...	164	1,061	1,154	1,079	783	628	535	445
U.S.S.R. ...	392‡	372	725	788	886	496	520	506
Australia ...	259	1,600	2,045	2,520	1,393	788	489	673
Morocco ...	18	245	486	504	301	393	486	465
Roumania ...	98	205	203	233	375	565	456	354
French Indo-China	98	464	715	692	526	404	405	582
French W. Africa	101	681	804	832	754	457	330	376
Sweden ...	83	522	642	806	749	523	306	342
Dutch East Indies	68	497	771	772	428	244	276	394
Czechoslovakia ...	—	225	218	245	309	330	250	219
Madagascar ...	25	255	430	367	254	243	244	261
Poland ...	—	186	210	302	356	457	236	205
Egypt ...	83	739	926	1,023	649	385	235	322
China ...	217	1,168	1,684	1,253	715	485	210	229
Venezuela ...	—	60	99	212	272	203	200	204
Norway ...	30	224	219	268	301	221	194	169
Haiti and								
Dominica...	37	225	289	316	244	217	159	117
Japan ...	105	328	337	268	284	203	158	166
Finland ...	—	252	346	328	354	285	142	157
Portugal ...	14	161	259	213	190	219	125	109
Austria ...	—	171	251	309	304	254	117	109
Uruguay and								
Paraguay ...	64	236	302	284	259	211	100	84
Turkey ...	98	144	174	174	165	128	94	517

* Based on average values fixed by the Permanent Customs Evaluation Commission.

† Based on declared values.

‡ Economic Union of Belgium and Luxemburg from 1923 onwards.

§ Figures in 1909-13 column relate to former Russian Empire.

* Figures in 1933 column include imports from Union of South Africa on

PRINCIPAL SUPPLIERS OF FRANCE—*continued.*

Country	Average		1928*	1929†	1930†	1931†	1932†	1933†
	1909-13*	1922-26*						
Denmark ...	3	63	92	88	146	238	86	53
Greece ...	24	77	115	117	93	102	73	85
Jugo-Slavia ...	—	100	121	132	157	123	57	50
Mexico ...	29	142	283	250	215	134	54	112
Chile ...	98	412	725	1,105	579	528	46	130
Syria ...	—	78	97	74	62	43	33	28
Other foreign countries ...	313	1,687	1,777	1,797	1,595	1,391	1,153	...
Other French colonies ...	134	677	904	919	731	661	710	702
Totals ...	7,627	40,311	53,644	58,220	52,511	42,206	29,808	28,425

* Based on average values fixed by the Permanent Customs Evaluation Commission.

† Based on declared values.

Germany.—In 1930 Germany dislodged the United States from the position of chief supplier to France, and held that position until the end of 1932, furnishing 15.1, 14.5 and 12.1 per cent. of all imports into France in 1930-32. The value of imports from Germany rose in 1928-30 from 5,004 to 7,937 million francs, declining to 3,613 and 3,044 millions in 1932 and 1933, and the course of most of the leading commodities followed a somewhat similar curve; but comparison with earlier years is rendered difficult by the distortion of the relative proportions that they usually form, in the total value of imports, due to the influence of deliveries in kind up to the middle of 1931, their subsequent suspension and the effect of restrictions by quota. Thus, the relative importance of coal and coal products has substantially diminished, for whereas in 1927 they constituted more than one-third of the total value of imports, in 1932 they formed only 18 per cent. (666 millions), the quantity imported having declined by more than half, from 12.7 to 5.9 million tons. Products of engineering, after having tripled in value from 1928 to 1930 (from 915 to 2,760 millions), fell back in 1932 to 951 millions, or 26 per cent. of the total imports, all except ships showing a considerable increase by weight in comparison with 1928. The chief components in 1932 were (1931 and 1928 figures in parenthesis): steam and other engines 45,573 tons (92,237 and 39,815 tons); tools and metal wares 44,586 tons (79,229 and 18,483 tons); machinery spare parts 16,456 tons (43,622 and 13,135 tons); boilers 3,198 tons (7,835 and 2,575 tons); ships 6,937 tons (46,486 and 29,535 tons); while motor-cars nearly doubled in number, from 172 (285 tons) in 1928 to 316 (941 tons) and 349 (1,042 tons) in 1931 and 1932 respectively. Paper and printed

matter declined between 1928 and 1932 from 75,203 to 46,987 tons, pottery and glassware from 80,170 to 58,916 tons, and prepared skins and furs, including leather manufactures, from 3,110 to 2,940 tons. Imports of pig iron in 1932 were three times as great as in 1928, and of iron and steel four times, the quantities of the former being 1,641 and 4,962 tons, and of the latter 13,367 and 51,492 tons. In 1932 the groups above-mentioned constituted 2,519 millions, or 70 per cent. of the total value of imports.

United States.—The United States, leading supplier to France from 1924 to 1929, but only third (after Germany and Algeria) in 1932, furnished goods to a value of 2,900 millions, or a little less than half the value (6,177 millions) supplied in 1928. The proportion of the total value represented by raw cotton fell from 38 to 26 per cent., its value decreasing from 2,360 to 762 millions, though the weight declined by only 12 per cent. (from 202 thousand tons in 1928 to 140 and 177 thousand tons in 1931 and 1932). Mineral oils, including heavy oils and petroleum residues, declined in value by 50 per cent. from 1,313 to 649 millions, the weight of mineral oils falling from 1,020 to 992 thousand tons and that of heavy oils and petroleum residues from 322 to 238 thousand tons. Copper fell from 685 to 119 million francs in value and from 82.8 to 35.2 thousand tons in weight, while cereals increased in quantity (from 157 to 235 thousand tons), but declined in value from 232 to 155 millions. Raw hides and pelts also declined in value by three-fourths (from 63.1 to 16.9 millions) and in weight by five-sixths (from 2,320 to 404 tons). Among products of engineering there was one increase, *viz.* machinery spare parts, which advanced in value from 26 to 33½ millions, corresponding to tonnages of 1,503 and 2,168; tools and metal wares suffered a relatively slight decline from 56.2 to 43.8 millions in value and from 2,590 to 2,394 tons; while both engines and motor-cars decreased by about 50 per cent.—the former from 15,926 to 8,353 tons (values 336 and 208½ millions) and the latter from 11,112 to 5,922 tons (values 118 and 73½ millions), the number of cars, however, falling from 4,327 to only 395. Noteworthy increases occurred in several instances, as regards both weight and value: for instance, table fruit, from 26,331 to 69,439 tons (101 and 158 millions); tobacco from 12,585 to 18,640 tons (129 and 148 millions); miscellaneous chemical products from 11,208 to 87,800 tons (29 and 91 millions); tar distillation products from 6,280 to 113,306 tons (6.4 and 44.6 millions); mineral tar, bitumens and asphalts from 33 to 66.7 thousand tons (21.3 and 23.5 millions). Supplies of coal from the United States, which had attained nearly half a million tons in 1927, have since gradually dwindled to negligible proportions, only 4,454 tons being imported in 1932. Total imports in 1932 declined slightly, to 2,851 millions.

Belgium.—Imports from the Economic Union of Belgium and Luxemburg, 2,447 millions in 1932, were slightly more than half

what they were in 1928 (4,040 millions), but constituted 8.2 per cent. of the total value of French imports, as against 7.5 per cent. previously. The values are spread over a large number of commodities, and the five or six leading items did not in 1932 preponderate to so large an extent as in the preceding years. Coal, the chief item (value 454½ millions), declined in quantity from 4,578 to 3,467 thousand tons as a result of quota restrictions, the weight in 1931 being 5,586 thousand tons. Pearls and precious stones declined in value from 385 to 52 millions, though the apparent decrease is perhaps largely attributable to the omission from the import returns, of dealers' consignments sent on approval. Imports of potatoes were lower by nearly two-thirds (76.9 thousand tons as against 194 thousand tons), as were also imports of raw cotton (8,444 against 24,643 tons), and the two chief components among engineering products also declined: machinery (value 56.7 millions) from 10,486 to 6,784 tons and tools and metal wares (value 38.1 millions) from 10,978 to 9,216 tons. On the other hand, several increases, some of which were very considerable, have to be recorded: raw wool (value 260 millions) from 14,467 to 47,300 tons; cereals (value 61.3 millions) from 19,406 to 96,052 tons; flax (value 100 millions) from 10,539 to 33,778 tons; copper (value 89 millions) from 7,873 to 26,265 tons; and chemical products (value 167 millions) from 126 to 501 thousand tons, this last-mentioned group including tar distillation products (from 18,248 to 235,277 tons), phosphatic fertilizers (from 20,431 to 173,914 tons) and miscellaneous chemicals (from 63,440 to 90,621 tons). The foregoing products accounted in all for 56 per cent. of the total value in 1932, and 14 other commodities each represented individual values in excess of 20 millions. In 1933 there was a further decline, to 1,966 millions, in the total value of imports from Belgium-Luxemburg.

The Argentine.—Sixth in importance as a supplier of France, the Argentine furnished in 1932 goods to the value of 1,068 millions, or 3.6 per cent. of the total imports. Relatively few commodities enter into the composition of this amount, cereals accounting for two-thirds (676 millions), and oilseeds and raw cotton (134 and 125 millions respectively) together for another 25 per cent. Cereals increased in quantity from 631 thousand tons in 1928 to 1,448 and 1,383 thousand tons in 1931 and 1932; oilseeds and fruits increased from 139 to 197 and 185 thousand tons; raw wool declined from 52,528 to 37,022 and 35,322 tons. Among commodities of secondary importance that increased by weight were: fresh and frozen meat (value 31.6 millions) from 4,897 to 24,713 and 10,204 tons; raw hides and pelts (value 12.4 millions) from 3,315 to 3,765 and 3,669 tons; and imports of butter showed an exceptionally large progression, from 193 to 1,296 and 2,922 tons, the value advancing from 3.9 to 25.3 million francs. Chemical products declined from 14,533 to 12,434 tons, with a fall of three-fourths

in value (from 48.5 to 11.7 millions). In 1933 imports from the Argentine Republic declined by 487 millions, or 45½ per cent., compared with 1932; this large reduction being due to a shrinkage of nearly 90 per cent. in purchases of wheat, partly offset by an increase in purchases of raw wool, which were nearly doubled in value.

Holland.—Of the 1,044 millions that constituted the value of imports from the Netherlands in 1932, foodstuffs (35 per cent.) and coal (19 per cent.) accounted for 54 per cent. The total value was 561 millions, or 33 per cent., less than in 1931 and 667 millions less than in 1928. Five years earlier the percentage represented by foodstuffs was 42 per cent., the reduced proportion being due largely to the very considerable decrease in imports of fresh meat and of animal fats, though most foodstuffs contributed their quota to the decline. The largest individual item was coal (198 millions), which differed very little in value or weight from the figures of 1928, but was less than half the quantity imported in 1931 (1.48, 3.09 and 1.46 million tons in 1928, 1931 and 1932 respectively). Within the foodstuffs group (367 millions), increases in quantity occurred in the case of: dairy produce (from 10,570 to 19,348 and 14,069 tons), 63 per cent. of its value of 113 millions in 1932 being attributable to cheese and 26 per cent. to butter; fixed vegetable oils (from 10,670 to 15,148 and 20,008 tons), with a value of 46.6 millions; pulse and pulse meal (from 16,371 to 18,112 and 20,397 tons), value 25.3 millions; table fruit (from 7,057 to 31,215 and 11,258 tons), value 19.5 millions. The principal foods that declined in weight were: fresh meat (from 24,597 and 24,505 to 8,791 tons), whose value fell from 197 to 62.1 millions; animal fats (from 15,608 to 2,232 and 2,351 tons), the value shrinking from 90.1 to 9.4 millions; cocoa (5,368, 4,573 and 3,695 tons, accompanied by a decline in value from 48.2 to 16.5 millions). There was a less pronounced decrease in the case of potatoes, which, with a value of 25.9 millions in 1932, declined in the period under consideration from 60,219 and 70,114 to 54,838 tons. Engineering products increased by nearly 50 per cent. in weight and more than doubled in value (from 8,425 to 12,002 tons and from 37.7 to 86.5 million francs), the figures for the chief commodities comprising this group being: steam and other engines, an increase from 871 to 2,267 and 2,241 tons, accompanied by an advance in value from 18.7 to 60.4 millions; tools and metal wares, weight 644, 1,913 and 1,135 tons, the value increasing from 5.3 to 12.4 millions; machinery spare parts, weights 186, 404 and 335 tons, values 2.8 and 4.2 millions; and ships, 6,724, 16,904 and 8,292 tons gross, the values in this case, however, suffering a slight setback from 10.8 to 9.5 millions. The values recorded for pearls and precious stones were much lower, the figures for 1928, 1931 and 1932 respectively being 66.3, 5.0 and 4.8 millions in the case of pearls, and 146, 27.3 and 24 millions in that of precious stones.

Imports of raw hides, whose value fell from 65.9 to 17.7 millions, amounted to 4,391, 4,852 and 3,780 tons; and very considerable reductions occurred also as regards raw cotton (from 6,777 to 2,373 and 1,324 tons, the value declining from 67.8 to 4.6 millions) and glassware and crystal (from 1,070 to 826 and 512 tons, the value dropping from 81.5 to 36.9 millions). In 1933 the total value declined by 20 per cent. to 833 millions.

Spain.—Of Spanish imports, 717 millions in 1932, or 42 per cent. of the 1928 total, nearly half (331 millions) consisted of table fruit, the weight of which increased from 213.4 to 280.9 thousand tons between 1928 and 1932. Fresh vegetables (value 64.9 millions) increased from 9,639 to 42,000 tons; lead (54.2 millions) from 20,106 to 42,151 tons; manufactured cork (17.1 millions) from 1,223 to 2,026 tons; and fixed vegetable oils (15.8 millions) from 249 to 3,121 tons. A very large decrease occurred in imports of wines, which dropped to 624 thousand hectolitres, whereas in 1928 they had formed the chief import, with a value of 585 millions (3,734 thousand hectolitres). Sulphur and pyrites also declined greatly (from 58.5 to 41.8 thousand tons, value 81.8 and 39.2 millions), as did ores (from 254 to 122 thousand tons; value 56.5 and 16.7 millions), raw wool (from 3,730 to 1,435 tons; value 65.2 and 9.5 millions), and raw hides and pelts (from 1,944 to 723 tons; value 62.6 and 13.3 millions). A decline of 31 millions in 1933 reduced the total value in that year to 686 millions.

Italy.—Italian imports reached the value of 630 millions in 1932, or 807 millions less than in 1931 and 895 millions less than in 1928. Silk and silk floss, raw hides, hemp, textiles and clothing, engineering products, which had formed in 1928 the principal items in point of value, all showed considerable reductions, though there was an increase in the weight of textiles and clothing. Table fruit came to the head of the list with a value of 64.5 millions (as against 68.9 in 1928), the weight increasing from 26,751 to 47,884 tons. Silk and silk floss was second, with a fall in value from 478 to 58½ millions, accompanied by a decrease in weight from 2,675 to 1,070 tons. Cheese, with a value of 45.3 millions, increased in quantity from 4,936 to 6,346 tons. Textiles and clothing, though declining in value from 76 to 42 millions, advanced in weight from 1,843 to 2,262 tons, the chief components of this group being silk yarns (757 tons), which accounted for half the value, and silk fabrics (66.7 tons), which accounted for one-fourth. Sulphur and pyrites (35 millions) increased from 66,987 to 96,018 tons. Imports of salted meat and pork-butcher's wares were more than doubled (from 845 to 1,962 tons; values 13.5 and 30.8 millions), and rice, though lower in value (28.5 millions as against 42.3), advanced in weight from 25 to 31 thousand tons. Prominent among the decreases were: raw hides and pelts, from 6,672 to 3,423 tons, corresponding to values of 124 and 25½ mil-

lions; hemp, from 18,270 to 4,405 tons (values 116 and 14 millions); and engineering products, from 9,544 to 2,479 tons (values 78.2 and 31.6 millions), the most important item within the latter group, namely, motor-cars, declining in number from 3,926 to 116 and in weight from 3,220 to 226 tons (corresponding to values of 43.2 and 3.7 millions). In 1933 the total value was 622 millions.

Switzerland.—Among the imports from Switzerland, whose value in 1932 amounted to 607 millions, products of engineering play a prominent part and, together with watches and clocks, constituted more than one-third of the total value. Although engineering products as a whole were slightly lower in weight as well as in value, compared with 1928 (10,244 tons, value 161.4 millions, as compared with 11,280 tons, value 169 millions), and the principal component thereof, steam and other engines, declined from 6,358 to 5,077 tons, both tools and metal goods and machinery spare parts showed small advances, the former (31.4 millions) from 3,053 to 3,259 tons and the latter (24.2 millions) from 1,361 to 1,440 tons. The value of watches and clocks declined from 76 to 45.7 million francs, and that of prepared dyes from 37.4 to 31.9 millions (with a fall in weight from 615 to 536 tons). Imports of basketware were quadrupled in value (from 6.7 to 26.3 millions), their weight in 1932 being three times that of 1928 (269 tons, as compared with 83.3). A slight recovery of 25 millions increased the total value in 1933 to 632 millions).

Brazil.—Coffee, the chief product of Brazil, accounted for 500 millions out of a total of 535 millions supplied to France in 1932, thus constituting 93½ per cent. of the total value, as against 85 per cent. in 1928, when its value was 983 out of 1,154 millions. In quantity it increased from 91,464 tons in 1928 to 122,465 in 1931, falling back to 97,178 tons in 1932. Most of the few remaining commodities decreased greatly in weight as well as in value: raw hides and pelts from 4,837 to 394 tons (69.2 and 4.9 millions), crude rubber from 1,298 to 649 tons (15.0 and 1.6 millions), ores from 43,181 to 6,889 tons (13.0 and 1.2 millions), cocoa from 3,272 to 1,173 tons (28.2 and 3.4 millions); an isolated increase occurring in the case of fresh and frozen meat (from 1,189 tons, value 5.9 millions, to 1,651 tons, value 5.7 millions). A further decline of 90 millions, or 17 per cent. reduced the total value in 1933 to 445 millions.

III. FRENCH COLONIAL TRADE

The part played by French overseas possessions in the total import and export trade of their mother country has become more pronounced during the last few years, though in absolute values there was a considerable decline in 1931 and 1932, in common with the French trade with foreign countries. Expressed as a per-

centage of total trade, *imports* from the colonies in 1932 were almost twice as great as in 1909-13. In the last five pre-war years they averaged 11.1 per cent. of total imports from all sources; in 1927-30 they averaged 12.7 per cent., advancing in 1931 and 1932 to 14.7 and 20.9 per cent. respectively, their value in the latter year (6,223 millions) exceeding that of imports from the United Kingdom and Germany together. The proportion of *exports* to the colonies in 1932 was 2½ times as great as before the war. In 1909-13 they averaged 12.8 per cent. of total exports; in 1927-30 they averaged 17.9 per cent., advancing in 1931 and 1932 to 24 and 31.5 per cent. respectively. In 1932 their value (6,202 millions) was greater by 309 millions than the combined value of exports to the three best foreign customers of France (Belgium, United Kingdom and Germany). The following table shows the total value of French imports and exports in the years 1909-13, 1922-26, and in each of the years 1927 to 1933, and the proportions thereof borne by her overseas territories:—

RELATION OF FRENCH COLONIAL TRADE TO TOTAL EXTERNAL TRADE.
(Millions of francs).

Year	Imports			Exports		
	Total	Of which, from colonies	%	Total	Of which, to colonies	%
1909-13 (average)*	7,627	849	11.1	6,324	811	12.8
1922-26 (average)*	40,295	4,365	10.8	40,090	5,834	14.6
1927*	52,996	6,243	11.8	55,196	8,184	14.8
1928*	53,644	6,856	12.8	52,104	9,025	17.3
1929†	58,220	7,009	12.0	50,139	9,449	18.8
1930†	52,511	6,531	12.5	42,835	8,851	20.7
1931†	42,206	6,215	14.7	30,436	7,318	24.0
1932†	29,808	6,223	20.9	19,795	6,204	31.5
1933†	28,425	6,724	23.7	18,433	5,973	32.4

* Based on values fixed by the Permanent Customs Evaluation Commission
† Based on "declared values."

It will be observed that in 1932, for the first time for many years, the balance of visible trade was against France. Three-fourths of the total value of trade with the colonies is effected between France and Northern Africa (comprising Algeria, Tunisia and Morocco).

Imports attained their highest level in 1929 when, with a value of 7,009 millions, they were 2.2 per cent. greater than in the preceding year; declines of 6.8 and 11.3 per cent. in 1930 and 1931 brought down the total value slightly below that of 1927. In 1932 the value remained stationary, and in 1933 it advanced by 501 millions, or 8 per cent. *Exports* to the colonies suffered a much

greater decline. After advancing in 1929 to the record figure of 9,449 millions, each of the years 1930 to 1933 saw a substantial reduction, the value of 5,973 millions in 1933 being 36.8 per cent. less than in 1929 and 33.8 per cent. less than in 1928. As will be seen from the following tables of trade with individual colonies, in practically all cases except that of Algeria (see below), imports and exports alike declined from 1929 to 1931, but in 1932 and 1933 there were increases in the value of imports from four of the seven overseas territories separately distinguished in the trade returns:—

TRADE OF FRANCE WITH FRENCH COLONIES.

(Values in millions of francs).

Imports from :	1927	1928	1929	1930	1931	1932	1933
Algeria	2,601	2,832	2,990	3,299	3,428	3,291	3,859
Tunisia	398	589	704	665	585	725	345
Morocco	497	487	504	301	393	486	465
Indochina	627	715	692	527	404	405	582
French W. Africa ...	873	804	832	754	457	330	376
Madagascar	320	430	367	254	244	244	261
Other colonies	927	999	920	731	704	742	731
Total from colonies ...	6,243	6,856	7,009	6,531	6,215	6,223	6,724

TRADE OF FRANCE WITH FRENCH COLONIES.

(Values in millions of francs).

Exports to :	1927	1928	1929	1930	1931	1932	1933
Algeria	3,426	3,965	4,501	4,564	3,976	3,271	3,306
Tunisia	804	909	1,007	915	801	754	665
Morocco	1,039	1,243	1,291	1,116	881	721	584
Indochina	1,161	1,076	1,013	896	537	462	434
French W. Africa ...	710	798	586	549	284	213	215
Madagascar	418	405	407	240	260	222	222
Other colonies	626	630	644	571	579	561	547
Total to colonies... ..	8,184	9,026	9,449	8,851	7,318	6,204	5,973

Colonial Trade Policy of France.—The principle and practice of very close trade relations between France and her overseas territories have always been fostered on many grounds by French public opinion and by French industry and commerce. In recent years strong movements for the further tightening of these relations have taken shape and have been stimulated by various particular events, such as the preparation, teachings and

contacts of the Colonial Exhibition in Paris in 1931, the shrinkage of foreign markets, the more intense sense of economic nationalism, the calling together of the Ottawa Conference of the British Dominions for considering closer trade ties with the United Kingdom. Early in the Great War when attention was directed to the utilisation of colonial resources, a methodical inventory or census of their potentialities and of their rational turning to account was drawn up and formed the basis of a Government Bill in 1920. Much was done through public funds and reparations to develop their public equipment (railways, routes, ports, electricity, etc.) and agricultural development between 1920 and 1928; and under the National Equipment measures of the intervening period, financial facilities for further large-scale improvements were provided.

The enhanced importance of colonial trade has already been noted: the colonial *imports* into France in 1932 equalled in value the combined imports of the United Kingdom and Germany and were nearly 21 per cent. of all French imports: that the French *exports* thereto equalled the combined exports to the three best foreign customers (Belgium, United Kingdom and Germany), and were 31½ per cent. of all French exports. And from the colonial standpoint the home country has become of predominant importance as a market: in 1931 she was the purchaser of 66 per cent. of their total exports, and in 1932 the figures when available will no doubt show a much higher percentage. Of the total *imports* of the French overseas possessions in 1930 and in 1931 France supplied 63 per cent. To further these noteworthy developments in Franco-colonial exchanges, a Colonial Economic Conference was convened for May, 1933, to consider, *inter alia*: the more extensive use of products of colonial origin by the industries of France; the intensification of the whole range of colonial production in conformity with the proposals mentioned above as having been drawn up in 1920; the problems governing French exchanges with the colonies, customs tariffs, transports, and so forth. Further adjustments of customs tariffs and regulations in favour of the mother country are doubtless envisaged. As regards North Africa, Algeria is already one with Continental France. Tunis makes its own rates in accord with the French Government but duty-free entry is accorded to a number of outstanding industrial imports, including textiles, iron and steel and engineering products, if of French or Algerian origin. In 1932 increased duties on certain foreign textiles were already imposed in French West Africa. French goods enter free of duty into the so-called assimilated territories (Indo-China, Madagascar, Guadeloupe, French Guiana, Martinique, Reunion).

Attempts will doubtless be made to solve such difficult problems as the competition of Algerian and Tunisian wines, wheat and other products with the corresponding products of French agriculture; the growing menace (as far as French industrialists

are concerned) of the young, but developing, industries of Indo-China (coal, iron and steel, etc.); the demands heard in some quarters for a revision of the present equality of customs treatment, in the Protectorate of Morocco, of French and foreign goods; the extension of public works, and of road and railroad building, in particular, as a means of providing bigger outlets for manufactured products of French industry (metallurgical products, such as railway material, machinery, motor-cars, alone represent a value of three milliards, or one-sixth, of the aggregate yearly imports of French colonies, and a weight of some 800,000 tons, three-fourths of which is at present supplied from French sources).

Algeria.—Algeria supplies more goods to France, and takes a greater proportion of her exports, than all the other French colonies combined. In 1932 she headed the list of customers of France; and as a supplier she advanced from fifth position in 1931 to second in 1932, and advanced to the head of the table in 1933. *Imports* from Algeria, 3,291 millions in 1932, were lower by 137 millions than in the previous year, but in 1931 they had grown by 31.8 per cent. in five years; and a further increase of 568 millions in 1933 brought the total advance since 1927 up to 48.4 per cent. The advance in value is entirely due to the large increase in imports of wines, while this commodity and five others (cereals, cattle, spirits, table fruit and the group oatmeal, semolina and alimentary pastes) together account for nine-tenths of the total value of imports from that colony. The following table shows the weight of the principal imports from Algeria in the years 1928 to 1933, and the total values for those years:—

[TABLE]

PRINCIPAL IMPORTS FROM ALGERIA.

Commodities	Weight (tons)					1933
	1928	1929	1930	1931	1932	
Wines (1,000 hl.) ...	7,056	9,494	10,279	12,050	12,183	14,761
Cereals ...	263,239	207,430	368,870	168,177	289,177	249,852
Cattle... ..	24,200	24,325	48,617	29,662	25,942	(a)
Brandies & spirits (hl.)	32,816	95,061	134,100	116,337	331,697	122,642
Table fruit	51,936	47,001	58,117	48,245	51,743	62,392
Semolina, oatmeal and other pastes ...	28,071	21,661	27,425	27,479	31,801	32,678
Potatoes	30,751	37,292	40,127	27,409	27,118	48,871
Vegetables, fresh ...	24,969	25,603	27,398	26,794	32,094	39,111
Tobacco, in leaf or manufactured ...	9,684	7,050	8,837	6,298	7,230	10,427
Fixed vegetable oils	8,805	5,092	12,058	5,152	10,890	3,403
Raw wool	8,993	8,010	7,863	3,805	2,013	2,421
Stones and earthen (arts and crafts)	191,546	218,858	203,060	133,156	113,843	148,583
Pulse & pulse meal	16,918	16,106	14,533	14,569	15,047	7,832
Raw hides and pelts	2,973	2,020	2,735	1,590	1,568	1,648
Fodder and bran ...	24,160	35,030	21,034	20,984	20,218	32,918
Ores	42,322	54,481	56,972	73,729	28,656	39,409
Timber	5,951	9,342	7,410	4,910	4,932	12,754
Eggs	1,779	2,967	1,659	823	463	1,100
Cotton	930	1,345	1,248	615	199	293
Parcel post and misc. (values)	19	19	19	15	11	18
Value (million francs)	2,699	2,855	3,171	3,330	3,199	3,739
Value, total imports (million francs)...	2,832	2,990	3,300	3,428	3,291	3,859

(a) Quantity not recorded in 1933 return. Value was 122 millions, or practically equal to imports in 1929 and 1932.

Exports to Algeria, 3,271 millions in 1932, were 17.7 per cent. lower in value than in the previous year, 28.3 per cent. less than in 1930 (when their value, 4,563 millions, was the highest on record), and 17.5 per cent. less than in 1928. Between 1928 and 1931 exports of engineering products increased in quantity by about one-third, the expansion being most marked in the case of tools and metal wares and in that of iron and steel. Cotton fabrics, the most important item in point of value, maintained an advance upon the years 1928 and 1930, while the weight of yarns of all kinds exported to Algeria in 1931 was nearly twice as great as in 1928. Nearly all the principal commodities declined in quantity as well as in value in 1932, the principal exception being miscellaneous chemicals.

PRINCIPAL EXPORTS TO ALGERIA.

Commodities	Weight (tons)					
	1928	1929	1930	1931	1932	1933
Metals & Engineering Products:						
Tools and metal wares ...	62,707	71,219	95,163	112,858	78,511	70,366
Motor-cars and parts ...	14,283	17,757	14,871	13,424	10,185	14,129
Engines & boilers	20,933	25,360	29,132	26,881	20,901	17,037
Iron and steel ...	107,565	122,663	127,090	175,992	132,504	152,234
Machinery parts	9,004	11,916	14,983	12,747	8,142	7,825
Non-ferrous metals...	3,188	3,718	5,762	4,917	3,702	2,861
Vehicles other than motor-cars	6,125	4,419	9,304	4,697	2,571	1,072
Textiles & clothing:						
Cotton fabrics	12,345	15,954	12,263	12,657	9,766	15,367
Jute ..	9,160	9,125	9,167	5,799	3,646	4,974
Woolen ..	244	382	437	310	211	407
Silk ..	212	232	279	756	918	586*
Linen and hemp fabrics ...	528	566	609	363	277	358
Underwear and ready-made garments ...	1,829	2,052	2,259	1,869	2,150	3,550
Yarns of all kinds	1,542	1,980	1,786	2,647	2,160	3,263
Twine and rope	2,724	3,318	2,491	2,232	1,799	2,047
Sugar, raw & refined	54,156	65,307	74,886	76,360	72,840	70,377
Chemical products:						
Prepd. medicines	1,034	996	1,237	2,370	2,072	2,069
Phosphatic fertilizers	55,844	41,521	40,510	43,486	35,151	39,243
Copper sulphate	3,957	3,115	4,245	4,311	2,618	3,880
Other chemicals	47,007	53,233	46,635	42,963	48,826	61,617
Dairy produce ...	4,214	4,440	5,841	7,215	6,725	8,327
Fixed vegetable oils	17,603	21,374	22,627	29,505	28,547	34,309
Building materials	271,231	404,275	408,424	451,654	426,368	497,828
Pottery, porcelain & glass-ware ...	32,204	35,924	46,067	36,265	30,077	38,845
Paper, cardboard & printed matter...	19,669	17,810	20,802	21,445	21,458	24,280
Perfumes & soaps	18,533	17,354	20,993	22,693	21,920	28,916
Rubber manufacts.	2,390	3,355	2,891	2,947	2,498	3,280
Furniture & wooden manufactures ...	6,574	8,536	10,396	12,663	10,775	14,241
Leather & leather manufactures ...	2,726	3,225	3,345	2,578	2,247	3,644
Parcel post & misc. (values)...	636	751	694	656	701	662
Value (million frcs.)	3,418	3,937	3,958	3,415	2,825	2,873
Value, total exports (million francs)	3,965	4,501	4,563	3,976	3,271	3,306

* Does not include silk fabrics sent by parcel post, which in previous years constituted, both by weight and value, from one-half to three-fourths of the total.

Tunisia.—The Tunisian Protectorate, which follows Algeria among the French possessions in order of importance of trading relations, furnished to France in 1932 goods to the value of 725 millions or nearly 25 per cent. more than in the previous year; but in 1933 it sent goods worth 58 per cent. less (450 millions). *Exports*, with a value of 754 millions, were 47 millions less than in 1931, and lower by 17.1 and 25 per cent. than the corresponding figures for 1928 and 1929. *Imports* of Tunisian cereals (326,451 tons), which have greatly increased in the last few years, were double the quantity imported in 1931, and three times that of 1928, while they accounted for half the total value of imports in 1931 and 1932. Phosphates, ores, raw wool and table fruit are the principal commodities in respect of which a marked decrease in imports is observed, as will be seen from the following table of imports in 1928-33:—

PRINCIPAL IMPORTS FROM TUNISIA.

Commodities	Weight (tons)					
	1928	1929	1930	1931	1932	1933
Cereals ...	114,383	174,469	140,054	167,289	326,451	121,054
Wines (1,000 hl.)	565	509	913	501	828	737
Phosphates (1,000 tons) ...	1,024	1,156	1,036	723	607	641
Lead ...	16,146	16,753	10,907	19,940	12,546	13,070
Fixed vegetable oils	5,178	11,672	11,091	5,410	9,391	20,258
Pulse and pulse meal	18,765	29,102	13,578	16,837	19,253	6,012
Ores (thousand tons)	117	135	130	62	51	11
Raw hides and pelts	1,077	872	953	716	700	865
Table fruit ...	1,716	2,133	2,603	1,756	1,456	2,385
Cattle ...	—	—	1,395	865	2,047	(a)
Raw wool ...	1,265	762	264	119	61	—
Parcel post & miscel. (values) ...	9	10	9	8	7	13
Value (million francs)	559	671	634	556	694	442
Value, total imports (million francs)	589	704	665	585	725	450

(a) Quantity not recorded in 1933 return. Value was 8.4 millions, as against 12 millions in 1932.

Among the French exports to Tunisia, sugar, brandies and spirits, and perfumes and soaps, were the most noteworthy exceptions to the general rule of diminished quantities; but in 1933 these three items showed lower figures. Exports of cotton fabrics in 1933 were nearly 50 per cent. higher than in 1931 and 1932. The following tables shews that in 1933 total exports were only 666 millions against an average of 877 millions for the years 1928-32.

PRINCIPAL EXPORTS TO TUNISIA.

Commodities	Weight (tons)					
	1928	1929	1930	1931	1932	1933
Metals & Engineering Products:						
Tools and metal wares	17,931	28,319	16,120	14,436	20,213	14,101
Motor-cars and parts	2,705	3,996	2,769	2,964	2,286	2,425
Engines & boilers	5,163	5,480	4,774	3,664	3,264	3,315
Iron and steel ...	31,327	33,480	32,110	37,928	29,175	25,679
Machinery parts	2,424	3,357	3,342	3,120	2,304	1,632
Non-ferrous metals	600	1,290	1,012	1,177	1,058	603
Vehicles other than motor-cars	582	688	1,077	596	356	455
Textiles & clothing:						
Cotton fabrics	3,640	4,296	3,325	3,072	3,258	4,560
Jute ..	2,549	2,880	2,057	1,918	1,884	1,619
Woollen ..	65	146	126	78	92	126
Linen & hemp ..	103	145	125	121	133	108
Silk fabrics ...	61	91	52	147	223	169
Underwear and ready-made garments	190	338	258	258	347	405
Yarns, twines, &c.	1,322	1,333	1,012	758	973	903
Sugar, raw & refined	26,319	33,356	34,938	32,160	35,795	31,927
Wines (hectolitres)	3,757	4,947	4,614	4,704	4,351	4,428
Brandies & spirits (hl. alcohol) ...	11,474	8,115	10,733	7,335	12,130	7,122
Liqueurs (h'ct'litr's)	1,539	1,707	1,490	1,392	1,396	1,552
Building materials	66,488	89,445	76,691	74,946	74,886	85,768
Paper and printed matter	3,601	4,352	5,155	5,121	5,256	5,586
Pottery, porcelain and glass ware	6,394	8,111	6,899	7,162	6,436	7,781
Perfumes and soaps	3,256	3,982	3,431	3,745	3,856	4,983
Chemical products	11,408	10,734	15,128	12,031	10,491	7,075
Rubber wares ...	457	675	688	610	514	714
Leather and leather manufactures ...	607	970	826	642	772	940
Fixed vegetable oils	3,193	3,343	1,728	3,147	1,859	1,475
Furniture & wooden manufactures ...	1,719	3,108	2,864	1,672	1,452	1,258
Parcel post & misc.	116	190	179	170	214	180
Value (million frcs.)	817	891	799	695	669	598
Value, total exports (million francs)	909	1,006	915	801	754	666

Morocco.—Imports from Morocco, 486 and 465 millions in 1932-33, were practically identical in value with those of 1928 and 1929, and substantially higher than those of 1930 and 1931. As in the case of Tunisia, imports of cereals have greatly increased, and in the last three years accounted for two-thirds of the total

value of Moroccan imports into France. Imports of eggs have advanced remarkably, from 2.3 tons in 1930 to 9,200 tons in 1932, and in the latter year came second in importance of value, with 46 million francs. Oilseeds (8,827 and 10,271 tons in 1932 and 1931) declined to 2,325 tons in 1933, while ores, after an increase to 62,050 tons in 1931, or more than three times the quantity recorded in 1928, fell away to 800 tons in 1933. Among the French exports to Morocco, sugar and products of engineering together account for nearly half the total value. The former, with 116,000 tons in 1933, does not greatly vary from year to year. Tools and metal wares (36,250 tons), though less by one-seventh than in 1931, were higher by 143 per cent. than in 1928, and iron and steel similarly showed an advance of 115 per cent. Motor-cars, which declined considerably in number in 1930-32 (1,792, 2,391 and 1,834, as compared with 2,585 and 2,821 in 1928 and 1929), numbered 2,300 in 1933.

PRINCIPAL IMPORTS FROM MOROCCO.

Commodities	Weight (tons)					
	1928	1929	1930	1931	1932	1933
Cereals	120,416	197,936	76,630	182,331	314,558	310,595
Stones & earths for arts & crafts	2,051	232,518	285,010	92,742	105,696	135,642
Phosphates (a)	187,262	—	—	—	—	—
Pulse & pulse meal	17,335	18,576	13,329	16,738	13,362	12,823
Vegetables, fresh ...	1,157	1,811	3,690	6,757	6,556	10,727
Fish : dried, salted & preserved	659	926	973	1,544	3,335	6,082
Oleaginous seeds & c.	2,778	5,109	4,521	10,271	8,827	2,326
Raw hides and pelts	2,966	1,656	1,979	1,515	757	1,002
Oatmeal, semolina & other pastes	2,708	2,410	304	4,198	6,969	4,984
Cattle	71	—	1,219	1,726	2,778	(b)
Raw wool	5,643	3,230	2,349	1,251	593	862
Ores	19,899	19,113	24,991	62,050	955	800
Phorium tenax and similar fibres	3,884	6,788	6,712	5,733	4,597	4,680
Timber	17,734	5,882	16,497	10,453	1,876	3,297
Medicinal plants, etc.	2,964	2,384	427	751	371	374
Fixed vegetable oils Parcel post & misc. (values)	3,208	1,776	24	5	—	—
	3	4	4	3	2	6
Value (million frcs.)	452	458	272	360	429	395
Value, total imports (million francs)	487	504	301	393	486	465

(a) Probably included in the figures for "stones and earths" from 1929 onwards.

(b) Quantity not recorded in 1933 return. Value was 17.2 millions, as against 9.7 and 15.8 millions in 1931 and 1932, respectively.

PRINCIPAL EXPORTS TO MOROCCO.

Commodities	Weight (tons)					
	1928	1929	1930	1931	1932	1933
Metals & Engineering :						
Products :						
Tools and metal wares	14,879	21,122	25,060	42,592	31,310	36,246
Motor-cars & parts ...	4,357	4,975	3,034	3,528	3,239	4,042
Engines and boilers ...	6,498	7,313	7,841	5,952	5,627	4,419
Machinery parts ...	3,413	5,065	4,313	4,141	2,982	2,397
Iron and steel ...	14,567	19,774	23,934	27,216	21,526	31,457
Vehicles other than motor-cars ...	2,485	2,597	3,663	4,422	1,116	808
Non-ferrous metals ...	431	1,157	2,136	1,390	1,279	626
Sugar ...	115,216	127,795	123,610	124,234	118,939	115,664
Textiles and clothing :						
Underwear & ready- made garments ...	298	508	464	301	212	369
Cotton fabrics ...	1,445	1,169	465	429	408	313
Woolen " ...	166	284	159	174	211	210
Silk " ...	106	158	60	61	99	35
Other " ...	721	684	434	956	400	598
Pottery, porcelain & glassware ...	6,936	10,789	8,211	8,236	6,843	6,884
Rubber & gutta-percha manufactures ...	737	887	761	853	764	1,026
Wine (hectolitres) ...	15,612	19,919	18,644	18,185	17,437	13,379
Paper, cardboard & printed matter ...	2,706	2,414	2,390	2,206	1,940	1,908
Perfumes and soaps ...	5,060	5,940	3,914	3,877	3,097	5,228
Chemical products ...	6,640	9,112	8,977	12,171	8,729	5,935
Dairy produce ...	1,024	1,352	1,468	1,190	1,144	1,218
Building materials ...	71,556	119,900	88,294	65,518	14,001	5,454
Cereals ...	301	12	10,593	10,956	7,175	1,086
Brandies and spirits (hl. alcohol) ...	1,454	1,706	1,332	1,526	1,527	1,383
Liqueurs (hectolitres) ...	5,646	7,307	7,084	7,134	6,124	5,122
Fixed vegetable oils ...	1,305	1,690	2,417	2,810	2,755	2,591
Parcel post & misc. (Value) ...	201	203	153	67	68	61
Value (million francs) ...	1,126	1,170	988	779	638	526
Value, total exports (million francs) ...	1,243	1,291	1,116	881	721	584

Indo-China.—In 1933 the *imports* from Indo-China amounted to 582 millions, or 45 per cent. more than in 1931-32, but 19 per cent. lower than in 1928 and 1929. Rice (524,000 tons) and cereals (277,000 tons), which together account for three-fourths of the total value, were respectively twice and thrice the 1928 figures; and imports of coal and coke show a rapid development, passing from 51 tons in 1929 to 148,000 in 1933 and becoming third in order

of value. French *exports* (434 millions) were 15 per cent. less than in 1931 and 57 per cent. less than in 1928. Cotton fabrics (value 127 millions) amounted to 6,722 tons, being 34 per cent. more than in 1931 and 2 per cent. more than in 1928. Among engineering products, all items except aeroplanes were considerably lower in 1933 than in 1928, though in the case of tools and metal wares there was some recovery from the low figures of 1931. Exports of wine have notably declined, being lower by about three-eighths in 1931 and 1932 and by over 50 per cent. in 1933, compared with 1928.

PRINCIPAL IMPORTS FROM INDO-CHINA.

Commodities	Weight (tons)					
	1928	1929	1930	1931	1932	1933
Rice	249,794	223,015	197,846	250,971	326,425	523,731
Cereals	97,009	116,745	96,123	104,042	128,591	276,800
Pepper and allspice ...	2,592	2,338	2,713	2,436	2,011	2,509
Crude rubber & gutta- percha	4,111	3,837	3,927	4,346	4,575	6,208
Oleaginous seeds & fruits	10,147	12,865	10,392	9,415	5,994	7,069
Coal and coke	—	51	17,328	52,338	109,603	148,179
Raw hides and pelts ...	779	803	429	359	270	571
Ores	16,007	9,756	12,223	18,961	3,839	3,567
Brandies and spirits (hl. alcohol)	4,592	6,157	5,528	5,312	4,295	6,760
Basketware	590	738	1,044	1,069	737	1,246
Silk fabrics	25	26	32	21	6	9
Cotton fabrics	5	5	7	13	15	25
Volatile oils & synthetic perfumes	93	141	192	151	88	110
Timber	2,433	2,271	2,810	1,512	1,527	1,024
Tin	282	284	262	180	36	—
Fish oils	3,065	3,303	2,509	1,457	752	508
Tea	324	306	264	233	232	240
Vegetable waxes, resins & gums	502	603	564	220	47	63
Cotton	51	2	159	221	—	—
Coffee	340	537	153	86	465	250
Silk and silk floss ...	40	45	39	11	1	—
Sago, manioc, etc. ...	828	5,095	836	200	27	—
Miscellaneous (values) ...	7	7	6	4	4	10
Value (million francs) ...	697	679	579	396	396	579
Value, total imports (mil- lion francs)	715	692	526	404	405	582

PRINCIPAL EXPORTS TO INDO-CHINA.

Commodities	Weight (tons)					
	1928	1929	1930	1931	1932	1933
Metals & Engineering						
Products :						
Tools & metal wares ...	22,589	24,522	18,530	13,640	17,461	14,439
Engines & boilers ...	5,202	4,638	4,857	4,349	1,361	2,374
Machinery & parts ...	4,071	3,670	3,324	2,767	1,600	1,716
Iron & steel ...	39,979	66,057	46,262	24,786	22,538	24,915
Motor-cars & parts ...	4,810	4,606	2,559	1,320	898	915
Aeroplanes & parts ...	27	49	31	49	64	42
Vehicles other than motor-cars ...	1,748	2,316	1,155	1,274	1,065	454
Non-ferrous metals ...	2,141	2,594	2,627	929	60	486
Textiles and clothing :						
Cotton fabrics ...	6,582	7,873	9,302	5,000	6,910	6,722
Silk " ...	137	135	155	88	163	199
Woolen " ...	222	167	146	119	77	66
Cotton yarns ...	130	280	214	211	379	361
Underwear and ready-made garments ...	90	88	66	45	51	63
Other textiles ...	285	322	301	298	53	66
Paper, cardboard & printed matter ...	5,454	5,771	6,621	4,913	4,769	5,450
Wine (hectolitres) ...	88,545	76,591	63,551	53,697	54,321	39,608
Rubber & gutta-percha manufactures ...	1,028	1,178	1,154	926	791	943
Chemical products ...	9,352	12,151	9,142	6,900	5,892	6,791
Pottery, porcelain & glassware ...	7,682	7,500	3,476	1,621	1,944	1,092
Brandies and spirits (hl. alcohol) ...	3,804	3,984	2,212	1,083	1,219	972
Liqueurs (hectolitres) ...	4,039	3,724	3,632	3,058	3,449	2,675
Perfumes and soaps ...	1,418	1,723	1,200	810	1,182	850
Prepared medicines ...	639	589	482	335	302	281
Leather & leather manufactures ...	206	242	210	105	147	111
Parcel post & misc. (values) ...	44	34	29	24	29	40
Value (million francs) ...	955	887	801	471	398	394
Value, total exports (million francs) ...	1,076	1,013	896	537	462	434

French West Africa.—This vast African territory shows a proportionately greater decline in its trade with France since 1928 than any of the other colonies. The recorded totals for 1932 and 1933 show that there was a decrease of 58 per cent. in the value of imports, as compared with 1928, and about 76 per cent. in that of exports. Among *imports* in 1933 oilseeds (236 millions), which account for nearly 63 per cent. of the total value, again recovered the 1931 figure, and was in excess of the 1928 exports to France.

Cocoa and table fruit, the next two items in order of values were twice and $7\frac{1}{2}$ times as great in quantity as in 1928. The values of French exports to French West Africa are more widely spread over a large number of commodities than in the case of the other colonies; products of engineering accounting for one-fifth and textiles for one-seventh of the total. As will be seen from the accompanying table of exports, all the principal commodities suffered a considerable decline in quantity in 1933 as compared with 1928. The purchasing power of the territory was greatly reduced as a result of the great fall in price of its chief export, namely arachides or ground nuts.

PRINCIPAL IMPORTS FROM FRENCH WEST AFRICA AND EQUATORIAL AFRICA.

Commodities	Weight (tons)					
	1928	1929	1930	1931	1932	1933
Oleaginous seeds, &c. ...	265,109	300,364	351,783	306,583	187,287	305,706
Cocoa	9,653	12,599	14,051	15,628	19,901	21,172
Timber	144,653	149,846	176,604	131,192	101,808	28,098*
Vegetable waxes, resins & gums	3,877	5,116	4,423	4,926	3,567	4,438
Table fruit	2,318	3,207	4,773	6,469	10,776	17,394
Fixed vegetable oils ...	11,729	9,134	11,029	7,012	8,221	9,484
Raw hides and pelts ...	2,842	2,582	2,531	1,845	1,245	1,877
Cotton & cotton waste ...	3,288	3,987	4,698	2,186	2,089	1,428
Phorium tenax and simi- lar fibres	1,355	1,204	1,815	1,185	807	1,894
Coffee	123	372	388	719	1,429	1,713
Crude rubber & gutta- percha	1,429	1,041	1,020	342	204	154*
Miscellaneous (values) ...	1.2	2.1	2.4	1.8	1.0	3.6
Value (million francs) ...	885	896	827	502	372	368
Value, total imports (million francs) ...	899	908	840	511	378	376

NOTE.—The 1933 column does not include imports from French Equatorial Africa, the returns for which are not yet published. The absence of these returns affects mainly the items marked *, to the extent, normally, of about 75 to 80 million francs in all.

PRINCIPAL EXPORTS TO FRENCH WEST AFRICA AND EQUATORIAL AFRICA.

Note.—The 1933 column does not include exports to Equatorial Africa, the returns for which (averaging normally about 90 millions) are not yet published.

Commodities	Weight (tons)					
	1928	1929	1930	1931	1932	1933
Metals & Engineering Products :						
Tools & metal wares ...	18,734	27,112	27,728	17,932	14,038	4,582
Engines & boilers ...	3,597	3,606	3,316	4,711	1,756	2,075
Motor-cars & parts ...	2,702	2,445	1,774	736	683	720
Machinery & parts ...	1,624	1,780	1,811	1,027	661	414
Aeroplanes & parts ...	10	11	21	38	54	13
Iron & steel ...	13,729	14,967	15,186	12,566	11,317	3,682
Vehicles other than motor-cars ...	2,869	1,582	4,369	1,797	293	169
Ships (tons gauge) ...	2,606	2,418	1,799	2,982	443	—
Textiles & clothing :						
Cotton fabrics ...	2,597	2,241	1,621	487	1,131	2,253
Underwear & ready-made garments ...	558	500	430	236	148	159
Jute fabrics ...	1,405	1,027	1,092	533	690	1,208
Cotton yarns ...	579	545	469	106	182	387
Woollen fabrics ...	158	165	97	64	30	48
Other textiles ...	423	280	304	41	45	15
Rice ...	67,780	41,601	51,279	19,382	21,330	15,596
Wine (hectolitres) ...	65,703	61,806	60,666	38,349	40,202	24,666
Sugar ...	18,502	11,609	14,991	6,052	6,515	6,352
Building materials ...	55,110	66,148	83,733	56,942	53,579	34,140
Coal & coke ...	39,508	47,600	37,362	42,405	22,566	28,744
Cereals ...	34	24	8,848	8,591	10,029	9,976
Perfumes & soaps ...	4,258	3,940	3,705	1,583	2,492	1,814
Rubber & gutta-percha manufactures ...	430	494	367	234	237	321
Chemical products ...	11,994	6,554	4,707	3,458	2,195	3,611
Biscuits, jams, etc. ...	3,220	2,779	4,133	1,305	1,979	3,017
Brandies & spirits (hl. alcohol) ...	4,894	2,382	1,637	1,180	1,006	765
Liqueurs (hectolitres) ...	7,287	5,094	3,999	3,318	3,612	2,369
Pottery, porcelain & glassware ...	6,291	7,575	3,399	1,870	1,040	964
Arms & ammunition ...	274	402	364	222	130	75
Leather & leather manufactures ...	561	592	388	127	102	82
Furniture & wooden manufactures ...	1,096	1,102	900	488	318	372
Parcel post & misc. (values) ...	57	58	53	27	28	24
Value (million francs) ...	831	611	572	295	228	194
Value, total exports (million francs) ...	897	677	633	335	258	215

Madagascar.—In 1932 imports into France amounted to 244 millions, this being almost the same figure as in the two previous years and 43 per cent. less than in 1928. *Imports* of coffee (12,122 tons), meat (5,813 tons) and tobacco (3,013 tons), three of the principal items in point of value, were each three times as great in quantity as in 1928, while sago and manioc, third in order of value, increased by about 21 per cent., vanilla by nearly 100 per cent. and sugar by over 50 per cent. *Exports* to Madagascar (222 millions), which also showed relatively little shrinkage as compared with 1930 and 1931, were 45 per cent. lower in value than in 1928 and 1929. Of this total, textiles accounted for 79½ millions, or rather more than one-third, consisting chiefly of cotton fabrics, which declined in weight from 4,150 tons in 1928 to 3,209 in 1932; while in the case of engineering products (34 millions), tools and metal wares dropped from 7,715 to 5,002 tons, iron and steel from 7,100 to 5,603 tons, and all other items of the group suffered similar declines except non-ferrous metals, which advanced from 212 to 252 tons. Wines, perfumes and soaps, building materials, chemical products, all increased substantially in quantity between 1928 and 1932. As to 1933, the slight movements will be observed in the attached table.

PRINCIPAL IMPORTS FROM MADAGASCAR.

Commodities	Weight (tons)					
	1928	1929	1930	1931	1932	1933
Coffee	4,026	2,771	3,136	8,190	12,122	14,326
Meat : fresh & frozen ...	2,477	3,862	4,632	5,153	5,813	8,018
Raw hides & pelts ...	8,870	7,338	5,366	5,000	3,180	4,298
Meat preserves, pate de foie, etc. ...	3,290	3,242	3,177	3,302	3,041	4,234
Phorium tenax and similar fibres ...	7,360	5,437	4,008	4,263	3,627	3,301
Sago, manioc, etc. ...	31,248	35,211	29,528	30,208	37,908	34,322
Tobacco, in leaf or manufactured ...	990	1,124	1,862	2,450	3,013	2,355
Sugar	4,434	4,660	3,689	5,499	6,929	6,949
Brandies & spirits (hl. alcohol) ...	7,844	7,993	12,613	8,965	9,683	7,119
Tapioca & potato starch	2,040	953	937	2,251	3,035	4,848
Oleaginous seeds, etc. ...	4,699	6,415	4,283	2,886	2,127	2,342
Animal wax	432	328	446	337	228	370
Volatile oils & synthetic perfumes	92	151	106	87	88	118
Vanilla (kilogrammes) ...	47,416	61,690	62,671	91,554	91,040	128,392
Graphite	7,460	6,155	3,786	1,744	645	673
Stones & earths for arts and crafts	476	359	370	191	54	62
Basketware	566	352	255	239	153	47
Rice	7,734	4,931	1,616	1,588	3,102	2,613
Cereals	4,659	7,544	2,454	859	2,225	5,042
Parcel post & misc. (values)	5	4	2	2	2	2.7
Value (million francs) ...	410	344	237	235	236	253
Value, total imports (million francs) ...	430	367	254	243	244	261

PRINCIPAL EXPORTS TO MADAGASCAR.

Commodities	Weight (tons)					
	1928	1929	1930	1931	1932	1933
Textiles & clothing :						
Cotton fabrics ...	4,150	4,034	2,301	3,156	3,209	4,270
Underwear & ready-made garments ...	159	341	152	157	184	234
Woolen fabrics ...	47	78	98	52	38	33
Silk ...	34	34	6	17	43	39
Other textiles ...	163	205	131	84	203	76
Metals & Products of Engineering :						
Tools & metal wares ...	7,715	8,310	5,362	6,640	5,002	10,286
Engines and boilers ...	1,179	1,533	1,714	1,242	684	878
Machinery parts ...	562	873	803	1,204	518	345
Iron and steel ...	7,100	15,150	7,683	7,391	5,603	6,870
Motor-cars parts and Vehicles other than motor-cars ...	957	1,841	584	448	608	908
Ships (tons gauge) ...	286	277	302	205	110	307
Non-ferrous metals ...	994	265	580	318	186	158
Wines (hectolitres) ...	212	213	327	165	252	30
Perfumes and soaps ...	38,489	42,149	36,411	36,802	44,568	37,361
Building materials ...	1,318	1,630	1,341	1,977	2,040	2,554
Paper, cardboard & printed matter ...	18,511	25,363	19,184	18,090	26,764	27,073
Rubber & gutta-percha manufactures ...	935	979	808	1,007	944	999
Pottery, porcelain and glassware ...	120	203	176	196	160	208
Chemical products ...	1,683	2,288	980	1,447	688	678
Fixed vegetable oils ...	1,142	1,122	964	1,023	1,637	2,582
Biscuits, janes, etc. ...	609	625	583	597	689	562
Paints, inks, pencils ...	433	533	275	284	352	446
Parcel post misc. (values) ...	514	523	309	368	352	456
Parcel post misc. (values) ...	50	54	31	37	43	38
Value (million francs) ...	381	381	223	239	211	209
Value, total exports (million francs) ...	405	407	240	260	222	222

Other Colonies and Protectorates.—The remaining French colonies and protectorates supplied in 1932 commodities to the value of 694 millions, and purchased goods to the value of 516 millions. Imports were greater by 44 millions than in 1931, but less by 210 millions, or 23.2 per cent., than in 1928; while exports were lower by 12 millions than in 1931 and 2.8 per cent. less than in 1928 (531 millions). Syria, which in 1932 for the first time was separately distinguished in the monthly trade returns, supplied goods to the value of 33.4 millions (as against 43 millions in 1931), and purchased French goods to the value of 147 millions (156 in

1931). Raw silk, 234 tons, silk fabrics, 23.8 tons, eggs, 1,168 tons, pulse and pulse meal, 3,800 tons, together with parcel post and articles not separately distinguished, accounted for 80 per cent. of the total value of imports from Syria, the only feature worthy of particular remark being the increase in the quantity of eggs, from 179 and 535 tons in 1930 and 1931. Among the *exports* to that territory, products of engineering accounted for 39 millions, or 26 per cent. (tools and metal wares 16,355 tons, against 3,096 and 3,466 tons in the two years preceding; motor-cars 226 in number, against 163 and 138); textiles accounted for 25 millions, or 17 per cent. (half of which consisted of silk fabrics, 87 tons, against 94 and 41 tons in 1931 and 1930); cereals 11.2 millions (13,586, 7,769 and 8,702 tons); oatmeal and semolina 11.5 millions (12,293, 237 and 150 tons); while parcel post and other articles not separately designated accounted for 14.8 millions.

Among the imports from colonies not separately distinguished (661 millions), 75 per cent. of the value was attributable to sugar (261 millions) and brandies and spirits (232 millions); in the case of the former the weight (128,521 tons) represented an increase of 25 per cent. as compared with 1928, 1930 and 1931; while in that of brandies and spirits the quantity (219 thousand hectolitres of alcohol in 1932) has not varied by more than 11 per cent. for the last five years, except for a temporary decline of 23 per cent. in 1930. The apparent total value of *imports* has been influenced in the last three years by the fact that dried, salted or preserved fish (chiefly cod) from the Newfoundland and Nova Scotia fishing banks (50,000 to 70,000 tons, with a value of 175 to 190 millions) is no longer reckoned as an import since 1930. Several commodities of secondary importance as far as value is concerned, show pronounced increases in the last five years, the figures for 1928, 1931 and 1932 being: table fruit, 2,059, 4,316 and 11,524 tons; oilseeds and fruits 16,294, 14,534 and 26,258 tons; cocoa 11,003, 16,232 and 16,887 tons. Three-fifths of the total value of *exports* (369 millions in all) consist of engineering products (61 millions), textiles (56 millions), wines and spirits (52 millions) and parcel post and miscellaneous articles (65 millions). The chief items, arranged in descending order of value in 1932, were: wines 87,535, 81,295 and 92,383 hectolitres in 1928, 1931 and 1932; cotton fabrics (1,310, 1,058 and 1,529 tons); tools and metal wares (12,788, 7,411 and 14,370 tons); machinery and boilers (1,894, 2,449 and 1,619 tons); iron and steel (11,587, 8,829 and 11,671 tons).

IV. ANGLO FRENCH TRADE

Remarkable Decline.—Continuous decline in value has been a noteworthy characteristic of trade between Great Britain and

France since 1926 (save for an almost imperceptible recovery in 1929). This movement was still further accentuated in 1931-33 as a result of the general trade depression, currency alterations, and restrictions imposed on the free exchange of commodities such as the introduction or increase of duties, or of other levies on imports having an incidence analogous to import duties (*e.g.* exchange compensation levy, turnover tax at point of entry of goods), limitation of imports by quotas, or prohibitions on sanitary grounds. The combined value of imports and exports in the eight years 1926-33 was successively 16.7, 16.2, 13.2, 13.4, 12.1, 8.8, 4.4 and 3.8 milliards of francs. If allowance be made for the reduction to one-fifth of the statutory gold value of the franc, the value of the visible exchanges was in 1930 almost identical with that of the years immediately preceding the war: the value of imports from Great Britain in 1930 was 5.28 times that of the average for 1909-13, while the value of exports to Great Britain was 5.25 times the corresponding average for 1909-13. In 1931-1933 the volume of trade in both directions suffered further substantial reductions, the value of imports from Great Britain being lower by 36, 58 and 63 per cent. than in 1929, and that of exports to Great Britain lower by 34, 61 and 78 per cent.

Reversal of Traditional Trade Balance, 1932-33.—The following table† shows that the balance of visible trade in favour of France has been steadily shrinking since 1924, and that in 1932 for the first time on record (save during and immediately after the war) the balance was in favour of Great Britain:—

Year	Imports from Great Britain Million francs	Exports from France Million francs	Balance	
			Million francs	Million £*
1909-13	995	1,303	+ 308	or +12.2
1922	3,256	3,960	+ 704	+12.9
1923	5,034	6,331	+1,297	+17.1
1924	4,765	7,860	+3,095	+36.3
1925	5,669	9,221	+3,552	+34.6
1926	6,131	10,530	+4,399	+28.7
1927	6,314	9,851	+3,537	+28.6
1928	5,296	7,881	+2,585	+20.8
1929	5,828	7,573	+1,745	+14.1
1930	5,273	6,845	+1,572	+12.7
1931	3,724	5,043	+1,319	+11.4
1932	2,458	1,962	- 496	- 5.6
1933	2,166	1,676	- 490	- 5.8

As a customer of France, Great Britain still headed the list up to 1931. In that year she took 27 per cent. more than Algeria,

* Conversions to sterling at the average rates of exchange for each year.

† French returns do not separate re-exports from French domestic exports to the United Kingdom.

the next customer in order of importance, and in 1930 nearly 26 per cent. more than Belgium-Luxemburg, which was then second in the list. In 1932, however, the United Kingdom receded to third place in the table, after Algeria and Belgium-Luxemburg largely in consequence of the imposition in the United Kingdom of new customs duties, of the higher levels of French prices as expressed in sterling, of the reduced consumption by the United Kingdom population of many luxury goods that came mainly from France, and of sanitary restrictions affecting imports of vegetables. It has been shown in the table (p. 494) that purchases by Great Britain, after having averaged 18.9 per cent. of all French exports in the five years 1922-26, attained in the years 1927-32 the following proportions: 17.85, 15.13, 15.10, 15.98, 16.57 and 10 per cent. A further decline to 9.1 per cent. occurred in 1933, when Great Britain receded to fourth place, after Germany.

Invisible Anglo-French Exports.—Rightly to measure the respective value of French exports to the United Kingdom and of United Kingdom exports to France, it is essential to take into the account also the part played by invisible exports. In this category the tourist industry occupies the predominant place. Up to the autumn of 1931 immense totals must have been reached by the invisible French exports represented by the expenditure of the 700,000 to 800,000 persons who crossed the Channel yearly, of whom a goodly proportion made lengthy sojourns whether in Paris, along the Riviera, the Basque Coast, or in the seaside places from Wimereux along and round the Norman-Breton coasts down to the Pyrenees, or in the health resorts such as Vichy or Aix-les-Bains. The total disbursements in France of all foreign visitors in the years 1926-30 have been estimated at from £50 to £120 millions: as British visitors are reckoned to be numerically about 40 per cent. of all visitors, it may be deduced that their annual outlay, representing invisible exports to France, varied roughly from £20 to £45 millions. On the other hand the movement of French visitors to the United Kingdom is far from comparable—not more than one-fifth of the inverse movement—so that one may assume that United Kingdom invisible exports arising therefrom were correspondingly less. On this basis the annual total balance of visible and invisible items in favour of France, say in the years 1923 to 1931, may well have been quite double the amount indicated in the preceding table.

Position of the United Kingdom as a Supplier of France.—As suppliers of France, Germany and the United States have taken precedence before Great Britain since 1929 (see table p. 496); and in 1932, with the sudden advance of Algeria from the fifth to the second place in the list, Great Britain dropped to fourth. The respective contributions of the chief countries importing goods into France towards total French imports in the six years 1928-33

may be viewed in the table on pp. 496 and 505, but for convenience the following figures may be repeated here: Germany, 9.3, 11.3, 15.1, 14.5, 12.1, 10.65 and 10.7 per cent.; United States, 11.6, 12.3, 11.6, 9.0, 9.7, 9.7 and 10.0 per cent.; Great Britain, 9.9, 10.0, 10.0, 8.8, 8.2, 7.67 and 7.62 per cent.; Algeria, 5.3, 5.1, 6.3, 8.1, 11.0, 14.2 and 13.6 per cent. The great advance in imports from Germany (from 5,004 million francs in 1928 to 6,613, 7,937 and 6,142 in the three years 1929-31) was largely attributable to the very considerable quantities of raw materials and manufactured goods supplied under the reparations agreements, and to the relatively low prices at which German products as a whole were offered in the French market. The lapse of the delivery in kind system and the institution of the quota system as from the summer of 1931 mainly accounted for the drop of German imports in 1932 and 1933 to 3,613 and 3,043 millions, or by 41 and 50.5 per cent. respectively.

Factors influencing Trade between France and the United Kingdom. — Certain measures were responsible in 1931 and 1932 for a far greater reduction in French imports from Great Britain (and to a substantially smaller extent in French exports to Great Britain) than would probably have resulted merely from the general economic depression. One measure prejudicial to United Kingdom exports to France, inasmuch as it did not apply to many of Great Britain's most important competitors in the French market in manufactured goods, was the institution, in November, 1931, of the exchange compensation surtax of 15 per cent. *ad valorem*, designed to counteract the advantage deemed to result from the depreciation in sterling as from September 21 of that year. The decree provided that commodities not subject to any customs duty, and those whose prices are not influenced by international exchange fluctuations, as having world prices, were to be exempt from the new tax. Coal, which is normally responsible for one-third of the total value of imports into France from Great Britain, was not at first exempt, but exemption was accorded to it three months after the original imposition of the levy. A number of other commodities (chiefly raw materials of industry) of relatively small importance in individual value, were also exempt from the levy, as not being subject to customs duty: some of the principal items within this group were raw wool, raw hides and pelts, raw rubber and gutta-percha, pearls and precious stones, rags for paper-making, which collectively represent about 15 per cent. of the total value of imports from Great Britain.

The burden of this surtax of 15 per cent. often proved to be particularly heavy in the case of goods upon which specific as distinct from *ad valorem* duties are leviable, for it frequently raised the effective charge far beyond the actual amount of that specific duty, and even resulted in an additional sum several times the prescribed specific duty on the score of weight. A further burden of the 15

per cent. arose from the method of calculating the minimum 2 per cent. turnover tax *ad valorem* on imports at point of importation: this tax was levied on the combined total of cost, insurance, freight, customs, and 15 per cent. surtax. When in April, 1932, this general rate of 2 per cent. was transformed into 4 per cent. on semi-finished and 6 per cent. on manufactured goods, the higher rate which was levied fell on a sum total of which the 15 per cent. formed a further constituent part.

The burden of the 2, 4 and 6 per cent. import duty was likewise highly prejudicial. By its method of calculation on c.i.f., plus duty, plus the 15 per cent. surtax, the percentage paid was bound to be greater than a 2, 4 or 6 per cent. on the goods alone, and the last rate might, *e.g.* in the case of manufactured goods with a minimum rate of 45 per cent. customs duty, be nearly 10 per cent. in fact. The 15 per cent. surtax was revoked at the end of 1933, and the differential import tax on April 1st, 1934.

Higher Customs Duties.—Increases in the rates of customs duties on numerous commodities, which were also enacted in recent years, are considered in another part: here, it suffices to note that they constituted a further handicap to United Kingdom exporters to France.

Adverse Factors for French Exports.—On the other hand, the export of French goods to Great Britain has been influenced by the new customs duties imposed by His Majesty's Government since November, 1931, and (to a more limited extent) by sanitary regulations adopted by the Ministry of Agriculture and Fisheries, by the alteration in the value of sterling as expressed in francs, and by the relative high cost of French production, due to the higher cost of necessaries in France. The new régime of customs duties was in general more keenly felt in that in most cases French exports had hitherto entered the United Kingdom duty-free, although several important French exports to Great Britain (*e.g.* silk fabrics and articles, motor vehicles, wines and spirits) were already subject to duties. The principal commodities affected by the new duties were: woollen and cotton fabrics, as well as articles of outer and under clothing; rubber manufactures; chemical products; potatoes, various kinds of vegetables; flowers; tools and metal wares; perfumes and soaps (including toilet preparations); articles de Paris, iron and steel. The extent of the decline in exports of these commodities may be gauged from the tables appearing in Appendix 18.

An adverse influence was felt also in the domain of invisible exports. The number of United Kingdom visitors to Paris and many other parts of France diminished as from the autumn of 1931 by some hundreds of thousands for various reasons, partly the prospective sterling loss on exchange into francs, partly the national desire not to put unnecessary strain on the sterling exchange, partly reduced incomes.

Nature of Trade between the Two Countries.—A dominating characteristic of the visible trade between the United Kingdom and France is that, whereas two-thirds of the imports from the former normally consist of raw materials and semi-finished goods, the exact converse is true of French exports to the United Kingdom, two-thirds of which usually consist of manufactures, including a very large proportion of goods in the so-called "luxury" class. Thus, among the principal imports from Great Britain are: coal (alone accounting approximately for one-third of the total value), raw wool, pearls and precious stones (mainly in the rough for polishing or cutting), crude rubber, raw hides and pelts, and so on; while if all raw or semi-manufactured materials were included in the list, they would be found to constitute well over two-thirds of the total value. Among French exports to Great Britain in 1929 to 1931, manufactures alone formed 65, 69 and 67 per cent. of the total values; the commodities that represented the highest values including silk fabrics, woollen fabrics, underwear and ready-made garments, woollen yarns, dressed hides and leather wares, wines and spirits, perfumes and soaps.

Incidence of Customs Duties.—The foregoing considerations have an important bearing upon published statements which have sometimes been given wide currency, respecting the relative amounts of customs duties imposed on French goods entering the United Kingdom, and on United Kingdom goods entering France. In such comparisons there is a tendency to lose sight of certain essential considerations. For instance, as French exports to Great Britain in normal years were usually about 33 per cent. greater in value than United Kingdom exports to France (the excess was 49 per cent in 1928 and 30 per cent. both in 1929 and 1930), customs yields of greater absolute value would in any case be anticipated. Moreover, having regard to the large proportion of manufactures (many of them luxury articles) among French exports to Great Britain, as contrasted with the large proportion of non-dutiable raw materials among United Kingdom exports to France, any comparisons based merely upon proportions borne by the yield of customs duties to the total values of imports would obviously be based upon unsound premises; for it is current practice among nations to impose higher duties upon manufactures (and in particular upon luxury goods) than upon raw materials or necessary foodstuffs.

In 1929 the total value of all United Kingdom exports to France, after deduction of coal (which then paid only a nominal duty of Fcs. 2 per ton, plus the turnover or import duty of 2 per cent.) and of the raw materials that entered duty-free (but with the 2 per cent. turnover duty) was 2,472 million francs. The amount levied in customs duties alone was practically 270 million francs, from which 26½ millions may be subtracted as representing the duty on coal and coke. The net balance of 243½ millions, imposed on merchandise to a value of 2,472 millions, was equivalent to 9.84 per cent.

ad valorem. With the addition of about 49½ millions more imposed under the head of importation tax (in lieu of business turnover tax), the *ad valorem* percentage becomes 11.84. As against this proportion, customs duties levied in Great Britain upon imports from France in the same year amounted to 729½ million francs, equivalent to 9.6 per cent. of the total value of imports amounting to 7,573 millions. There is in Great Britain no additional charge corresponding to the French "taxe à l'importation," and a large part of the total of 729½ million francs is really more in the nature of an excise tax than a customs duty, since it serves to counter-balance, in the case of wines, spirits and other commodities imported from abroad, internal taxes that have to be borne by home

Owing to the absence of complete figures, a similar comparison cannot be made for later years, but in 1930-1932 the *ad valorem* incidence of French customs duties alone, on imports from Great Britain exclusive of coal, coke and the non-dutiable raw materials, increased from 9.84 to 10.6, 12.5 and 21.2 per cent. respectively. The adoption by Great Britain in 1932 of a more extensive range of customs protection, the numerous increases in French customs duties in the same year, and the generalisation of the import quota system, all contribute to modify profoundly the relative position from that year onwards.

Imports from Great Britain, which attained in 1932 a value of 2,458 million francs, were 1,267 millions less than in 1931 and 2,816 millions less than in 1930, while if comparison be made with 1927, in which the figures attained their highest level (6,314 millions), a decline of over 61 per cent. is found. In 1933 imports showed a further decline of 291 million francs, or 12 per cent., as compared with 1932, the value falling to 2,167 millions, or nearly 66 per cent. less than in the peak year 1927. Comparing the weights in 1932 with those in 1930 (the latest year not unduly influenced by abnormal conditions), it will be seen that coal declined by 4.8 million tons, or 35 per cent.; engines and machine parts by 16,592 tons or 60 per cent.; chemical products, 30,660 tons, or 12 per cent. (mainly attributable to coal tar distillation products); raw rubber and gutta-percha by 17,400 tons, or 80 per cent.; woollen manufactures by 401 tons, or 36½ per cent.; ships by 39,500 tons, or 71 per cent.; pig iron, iron and steel by 58,900 tons, or 67 per cent.; tools and metal wares by 3,162 tons, or 47½ per cent.; cotton yarns by 2,137 tons, or 83 per cent.; woollen yarns by 321 tons, or 60 per cent.; cotton fabrics by 543 tons, or 61 per cent. There were increases, however, in the cases of: raw wool, 1,865 tons, or 8 per cent.; motor-cars and their parts, 1,087 tons or 78 per cent.; in raw hides, waste rags for paper making. Tables showing the weights and values of imports from Great Britain in 1913 and in each of the years 1928 to 1933 will be found in Appendix 17.

Exports to Great Britain, 1,962 millions in 1932, were 3,081 millions, or 61 per cent., lower in value than in 1931 and 4,883 millions, or 71 per cent., less than in 1930; while if comparison be made with the peak year (in this case 1926), when exports to Great Britain attained a value of no less than 10,530 millions, a decline of 81½ per cent. is found. In 1933, there was a further decline of 286 millions, or 14.6 per cent., compared with 1932, the value falling to 1,676 millions, or 75½ per cent. less than in 1930. In the comments that follow, the figures for 1933 are, as in the case of imports, compared with those for 1930.

Eight groups of commodities, shown in the following table, share between them 4,270 millions, or nearly 83 per cent., of the decline of 4,883 millions above-mentioned :—

Commodities	Values (million francs)		
	1930	1932	Decrease
Textiles and clothing group	2,915	554	2,361
of which :			
Raw materials...	205	174	31
Yarns and fabrics ...	1,817	343	1,474
Garments, hats and caps	893	36	857
Metals and engineering group	717	163	554
of which :			
Pig iron, iron and steel	348	79	269
Copper and lead ...	104	4	100
Products of engineering	265	78	187
Hides, furs and leather goods	434	86	348
Wines, spirits and liqueurs	351	77	174
Cereals ...	332	36	296
Fruit and vegetables ...	303	75	228
Pearls and precious stones	300	92	208
Chemical products ...	155	54	101
Totals ...	5,507	1,237	4,270
Total exports to Great Britain ...	6,845	1,676	5,169

The following table shows the weight, in each of the years 1928 to 1933, of the principal exports from France to Great Britain, while in Appendix 18 will be found a comparison of both weights and values in those years with the corresponding figures for 1913. In many cases the fall in 1932 compared with 1930 is very great. Woollen fabrics show a decrease of 88 per cent., underwear and ready-made garments 84½ per cent., motor-cars and spare parts 25 per cent., tools and small metal wares 89 per cent., wines 33 per cent., brandies 40½ per cent., phosphatic fertilizers 100 per cent., potatoes 100 per cent. Silk in this table includes rayon; silk fabrics alone declined in weight by 40½ per cent. but in value 71 per cent. (from 893 to 260 millions).

EXPORTS TO GREAT BRITAIN.

Commodity	1928	1929	1930	1931	1932	1933
	Tons	Tons	Tons	Tons	Tons	Tons
Ores	224,797	252,462	217,210	119,825	82,332	154,368
Pig iron	50,684	37,194	78,489	73,728	19,815	2,019
Iron and steel products	654,411	443,031	559,743	659,490	372,897	249,510
Tools and metal goods	23,009	24,000	22,564	13,809	4,053	2,430
Engines and machine parts*	10,485	8,503	7,380	5,986	4,401	2,721
Motor cars (number)	3,597	2,198	1,188	1,053	340	407
Wool and wool waste	11,358	9,762	8,744	10,303	7,026	12,995
Woollen yarns	5,105	5,811	5,500	6,238	279	298
Woollen fabrics	7,102	5,951	5,678	5,414	619	664
Silk	3,321	3,448	2,759	3,521	2,238	1,643
Cotton	3,272	3,036	2,636	1,835	465	524
Underwear and ready-made garments	1,123	1,210	967	1,114	159	150
Hats and caps (thousand)	2,284	2,821	2,597	1,146	417	387
Raw hides and pelts	1,589	3,348	1,996	1,340	1,847	1,948
Dressed hides and skins	3,623	2,692	3,312	2,925	1,414	1,043
Leather and imitation leather wares	689	675	547	413	165	226
Furs	540	395	343	326	173	81
Chloride of potash	1,505	1,620	1,512	2,518	2,164	2,159
Phosphatic fertilizers	56,459	43,650	46,482	18,626	1,983	—
Other chemical products... ..	59,154	37,444	45,382	33,016	26,991	29,853
Prepared dyes	1,134	1,327	431	368	177	187
Volatile vegetable oils and synthetic or artificial per- fumes	212	182	231	191	168	219
Perfumes and soaps	3,393	3,240	2,818	2,938	981	713
Copper	9,472	10,262	9,767	5,245	1,742	843

EXPORTS TO GREAT BRITAIN—*continued.*

Common timber	864,224	805,400	731,734	492,316	216,042	148,993
Wood manufactures (other than furniture)	5,609	7,902	6,074	5,752	3,475	3,090
Paper and printed matter	6,049	6,874	4,947	3,918	2,103	2,181
Rubber manufactures	2,147	2,305	1,640	1,869	793	632
Glass and crystal	21,443	19,871	6,393	7,514	5,522	6,670
Poultry and game	4,177	3,597	4,061	1,872	1,026	799
Eggs	12,511	6,419	5,339	1,398	75	—
Potatoes	189,065	123,694	109,226	107,872	3,753	2
Fresh vegetables	36,558	42,276	43,073	49,058	18,108	10,929
Preserved vegetables	3,708	3,253	3,340	2,660	1,679	1,141
Mushrooms	4,925	2,331	2,651	804	400	216
Table fruit	29,425	41,156	33,632	57,073	46,613	27,159
Preserved fruit and sweets	3,857	3,059	3,405	2,513	2,651	3,033
Fixed vegetable oils	3,458	4,395	6,160	3,669	2,004	2,432
Wines (hectolitres)	134,712	141,246	121,403	108,812	68,561	81,192
Brandies and spirits (hectolitres of pure alcohol)	29,760	31,499	26,713	19,150	15,149	15,882
Liqueurs (hectolitres)	4,073	5,468	3,724	4,096	2,121	2,783
Cereals	617	792	284,928	95,271	24,079	84,322

* Not including boilers.

V. FRENCH TRADE WITH BRITISH DOMINIONS

The trade of France with British Dominions and Colonies is very considerable, particularly in the case of imports, whose average value for the three years 1928-30 reached over 6,200 million francs. They consist mainly of raw materials for her industries (wool, oilseeds, jute, rubber, tin, cotton, hides and so forth). Complete figures are as yet available only up to the end of 1932, as several of the Dominions or Colonies are not separately distinguished in the French monthly trade returns. It is possible, however, from the partial returns, already published, to estimate the total value of French imports from British Dominions and Colonies in 1933 at about 2,532 millions and that of exports to those countries at about 491 millions, the value of the imports being about 59 per cent. lower than the corresponding average for 1928-30, and that of the exports 69 per cent. lower.

SUMMARY OF IMPORTS.
(Values in millions of francs).

From	1928	1929	1930	1931	1932	1933
India	2,653	2,758	2,103	1,163	790	792
Canada	604	843	447	830	542	318
Australia	2,045	2,520	1,393	788	489	673
Africa (South, East and West)	1,017	1,080	883	558	598*	508*
Rest of British overseas posses- sions	122	127	85	176	42	241*
Totals ...	6,441	7,328	4,911	3,515	2,461	2,532

SUMMARY OF EXPORTS.
(Values in millions of francs).

To	1928	1929	1930	1931	1932	1933
India	506	450	339	238	166	112
Canada	685	587	459	319	159	110
Australia	299	237	182	95	98	68
Africa (South, East and West)	271	214	212	136	97*	75*
Rest of British overseas posses- sions	195	173	141	135	92	126*
Totals ...	1,956	1,661	1,333	923	612	

* Includes estimates in respect of East and West Africa and of colonies in Central and South America.

Imports.—Imports into France from the overseas portions of the British Empire have developed greatly since the war. In 1919 their value (Fcs. 2,221 millions) was only one-fourth of that of imports from Great Britain (6.2 per cent. of all imports, as compared with 24.6 per cent.), but from 1925 to 1929 their value exceeded that of all imports from Great Britain, and averaged 12.4 per cent. of the total French imports, the share of Great Britain during the same period being 10.96 per cent. After attaining in 1929 a peak figure of 7,306 million francs, imports declined in 1930-33 to 4,911, 3,515, 2,461 and 2,532 millions respectively, representing 9.4, 8.3, 8.9 and 8.3 per cent. of the total value of French imports.

From the accompanying table showing the average value of imports in 1928-30 and the proportions furnished by individual territories it will be seen that two-fifths of the total consisted of raw wool (2,497 millions), supplied mainly by Australia (1,848) and Africa (587); oleaginous seeds and fruits (1,151 millions) were made up by 894 millions from India, 181 from Africa and 75 from Australia; of cereals (505½ millions), practically the whole came from Canada (427 millions), with a little from Africa and Australia; while raw cotton to a value of 436½ millions, jute to a value of 366½ millions and crude rubber to a value of 220 millions, came almost exclusively from India. The 23 commodities included in the table together constitute 96 per cent. of the total value of all imports from British Dominions and Colonies.

Weight of Imports.—Notwithstanding the very considerable decline in total values in 1931 as compared with the average of 1928-30, six of the 23 leading commodities showed substantial increases in weight. Cereals were more than doubled (415 and 908 thousand tons) and table fruit nearly doubled (5,650 and 10,078 tons), as was also zinc (3,011 and 5,847 tons); imports of copper were threefold (1,112 and 3,088 tons); lead advanced by nearly one third (6,789 and 8,723 tons); while imports of crude rubber increased from 22.7 to 23.9 thousand tons. The decreases were most pronounced in the cases of : ores (from 420 to 302 thousand tons), cellulose pulp (from 16,011 to 7,652 tons), jute (from 103 to 80 thousand tons) and raw wool (from 167 to 139 thousand tons); while a decrease of 40 thousand tons in imports of oilseed from India was counterbalanced by an increase of similar amount from the colonies in Africa. In the case of Canada, imports of practically all the chief commodities were much less in quantity than in 1931, the exceptions being copper and table fruit. Imports of cereals were down by nearly 25 per cent., those of chemical products by 50 per cent., and ores decreased from over 34,000 tons to a mere 60 tons. The weight of the principal imports into France from British overseas possessions in 1928-30 and in 1931 (also 1932 in the case of Canada) is shown in the accompanying table.

FRENCH IMPORTS FROM BRITISH OVERSEAS TERRITORIES IN 1928 TO 1930 (AVERAGE).
(Values in millions of francs).

Commodities	Total Value	of which, from							
		India	Australia	Africa	Canada	Palestine and Mesopotamia	Ireland	Other Colonies in America	Gibraltar Cyprus and Malta
Raw wool	2,497.2	38.8	1,848.0	587.2	.2	21.0	.7	.3	1.0
Oleaginous seeds and fruits... ..	1,151.1	894.1	74.9	181.0	—	.2	—	.6	.3
Cereals	505.4	9.5	30.7	36.8	427.3	—	1.1	—	—
Cotton and cotton waste	436.5	426.6	.7	7.9	.1	—	—	1.1	.2
Jute	366.4	366.4	—	—	—	—	—	—	—
Crude rubber and gutta-percha	220.3	219.4	.4	.1	—	—	.3	—	—
Ores	146.3	89.1	10.9	37.5	6.8	—	—	1.2	.8
Raw hides and pelts	137.6	62.8	3.3	65.8	1.9	1.3	.1	1.1	1.4
Tin	111.9	111.9	—	—	—	—	—	—	—
Fish: fresh, dried and preserved	56.1	—	—	7.0	48.6	—	.4	.2	—
Pearls	53.7	52.2	1.5	—	—	—	—	—	—
Coffee	49.9	34.3	—	15.2	—	.1	—	.2	—
Stones and earths for arts and crafts	45.6	5.0	—	19.4	18.3	—	—	.1	2.8
Cocoa	32.2	—	—	13.3	—	—	—	18.9	.1
Cellulose pulp for paper-making	29.0	—	—	—	29.0	—	—	—	—
Precious stones	24.9	24.5	.4	—	—	—	—	—	—
Jute fabrics	24.2	18.3	2.3	2.8	.3	—	.2	.1	.1
Engines, boilers and machinery parts	23.5	—	—	—	12.5	.6	10.4	—	—
Lead	18.4	—	—	—	18.3	.1	—	—	—
Table fruit	13.9	3.9	—	—	2.0	.9	—	3.0	4.1
Chemical products	11.0	.2	—	.5	10.0	—	.4	—	—
Zinc	9.7	—	.7	—	9.0	—	—	—	—
Copper	9.5	.2	—	.2	8.7	.4	—	—	—
Miscellaneous	252.4	147.3	12.1	18.6	38.7	3.5	9.5	17.9	4.6
Totals	6,227.0	2,504.5	1,985.9	993.3	631.7	28.1	23.1	44.7	15.4

FRENCH IMPORTS FROM BRITISH DOMINIONS AND COLONIES, 1928 TO 1933 (ALSO FOR CANADA).
(Weights in metric tons).

	Canada			British India		Africa (South, West and East)		Australia		Rest of Empire		Totals	
	Average 1928-30	1931	1932	Average 1928-30	1931	Average 1928-30	1931	Average 1928-30	1931	Average 1928-30	1931	Average 1928-30	1931
Raw wool	22	21	—	2,639	221	42,651	40,782	119,923	96,140	1,842	1,844	167,077	139,008
Oleaginous seeds and fruits ...	—	—	—	409,184	369,293	85,588	122,310	27,143	20,400	396	336	522,311	512,339
Cereals	341,866	874,730	690,173	6,943	20	42,246	19,538	22,953	13,318	1,029	228	415,037	907,834
Cotton and cotton waste	4	—	—	53,000	30,214	689	1,224	72	68	71	107	53,836	31,613
Jute	—	—	—	102,712	79,894	—	—	—	—	—	—	102,712	79,894
Crude rubber and gutta-percha ...	3	—	—	22,463	23,803	7	55	64	—	174	36	22,711	23,894
Ores	13,370	34,391	48	283,963	137,153	102,484	121,027	16,617	5,813	3,877	3,612	420,311	301,996
Hides and pelts	4	193	12	2,425	670	4,534	3,838	182	390	185	52	7,330	5,143
Tin	—	—	—	4,693	4,037	—	—	—	—	—	—	4,693	4,057
Fish: fresh, dried & preserved ...	8,606	5,996	552	—	—	—	—	—	—	3	20	8,609	5,996
Coffee	—	—	—	2,993	4,110	1,569	675	—	—	33	226	4,595	5,011
Stones and earths for arts and crafts	7,499	6,521	2,497	496	377	4,809	4,558	—	—	1,708	69	14,512	11,525
Cocoa	—	—	—	—	256	1,825	697	—	—	2,594	2,008	4,419	2,961
Cellulose pulp for paper making ...	16,011	7,652	7,554	—	—	—	—	—	—	—	—	16,011	7,652
Jute fabrics	—	119	68	6,169	5,681	986	1,391	771	422	181	97	8,226	7,659
Engines, boilers and machinery spare parts	2,022	783	290	—	—	—	—	—	—	1,031	765	3,054	1,548
Lead	6,763	8,516	3,103	—	—	—	—	—	207	26	—	6,789	8,723
Table fruit	950	1,836	1,683	1,058	1,103	—	278	—	989	3,642	5,872	5,650	10,078
Chemical products	14,181	13,497	6,673	330	457	143	375	—	—	852	62	15,506	14,391
Zinc	2,778	5,847	4,559	—	—	—	—	192	—	41	—	3,011	5,847
Copper	997	3,088	5,371	23	—	—	—	—	—	92	—	1,112	3,088

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Exports.—French exports to British overseas territories are much lower in value. Their proportion of total French exports grew from 1.12 per cent. in 1919 to 3.69 per cent. in 1928, subsequently declining in 1929-32 to 3.26, 3.09, 3.03 and 3.11 per cent. respectively. The average value for the three years 1928-30 was 1,650 millions, falling in 1931 to 823 millions (44 per cent. decrease) and in 1932 to about 612 millions (63.8 per cent. decrease). There is not the same overwhelming preponderance of a few items as in the case of the imports, and the 25 leading commodities included in the table that follows represented in 1928-30 not quite 83 per cent. of the total values. The leading place was taken by silk fabrics (311 millions), of which just over half (164½ millions) went to Canada and one-fourth (88.6 millions) to Australia. Wines, brandies and spirits accounted for a sum of 162½ millions, of which Canada's share was 64½ millions, that of India 49½ millions, that of Africa 20 millions, and that of Australia 11 millions. Nearly the whole of the woollen fabrics (138 millions) went to Canada and India (80 and 41 millions, respectively), while exports of underwear and ready-made clothing, tools and metals wares, perfumes and soaps, cotton fabrics, and a number of other commodities are more evenly distributed. Exports to India, Australia, Africa and Canada are very largely surpassed in value by imports from those countries (predominantly raw material for important French industries); while French exports to the lesser British colonies (on the basis of 1928-30 average values) are worth 50 per cent. more than the commodities purchased from them.

[TABLE]

FRENCH EXPORTS TO BRITISH OVERSEAS TERRITORIES IN 1928 TO 1930 (AVERAGE).
(Values in millions of francs).

Commodities	Total Value	of which, to							
		India	Australia	Africa	Canada	Palestine and Mesopotamia	Ireland	Other Colonies in America	Gibraltar, Cyprus and Malta
Silk fabrics	310.7	29.5	88.6	17.5	164.4	4.6	2.0	.5	3.7
Wines, brandies and spirits ...	162.4	49.6	11.1	20.3	64.5	1.3	6.8	6.9	1.9
Woolen fabrics	138.1	40.8	3.6	5.6	80.2	5.5	.2	.1	2.1
Underwear and ready-made garments	92.1	6.8	15.4	22.1	40.3	2.0	2.7	.4	2.8
Tools and metal wares	67.4	26.4	1.7	21.5	12.4	2.4	1.6	.3	1.1
Perfumes and soaps	67.3	25.6	6.3	12.3	10.8	6.0	1.6	2.7	2.5
Cotton fabrics	63.4	14.3	8.9	14.1	20.9	2.9	.3	.3	1.8
Hides and pelts, furs, leather wares	54.4	1.6	7.9	5.6	33.6	1.3	.1	—	4.4
Rubber and gutta-percha manufactures	45.2	19.3	12.0	7.6	—	3.9	1.4	.2	.9
Chemical products	43.6	4.3	19.0	9.5	4.5	.9	4.3	.3	.8
Pearls	41.7	41.0	.2	—	.3	.1	—	.1	—
Drugs and patent medicines ...	36.3	18.3	1.2	2.8	11.4	1.5	.2	.4	.6
Iron and steel	36.2	24.5	.3	1.9	7.1	2.2	.2	—	—
Motor-cars	32.6	16.1	2.5	6.8	.4	.8	6.0	—	.2
Paper, cardboard, newspapers and books	31.8	8.6	3.4	1.6	15.8	1.5	.3	.3	.2
Rice	25.6	—	—	25.1	.3	.1	—	—	.1
Engines, boilers and machinery parts	25.0	6.2	3.8	4.0	5.1	1.2	2.3	—	.9
Pottery, glassware and porcelain ...	23.5	6.1	1.0	2.5	12.0	.4	.9	.4	.3
Sugar and molasses	19.2	9.9	—	8.8	—	.5	—	—	—
Ships	15.1	—	9.7	.3	5.1	—	.1	—	—
Table fruit	14.2	1.4	1.4	.1	11.2	—	—	.1	—
Syrups, confectionery, biscuits, etc.	13.5	4.7	2.9	3.2	3.0	.2	—	.1	.2
Vegetable waxes and resins	9.5	.4	7.9	1.1	—	—	.1	—	—
Miscellaneous	281.2	76.2	30.8	37.8	73.6	16.1	20.0	12.7	12.5
Totals	1,650.0	431.6	239.6	232.1	576.9	55.4	51.1	25.8	37.0

Weight of Exports.—Most of the leading French exports to the overseas parts of the British Empire showed in 1931 decreases by weight of 33 to 50 per cent., and even more, in comparison with the averages for the corresponding goods in 1928-30. Although silk fabrics, the principal item in point of value, declined in quantity by only 17 per cent. (from 989 to 825 tons), cotton fabrics were less by 56 per cent. (1,443 and 634 tons) and woollen fabrics by 30 per cent. (1,629 and 1,101 tons). Wines decreased in quantity by 31 per cent. (from 54.6 to 37.7 thousand hectolitres), spirits by 52 per cent. (from 19.9 to 9.6 thousand hectolitres of alcohol) and liqueurs by 23 per cent. (from 4,192 to 3,230 hectolitres). While a relatively small decrease of 14 per cent. occurred in the case of iron and steel (from 52.5 to 45.4 thousand tons), far greater declines were recorded among the various products of engineering: tools and metal wares being less by 63 per cent. (40.8 and 15.1 thousand tons), engines, boilers and machinery spare parts by 40 per cent. (2,478 and 1,489 tons), and motor-cars fewer in number by 50 per cent. (1,123 and 555). Other substantial decreases in weight included: perfumes and soaps (26 per cent.), rubber and gutta-percha manufactures (33 per cent.), chemical products (59 per cent.), drugs and patent medicines (53 per cent.), ceramic wares (58 per cent.), syrups, confectionery, jams and biscuits (39 per cent.). The following table shows the total quantities of the principal commodities exported to British overseas possession in 1928-30 and in 1931 (also 1932 in the case of Canada), together with the proportions thereof taken by the more important parts of the Empire:—

FRENCH EXPORTS TO BRITISH DOMINIONS AND COLONIES, 1928 TO 1931 (ALSO 1932 FOR CANADA).
(Weights in metric tons).

	Canada			British India		Africa (South West and East)		Australia		Rest of Empire		Totals	
	Average 1928-30	1931	1932	Average 1928-30	1931	Average 1928-30	1931	Average 1928-30	1931	Average 1928-30	1931	Average 1928-30	1931
Silk fabrics	444	333	157	130	56	75	133	300	255	40	48	989	825
Wines (hectolitres)	20,198	19,053	4,293	8,216	4,922	17,323	7,789	1,824	381	7,018	5,566	54,579	37,711
Brandies and spirits (hecto- litres of alcohol)	5,417	3,099	1,613	10,631	4,560	1,300	539	1,377	189	1,148	1,185	19,873	9,572
Liqueurs (hectolitres)	2,123	1,081	389	793	584	264	353	480	—	532	1,212	4,192	3,230
Woollen fabrics	952	484	297	475	427	72	124	45	23	85	43	1,629	1,101
Underwear and ready-made garments	90	144	47	64	29	80	84	23	3	137	19	294	279
Tools and metal wares	2,272	1,489	147	16,531	1,539	20,158	10,723	121	137	1,741	1,205	40,823	15,093
Perfumes and soaps	528	630	494	2,380	2,332	1,723	810	183	164	1,437	693	6,251	4,629
Cotton fabrics	272	250	82	416	96	491	138	146	82	118	68	1,443	634
Hides and pelts, furs and leather wares	163	238	463	32	82	104	30	85	2	162	98	546	450
Rubber and gutta-percha wares Chemical products	—	—	11	666	695	263	224	394	75	396	168	1,719	1,162
Drugs and patent medicines	1,170	608	859	1,834	1,059	4,424	2,716	6,769	2,236	10,669	3,702	24,866	10,321
Iron and steel	534	412	369	2,227	810	150	96	49	25	190	149	3,150	1,492
Motor-cars (number)	9,488	6,501	4,398	36,638	32,021	2,381	3,669	321	—	3,667	3,205	52,495	45,396
Paper, cardboard, newspapers and books	9	15	7	546	355	231	29	67	—	270	156	1,123	555
Rice	1,010	1,057	761	736	266	155	133	228	303	242	191	2,371	1,950
Engines, boilers and machinery spare parts	180	—	399	—	—	14,485	5,060	—	—	85	96	14,750	5,156
Pottery, glassware & porcelain Sugar and molasses	355	289	46	719	461	462	179	421	120	521	440	2,478	1,489
Ships	4,014	1,960	1,840	3,752	1,747	1,183	31	368	—	1,531	805	10,848	4,543
Table fruit	—	—	—	6,918	—	3,761	1,079	—	—	182	—	10,861	1,079
Syrups, confectionery, pre- served fruits and biscuits	2,659	—	—	—	—	80	13	2,473	—	4	—	5,216	13
Vegetable waxes and resins	1,058	1,125	1,157	178	90	10	—	151	74	12	35	1,409	1,324
	219	167	125	658	521	610	383	283	21	55	27	1,825	1,119
	—	—	59	23	—	504	948	3,728	3,086	27	68	4,282	3,802

British India.—Seventh in importance as a supplier of France (prior to 1931 she was sixth) and 17th as a customer, British India furnishes France with goods about six times greater in value than she purchases from her. *Imports* from India averaged 2,505 million francs in the three years 1928 to 1930 (2,653, 2,758 and 2,103 millions), but in 1931-33 declined to 1,163, 790 and 792 millions. Though consisting almost entirely of raw materials for industry, they are rather more diversified in character than those from other parts of the British Empire, the average values of the leading items in 1928-30 being: oleaginous seeds and fruits 894; raw cotton 427, jute 366, crude rubber and gutta-percha 219, tin 112, ores 89, raw hides and pelts 63 million francs. The quantities showed in most cases an increase from 1928 to 1929 and 1930, followed by a substantial decrease in 1931: thus, oil-seeds 391, 418, 418, 369 and 335 thousand tons; cotton 46.4, 55.1, 57.5, 30.2 and 14.8 thousands tons; crude rubber and gutta-percha 10.6, 25.2, 31.6, 23.8 and 2.0 thousand tons; ores 272, 283, 296, 137 and 101 thousand tons. Jute showed a continuous decline, the quantities in 1928-32 being 110, 105, 93, 80 and 68 thousand tons respectively. The corresponding figures for tin were 4,400, 5,000, 4,650, 4,037 and 331 tons; and for raw hides and pelts 1,113, 1,463, 1,132, 670 and 651 tons. *Exports* to India in 1928-30 averaged 432 million francs (506, 450 and 339 millions), declining in 1931-33 to 238, 166 and 112 millions. Wines and spirits took the leading place with 49.6 millions, or 11.5 per cent. of the total value, closely followed by pearls (41 millions) and woollen fabrics (40.8 millions), or 9.5 per cent. each; while silk fabrics, tools and metal wares, perfumes and soaps, iron and steel, each accounted for between 24 and 30 millions, the values given in each case being the averages for 1928-30. Among these leading commodities, only in the case of woollen fabrics was there any increase in quantity in 1931-32 as compared with 1928, the weights for the five years being 493, 409, 522, 427 and 728 tons, although two of the lesser components in the textiles group showed large advances: woollen yarns from 54½, 15 and 69½ tons in 1928-30 to 151 and 250 tons in 1931 and 1932, and silk yarns from 86½, 111½ and 103 tons to 397 and 305 tons. Very considerable decreases occurred in the cases of wines (8,715, 8,687, 7,246, 4,922 and 2,489 hectolitres), spirits (12,859, 11,050, 7,984, 4,560 and 1,408 hectolitres of alcohol), liqueurs (897, 811, 671, 584 and 148 hectolitres), tools and metal wares (24,191, 19,678, 5,723, 1,539 and 1,589 tons), silk fabrics (198, 109, 82, 56 and 60 tons), pearls (values 50.9, 47.3, 24.9, 15.0 and 13.1 million francs), and a less pronounced decrease as regards iron and steel (40,133, 31,387, 38,394, 32,021 and 21,502 tons). Exports of perfumes and soaps, after having been 2,310, 2,857, 1,973 and 2,332 tons in 1928-31, fell to only 963 tons in 1932.

Canada.—The value of French trade with Canada has increased, relatively to that of pre-war days, in greater propor-

tions than the trade with any other of the overseas parts of the British Empire; and between 1928 and 1931 Canada advanced from 23rd position to 12th in the list of France's suppliers, its share in the total import trade of France increasing from 1.1 to 2.0 per cent.. In 1932 she fell back to 13th place, her share declining to 1.8 per cent. of total imports. As a customer, Canada held 16th position in 1928-30, receding in 1931 and 1932 to 17th and 19th, respectively. During that period her share of the total exports of France declined gradually from 1.3 to 0.8 per cent. The values of *imports* from Canada in the years 1928 to 1932 were 604, 843, 447, 830 and 542 millions. Cereals greatly predominated, their proportion in the above figures ranging from 61 to 87 per cent. (values in 1928-32: 416, 592, 274, 683 and 472 millions). The quantities of the principal imports, arranged in descending order of value, were:—(thousand tons) cereals 281, 474, 271, 875 and 690; fish 8.5, 10.6, 6.7, 6.0 and 0.6* ; pulp for paper manufacture 17.2, 17.9, 12.9, 7.7 and 7.6; lead 5.8, 5.2, 9.3, 8.5 and 3.1; stones and earths for arts and crafts 5.8, 8.4, 8.3, 6.5 and 2.5; chemical products 3.1, 18.0, 21.5, 13.5 and 6.7; zinc 2.9, 4.0, 1.4, 5.8 and 4.6; copper 2.4, 0.6, nil, 3.1 and 5.4. *Exports* to Canada in the period 1928-32 declined by 77 per cent., the values year by year being 685, 587, 459, 319 and 159 millions. Rather more than half the total value consisted of textiles, silk fabrics forming 28 per cent., woollen fabrics 14 per cent., under-clothing and ready-made garments 7 per cent. and cotton fabrics 4 per cent.; while wines and spirits accounted for about 11 per cent. in the total value. As regards quantity, nearly all of the principal exports to Canada declined in 1932 to a small fraction (one-third or less) of the corresponding weights in 1928; noteworthy exceptions being chemical products (which increased from 413 to 859 tons—the weights for the intervening years 1929-31 being 1,478, 1,618, and 608 tons), perfumes and soaps (increase from 410 to 494 tons, with 565, 608 and 630 tons in the intervening years) and apple fruit (a relatively small decrease from 1,296 to 1,157 tons). The principal decreases were: in the textiles group, silk fabrics 448, 410, 473, 333 and 157 tons; woollen fabrics 1,131, 936, 790, 484 and 297 tons; cotton fabrics 284, 284, 249, 249 and 82 tons; underwear and ready-made clothing 94, 82, 94, 144 and 47 tons; in the beverages group, wines 20.2, 24.8, 15.5, 19.1 and 4.3 thousand hectolitres; brandies and spirits 5.4, 5.6, 5.3, 3.1 and 1.6 thousand hectolitres of alcohol; liqueurs 2.7, 2.1, 1.7, 1.1 and 0.4 thousand hectolitres: among metals and engineering products, iron and steel 13.5, 8.1, 6.9, 6.5 and 4.4 thousand tons; tools and metal wares 3,172, 1,011, 2,634, 1,489 and 147 tons; engines, boilers and machinery spare parts 390,

* *Note*.—The figure for 1932 is not comparable with that for previous years, owing to the change in the French trade returns whereby fish caught by the French fishing fleets in Canadian waters are no longer recorded as imports. The figures for all five years are exclusive of shellfish.

475, 201, 289 and 46 tons. Exports of ceramic wares declined by over three-fifths (5,009, 4,934, 2,098, 1,960 and 1,840 tons), and those of drugs and prepared medicines by about 27 per cent. (510, 565, 535, 412 and 369 tons).

In 1933 French imports from Canada were lower by 224 millions, or 41.3 per cent., than in 1932 (318 against 542 millions), while exports to Canada were lower by 49 millions, or 30.8 per cent., (110 against 159 millions). Until the middle of May, when a Franco-Canadian commercial agreement was signed, commercial relations were seriously disturbed by the mutual application of the highest tariff rates. French exports were also affected by the depreciation of the Canadian currency by approximately 30 per cent., making French goods unruly expensive to Canadian purchasers.

Australia.—The trading relations of France and her colonies with Australia have been considerably handicapped in the past two or three years by the restrictive policies adopted on both sides: the application of the maximum French tariff (fourfold that of the minimum tariff), import restriction by quotas, coupled with an exchange compensation tax, on the part of France, supertaxes imposed by Indo-China upon Australian butter and other produce. French exports to Australia, which consist largely of luxury articles (silks, underwear, wines and spirits, perfumes and soaps, and motor-cars usually account for more than 50 per cent. of the total value) have been adversely affected not only by the reduced purchasing power of the usual buyers in Australia of such commodities, as the result both of severe depression and of the heavy depreciation of Australian currency in relation to the franc, but also by the imposition by the Federal Government of higher customs duties (50 per cent. increase), import quotas, and import prohibitions. In the case of wines and spirits the import quotas have now been suppressed, but the 50 per cent. increase in customs duty remains. Cherries, preserved fruits and vegetables, cheese, vinegar, tiles, are still on the prohibited list, but the embargoes on soap and gelatine, two commodities of particular interest to French exporters, have recently been raised, after being in force for two years. The Australian trade returns for the year 1930-31 (to June 30th) show a decline of over 50 per cent. in the value of imports from France as compared with 1929-30 (£1,498,306 against £3,070,645), and it is anticipated that a further decrease will be shown by the figures for 1931-32 when issued. Three-fifths of this decline are attributable to the piece goods and clothing group, which fell from £1,593,457 to £673,087, the principal items within this group being (1929-30 figures in parenthesis): silks and velvets £400,487 (£818,235); ribbons, braids and flowers £74,468 (£135,173); gloves £27,823 (£52,726); lace £23,996 (£64,639); woollen fabrics £22,336 (£88,498); dresses and mantles £12,372 (£90,963). In

the wines and spirits group, imports have fallen from £189,731 and £148,424 in 1928-29 and 1929-30 to only £20,456 in 1930-31, the quantity in every case declining by 73 per cent. or more. Imports of machinery fell from £136,190 to £57,000 (motor-cars alone declining from £17,480 to £2,030), vegetables and animal products from £123,963 to £72,746, foodstuffs from £85,427 to £22,231, and soaps from £5,763 to the insignificant amount of £83. In order of importance as a customer of France, Australia has receded from 25th position in 1928 to 29th in 1932.

In the case of exports to France, which for many years have been from three to five times the value of imports, there has been a continuous, though more gradual, decline since 1924-25, when a peak figure of £19.9 millions was attained: for the three years 1928-29 to 1930-31 the amounts were 15.1, 10.1 and 6.7 million pounds respectively, and in that period Australia fell back from 8th to 10th place in order of importance as a supplier. (She has since receded to 17th place in 1932). In these exports, the overwhelming preponderance of raw wool may be seen from the fact that, in the three years 1928-30, the value of raw wool exported to France from Australia averaged 1,848 million francs yearly, while oleaginous seeds and fruits, second in order of value, amounted only to 75 millions, and cereals, the next item, to 31 millions; these three commodities together constituting 98.4 per cent. of the total value of exports to France. The decline in volume was considerably less than would appear from the returns of values: of raw wool, the quantities supplied in the four years 1928-31 were 99,791, 137,213, 122,764 and 96,140 tons respectively, and of oleaginous seeds and fruits 37,206, 30,995, 23,227 and 20,400 tons; though in the case of cereals there was a much greater decline, 30,463, 35,117 and 3,280 tons in 1928-30, recovering in 1931 to 13,318 tons.

In 1932 and 1933 the value of French imports from Australia was 489 and 673 millions respectively, and that of exports to Australia 98 and 68 millions. Nearly the whole of the imports consisted of raw wool (80,600 and 117,900 tons, value 441 and 646 millions) and oilseeds and fruits (16,130 and 19,100 tons, value 18.9 and 17.4 millions); while chief among the exports were silk fabrics (449 and 192 tons, value 39 and 18 millions), potassium tartrate or wine lees (3,116 and 3,286 tons, value 12.6 and 9.2 millions), and fixed vegetable oils (five millions in each year).

Africa.—The African portions of the Empire (the Union of South Africa, together with the various British colonies and protectorates in East and West Africa) in 1930 occupied 14th place as suppliers of France and 27th place as customers, receding in 1931, however, to 17th and 30th, respectively. *Imports*, after having in 1928-30 averaged 993 millions of francs yearly (1,017, 1,080 and 883 millions), declined in 1931 to 558 millions. In 1932 imports from the Union of South Africa alone were 207

millions (as against 345 and 625 in the two years preceding), but comparable figures for the other African territories are not available. Raw wool accounts normally for about 60 per cent. of the total value, oilseeds for nearly 20 per cent., and hides and pelts six or seven per cent. Although during the period under review there was a decline of 50 per cent. in the total values, some of the leading commodities showed substantial increases in quantity: raw wool (almost entirely from the Union of South Africa) 31.9, 42, 54.1 and 40.8 thousand tons in 1928-31; oleaginous seeds and fruits (about five-sixths from West Africa and most of the remainder from East Africa) 82.3, 87, 87.4 and 122.3 thousand tons; ores (three-fourths from West Africa, one-fourth from South Africa) 81.3, 117.6, 108.5 and 121 thousand tons. Imports of cereals (almost entirely from South Africa) declined by nearly one-half (34, 37.5, 55.3 and 19.5 thousand tons) and hides and pelts by about 17 per cent. (4.6, 4.9, 4.1 and 3.8 thousand tons). *Exports* from France, whose value is rather less than one-fourth of that of imports, averaged 232 millions in 1928-30 (271, 213½ and 212 millions), declining to 136 millions in 1931. To the Union of South Africa alone, France supplied in 1932 commodities to a value of 45 millions, as compared with 79.5 and 100 millions in 1931 and 1930. In the 1928-30 average above-mentioned, the chief components were rice (25.1), underclothing (22.1), tools and metal wares (21.5), wines, spirits and liqueurs (20.3), silk fabrics (17.5), cotton fabrics (14.1), perfumes and soaps (12.3). As regards quantity, a comparison of the returns for 1931 with those for 1928 shows substantial increases in respect of four of the leading 23 commodities, silk fabrics showing an increase of 133 per cent. (57.3, 68.3, 98.2 and 133.4 tons in 1928-31); vegetable waxes slightly more than doubled (314, 586, 611 and 648 tons); woollen fabrics greater by 72 per cent. (72, 54, 90 and 124 tons); and iron and steel by one-third (2,809, 1,211, 3,124 and 3,669 tons). The figures for tools and metal wares were more than doubled in 1929 and 1930, but fell back in 1931 almost to the 1928 level (10,218, 28,342, 21,914 and 10,723 tons); and a somewhat similar tendency was shown in the case of underwear and ready-made garments (80.9, 87.3, 70.5 and 84 tons). Large decreases, exceeding 50 per cent. in most cases and going up to as much as 98 per cent., were suffered by nearly all the other principal commodities: for instance wines (20,160, 18,076, 13,732 and 7,789 hectolitres); spirits (1,610, 1,343, 946 and 539 hectolitres of alcohol); perfumes and soaps (2,122, 1,519, 1,528 and 810 tons); cotton fabrics (650, 390, 491 and 138 tons); chemical products (5,174, 5,076, 3,024 and 2,716 tons); motor-cars (357, 213, 122 and 29 in number); rice (13.7, 17.1, 12.7 and 5.1 thousand tons); engines and boilers, including machinery spare parts (435, 351, 601 and 179 tons); ceramic wares (1,759, 1,747, 41 and 31 tons).

In 1933 the value of imports from the Union of South Africa

was 308 millions, and that of exports 45½ millions. As regards other British possessions in Africa, the French trade returns no longer enable a clear distinction to be made, but as far as can be estimated, imports from those territories were about 390 and 200 millions in 1932 and 1933 respectively, and exports about 50 millions in each year.

VI. THE QUOTA SYSTEM

Origin.—The system of quotas for limiting imports to prescribed maxima was introduced earlier (May, 1931) for nitrates, but the present quota régime may be said to have been inaugurated by the French Government in July, 1931, with a view to defeating the practice of selling under the cost of production by countries with over-production or afflicted with currencies seriously depreciated in relation to the franc at a time when French industry was suffering from under-employment. France was debarred from introducing higher duties on a large scale, because under the treaties with Germany, Italy, Belgium, Switzerland and Czechoslovakia in 1927-28 about 72 per cent. of the 7,000 odd items in the French Tariff were consolidated, and could only be varied either by mutual agreement or by denunciation of treaties; the 72 per cent. moreover covered the vast bulk of industrial imports. Unlike the exchange compensation levy, the quota system applies indiscriminately to imports from all foreign sources, although some countries may be more affected than others by reason of their being prominent producers of goods falling under the ban of the quota decrees. Until September, 1931, quotas were applied only to a few commodities, chiefly raw materials (*e.g.* coal and flax in July, timber and wines in August), but by July, 1932, the system had been extended to cover also very many foodstuffs and innumerable manufactured articles. It has been calculated that about 1,800 classes of industrial products have been brought under this system. Of particular interest to United Kingdom exporters were coal, china clay, iron and steel plates, various kinds of tools, electrical and other machinery and engineering goods, papers, textile products.

Method of Establishment and Working of Quotas.—As a certain mystery, quite unmerited, seems to many United Kingdom exporters to surround the methods of establishment and of working of this system, an explanation thereof will not be superfluous. The method adopted, as regards industrial raw materials and products, for the establishment of a particular quota has been to select a basic period, either one, two, or three years, and to reduce the quantities importable by a fixed percentage of the imports over the basic period. To take the cases of coal and cotton. For the former the basic period is the three years 1928-30: the annual average imports of coal of each importing

country for these years having been ascertained at so many tons, each country may import a quantity corresponding to its own average over that period, minus the percentage reduction prescribed: for coal the reduction was at first 20 per cent., subsequently 28, 40, 36 and 41½ per cent., with certain alleviations or supplements. The basic period for the cotton quota was the average of 1929-31: importers were accorded, generally speaking, 80 per cent. of the imports of the various classes of goods. Quota quantities are fixed for various periods: at present it is usual to publish in the official gazette at the beginning of each quarter the quantities importable during that quarter by each country whose imports in the basic period exceeded 10 per cent. of the total annual imports: countries with less than 10 per cent. are not assigned specific quantities, but their whole group is allotted a total quota. This quarterly quantum is not necessarily one-quarter of the annual amount, as adjustments downwards are made where imports may have been exceeded or been deficient in previous quarters: or in certain cases when seasonal needs cause larger imports within certain periods and lesser imports within others. A flat rate of percentage reduction is not necessarily accorded for all classes of goods within one trade group: thus, for the leather quota certain qualities are accorded 80 per cent., others 60 per cent., others 50 per cent., of the basic period quantity; and in quota proposals for certain engineering goods, the reduction for one group was to 70 per cent., in another to 46 per cent.

Government Attitude towards Quotas Fixation.—The precise percentage reduction and other particular conditions have been made either *ex officio* by the French Government (as in the case of coal) or the latter have sanctioned and decreed the terms arranged between respective national associations (*e.g.*, for cotton). The quota system in the first instance was developed mainly to bring about a reduction of German, and to a less extent, of Belgian and Czechoslovakian imports, which were unduly increasing, when French industry was producing less, whilst, owing to consolidation of tariffs with these countries, measures of greater customs protection were difficult to achieve save after perhaps long negotiation or denunciation. The French Government, as from September, 1931, followed the practice of suggesting to the German Government that, as the imports were abnormally great, the respective national associations in particular trade groups should meet to discuss the best ways and means of reducing imports by a given approximate percentage. The technical advantage of this method was that the trade groups were better informed for adjusting reductions more in accordance with needs and with French capacity of production in specific branches than Government officials. Should the associations have failed to agree on the whole matter, the Government then made its own decision: if only partial agreement was secured, the Government

approved such partial agreement and took its own decision as regards the remainder. Similar negotiations took place with Belgian, Czechoslovakian, American and United Kingdom groups in respect of imports in which these countries were especially concerned. With the United Kingdom matters discussed included cotton, leather, electrical goods.

Agricultural quotas were established by the Government without such negotiations. The Minister of Agriculture appointed a French trade or inter-trade committee (*inter-professionnel*) and a supervisory or control committee to examine the expediency and the measure of the reduction to be effected; and, after consideration of the recommendation made, fixed of its own accord the conditions of the quota of the particular agricultural products to be promulgated. For agricultural products the period of reference was calculated on a different method: the average figure of the three years 1927-29 having been taken, it was multiplied by the coefficient 0.6, then the figure for the whole of 1930 and the first six months (later the first nine months) of 1931 was ascertained, and multiplied by 0.4. The resultant amalgam was applied to establish the quotas to be imported from the countries concerned.

Working of Quotas from Exporting Country.—As to the working of quotas from exporting countries, no uniform system covering all quota-ed products is in vogue. The handling of the United Kingdom coal quota is not centralised in a national organisation in the United Kingdom as are the quotas from Germany, Belgium, and Holland: every importer in France of United Kingdom coal within the period of reference (1928-30) is entitled, on production of the necessary proof (his coal import account) to import the fixed percentage of those imports. When the national organisation controls the exports under quota to France, it undertakes not to give licences for quantities in excess of the quota: this system has the advantage that exporters are largely relieved of the danger that their goods may arrive in France after exhaustion of the quota and may consequently have to be brought back or be subjected to charges for storage until some new period of quota makes them importable. The system of centralised control has been, however, adopted for United Kingdom exports in several cases (cotton goods, electrical material, wall-paper, leather, etc.) and the tendency of the French Government was, up to the end of 1933, to secure the control within the exporting country.

Recent Developments.—Decrees of December 31st, taking effect on January 1st, 1934, introduced about 600 new quotas which were to be managed under the French Ministry of Commerce by French trade committees only. The quota for fixed at 25 per cent. of the imports in 1932, but additional quantities could be secured in return for advantages to be conceded by countries concerned.

The same reduction was applicable to the previously existing quotas, but their management was left in the same hands: increases were to be secured, however, in return for concessions.*

The Future as regards the Quota System.—The drawbacks of any import quota system are obvious. In limiting potentialities it discourages enterprise and even normal development in the given market. As regards the individual trader, it may result in a serious permanent loss of business: thus, in the first place he is limited as to the orders he may take, and secondly, if goods ordered for and required in a certain period of a year cannot enter till a later quarter by reason of exhaustion of the quota, they become unacceptable, and such uncertainty may almost preclude future business. The early suppression of the quota system appears unlikely. In some cases quotas were replaced by higher customs duties. The Government announced in the summer of 1932 that it was its intention not to introduce new quotas save in extreme cases; and in March, 1933, the Minister of Commerce stated that since July, 1932, no fewer than 33 proposals for new quotas had been submitted to but rejected by the Government. In March, 1933, however, a high official of the Ministry of Commerce stated publicly that his Department alone then administered 64 quotas respecting commodities coming under 1,225 items of the tariff (which contains over 7,000): and other quotas are administered by the Ministry of Agriculture (agricultural products) and the Ministry of Mercantile Marine (fish).

The urban populations protest that the cost of living has been maintained unduly high by reason of the quotas on coal, meats, poultry, fish, eggs, cheese, butter and many other foods, on articles of clothing and other articles in ordinary consumption, when already the cost of bread, the staple of French diet, includes a customs duty of 80 francs per 110 lbs. or far more than the world market price of wheat. Exporters and manufacturers realise that if they continue to ration foreign imports, other countries may ration their imports from France, that that French cost of production must remain high if the cost of living remains high. In general, the authorities have defended the system on the ground of the necessity of checking the excessive importation of agricultural and industrial products at such low prices that French agriculture and industry, already greatly depressed, were faced with ruin. The French Minister of Commerce stated, in 1932, that he regarded the system as purely transitional; and in 1933, as just noted, a later Minister of Commerce observed that 33 applications for new quotas had been rejected. As regards the declared intention of the Government to replace it by higher duties, it was officially stated in March, 1933, that, in reply to the

* D.O.T. NOTE.—In the case of many goods the United Kingdom quota was subsequently raised to 75 or 100 per cent. of imports in the basic year.

Ministry's enquiry of those concerned respecting this substitution, their demands had all been very high, and most of the replies were to the effect that customs duties would not suffice. It was affirmed on the same occasion that despite the objections to the system, which were rather serious, it had to be decided to continue the quota system, leaving things as they were. On February 28th, 1934, the Minister announced in the Chamber that there was no question of removing the quota policy, which had rendered the most signal services to France in the economic crisis.

INSET

NOTE ON THE TOURIST INDUSTRY

Immense Importance to the French Economy.—Foreign visitors, who for generations had brought a considerable contribution to the French national income, assumed in the period 1919-30 an immense economic importance. Before 1914, France, Switzerland and Italy had stood forward as the chief resorts of tourists, but in the after-war years France for various reasons (general international sympathy for a country which had suffered invasion, desire to visit the scene of warfare, attractions of her varied climates and of her monuments, cheaper cost of living, etc.) occupied a predominant place, and reaped a rich harvest. She benefited also from the strong propensity toward travel of the ever-growing sections of modern industrial civilisations, which has been stimulated by the all-round development in the facilities for transport. Competition to share has grown most keen; and the organised efforts carried out in more recent years on an intensive scale by so many countries (Germany, Austria, Italy, Spain, Portugal, Czechoslovakia, Egypt, Belgium, Holland) constitute the signal and universal recognition of the high value to a nation of the foreign tourist traffic. The special importance attached thereto by France has been shown by the fact that she has created a special department of Government, presided over by a parliamentary Under-Secretary of State, to direct and co-ordinate matters connected with the attraction and the handling of foreign visitors. It was fully realised that the traffic provided profits not only for the transport, hotel, food and drink, and amusement industries, but also for an endless variety of trades, luxury and other, in which French achievement was conspicuous, notably in dressmaking, underwear, hosiery, woollens, silks, laces, jewellery, perfumes, fancy goods, and so forth. The annual expenditure of foreign visitors cannot of course be exactly computed. The French estimates for the best years (say 1927-30) have put it at from 12 to 15 milliards of francs: at the par value of the franc this would represent about 100 to 125 millions sterling. This section of the invisible exports would accordingly represent about a quarter of the value of the total visible exports. The extent to which France benefited by her prosperous foreign tourist traffic is testified by the comparative desolation that has overtaken, since the world depression set in, both the numerous places or areas mainly haunted by the foreigner and the various trades of which he was a bounteous customer.

Value of French Tourist Traffic.—No precise estimate of the sums expended annually in France by foreign visitors and by French tourists in their own country can be made on account

of the innumerable items in respect of which no statistics are procurable. It has just been noted, however, that in the boom years the total expenditure in France by foreign tourists alone was about 12 to 15 milliards yearly; and it was recently stated in Parliament by the Under-Secretary of State for Public Works and Touring that the *turnover* of the French touring industries had attained a yearly total of 40 milliards. As a consequence of the smaller number of visitors since the spread of the world depression, of their reduced individual spending capacity, and of the restrictions introduced in certain countries (e.g. Germany, Spain, Czechoslovakia, Latvia, etc.) upon the amount of money that their nationals may carry out of the country, foreign tourist expenditure has notably declined within the last few years. At a recent Paris congress of hotel proprietors and other bodies interested in the tourist industry, it was stated that French invisible exports from foreign tourists had fallen from 10 milliards in 1927 (and nearly 15 milliards in 1930) to about 5 or 6 milliards in 1932 and to a little over 4 milliards in 1933. For all nationalities the drop in the number of visitors has been nearly 50 per cent. and the reduction in expenditure nearly 60 per cent. compared with 1932.

The results of some recent enquiries tend to support these figures. An enquiry covering sixteen leading hotels in Paris revealed that, whereas the number of nights spent by visitors (that is, the product of the number of visitors by the number of nights spent by each) was 810,200 in 1928, the number was 46 per cent. less in 1932. In 1928 the turnover was 199 millions; in 1932, 79 millions. Similar reductions of 60 per cent. were shown in respect of provincial hotels. Another enquiry, conducted by the national association of hotel proprietors, showed that the receipts of some of the leading hotels in the country were lower in 1932 by no less than 75 per cent. when compared with 1926; that among hotels of the second category the decline ranged from 30 to 50 per cent.; and that in those of the third category the average fall in turnover was 10 per cent. Another striking index, relating to the lower spending power of American visitors (who are usually regarded as the spenders of the greatest average sum per head), is provided by a return, compiled by the American Chamber of Commerce in Paris, respecting the number of United States visitors to Europe and the class in which they travelled on board ship. In 1931, out of 382,578 passengers, 15.68 per cent. travelled first-class, 10.27 per cent. cabin-class, 9.51 per cent. second-class, 20.61 per cent. tourist-class and 43.91 per cent. third-class. In 1932, when the total bookings were 367,295 or 15,283 less, first-class passengers were fewer by 19 per cent., cabin by 31 per cent., second-class by 44 per cent., whilst those in the tourist-class increased by 11 per cent. and third-class passengers by 10 per cent.

A further indication of the losses to the tourist industry from the reduction in the number of visitors and in their individual

expenditure is provided by the casino returns, whose turnover was very largely provided by the foreign element. The takings of 170 casinos in France in the year ended 31st October, 1932, fell to under 152 millions, compared with 246 millions in the previous year and 445 millions in the record year 1928. Several of the greatest casinos showed returns lower by from 50 to 65 per cent. than in 1931, and in some the fall was nearly 75 per cent. In 1933 the total takings of the casinos fell further (to 146.2 millions). The State levy on the takings reached only 68 millions in 1932, whereas in 1927-30 it was successively 206, 221, 212 and 171 millions.

Numbers and Nationality of Foreign Visitors.—The tourist influx appears to have reached its zenith in 1929, when 1,911,107 foreign visitors were recorded. Relatively small decreases were reported in the next two years (1,667,831 and 1,542,285), but in 1932 and 1933 there was a pronounced decline, only 944,400 and 931,500 visitors being recorded, or half those in 1929.

Visitors from the United Kingdom form regularly the predominant element, and, the decline in their case having been less marked than in that of other nationalities, they tend to form an increasingly high percentage of the total: 46.1, 51, 56.4, 55.3 and 62.8 per cent. in 1929-33. According to French returns, they increased from 759,100 and 833,000 in 1925 and 1926 to a maximum of 881,000 in 1929, thence declining to 850, 870 and 522 thousand in 1930 and 1932. In 1933 there was a small increase, a total of 584,705 being recorded. An appreciable proportion of them, however, are excursionists spending a few hours at Dieppe, Calais, Boulogne, St. Malo or other Channel ports; or a day or two in Paris; or merely passing through France on their way to Switzerland, Italy, Spain, Egypt, or the East.

Spaniards, at one time second in numerical importance, have greatly declined in the last four years or so: whereas in 1926 there were 415,813 Spanish visitors recorded, in 1929-33 their numbers fell to 350, 213, 250, 125, 200, 114, 120,000 and 95,000 respectively. A similar decline has occurred in the case of visitors from the United States, who, after increasing from 190,000 and 225,000 in 1925 and 1926 to 296,174 in 1929, have since declined to 275,344, 205,320, 143,208 and 101,200 in 1930-33.

Among the other nationalities, together constituting each year from 20 to 30 per cent. of the total number of visitors, Dutchmen averaged 42,150 in the five years 1929-33, Swiss 40,760, Belgians 39,820, Germans 27,440. South Americans, at one time very numerous, show the greatest proportionate decline: from 150,000 in 1929 to 88,125, 50,321, 20,250 and 11,000 in 1930-33. The respective national percentages in 1929, 1932 and 1933, apart from those for the United Kingdom given above, were: Spanish, 18.3, 12.7 and 10.2; United States, 15.5, 15.2 and 10.9; Dutch, 2.9, 3.2 and 2.3, Swiss, 2.4, 3.7 and 3.8; Belgian, 2.0, 4.4 and 4.5;

German, 1.8, 1.1 and 2.7; South American, 7.8, 2.1 and 1.2; Austrian (in 1931 and 1932), 1.6 and 0.7; Miscellaneous, 1.6 in each year.

The foregoing figures, compiled by French authorities from the control of passports, the number of visas accorded by French consular officers abroad, and the numbering of tourists who disembarked from ships or who passed through frontier stations, certainly come far short of the real totals of visitors. Thus, in the case of passengers from England to France (not necessarily all of British nationality), English returns show totals of 1,095,000 and 1,137,000 in 1930 and 1932, or more than the grand totals for all nationalities recorded in those years by the French returns, and over twice the totals officially attributed to visitors from the United Kingdom. From Switzerland in 1932 there came 840,000 travellers by rail, 1,500,000 by motor-car and some 3,800,000 crossed the frontier afoot or by other means of locomotion, whereas only 35,200 Swiss tourists were recorded as having made a stay in France in that year; and 1,726,358 travellers entered by the Franco-Spanish frontier, although only 120,000 Spanish tourists were officially recorded. And in 1931 many thousands of Belgians, Germans, Austrians and so forth, who availed themselves of excursions organised for the purpose of visiting the Colonial Exhibition, probably failed to be recorded as tourists, although many of them certainly spent at least a few days in France before they returned home.

Number Engaged.—The movement of persons within a territory affects in such varying degrees so many classes that it is obviously impossible to isolate those that may be solely related to, and occupied in, the tourist industry proper: the *additional* employment provided by the numerous interests involved, whether transport organisations, hotels and restaurants, places of amusement, vendors of commodities and so forth, inevitably escapes analysis or computation. It may be mentioned, however, that the occupational census of 1921 and 1926 classified 57,053 and 57,088 establishments as hotels and restaurants, having 304,073 and 305,097 employed persons. Between the two periods, despite the non-expansion of the figures, there was undoubtedly a real and substantial increase in the hotel and restaurant capacity and in the volume of travel, especially of 'touristic' travel: the explanation of the slight increase in human employment is probably found in the fact that labour-saving agencies or devices were introduced in the interval on a large scale (internal telephones, running water, substitution of gas or of electricity for coal, of vacuum cleaners for hand-driven brushes, etc.). In the same interval the number of travel offices supplying guides increased from 61 with 706 employed to 128 with 1,432 employed.

Organisation for Development of Tourist Traffic.—Numerous organisations, official and unofficial, co-operate towards the

systematic development of the touring industry in France. Both in the Senate and in the Chamber of Deputies are 'tourist' groups which study and promote legislative proposals for the furtherance of tourism. The supreme official body is the department, within the Ministry for Public Works, of the Under-Secretary of State for Tourism, whose duty is to direct the policy and to co-ordinate the work of travel propaganda: its expenditure amounts to about 1½ millions yearly. The Higher Council for Tourism is a permanent inter-departmental and parliamentary committee under the same Ministry. It includes representatives of the budget and other committees of the Senate and of the Chamber, of the *Conseil d'Etat*, of the ministries for finance, industry and commerce, the heads of the rail, sea, air and road traffic departments of the various ministries, and of the administrative section of the foreign office, the directors-general of customs and of departmental administration of the Ministry for the Interior, together with representatives of the ministries for health and for posts, telegraphs and telephones, and 27 other officials. The income of the Council varies greatly, being derived from gifts, legacies and subscriptions from bodies such as the *Touring Club de France*, the Automobile Club, and so forth; but it may be placed, at a conservative estimate, at about one million francs.

The *Office National du Tourisme* (created by legislative act in 1919) carries out the actual work of propaganda. The sources of its income are noted in a subsequent paragraph. In its sumptuous central offices at the *Maison de France*, occupying a commanding position on the Avenue des Champs-Élysées in Paris, are co-ordinated services for supplying to the general public all kinds of information on any of the diverse aspects of touring or travel matters. Offices in the same building are sublet to railway and steamship companies, so that tickets may be obtained on the spot. Through its network of branches in foreign countries (some of which, however, it has been found necessary, for financial reasons, to close down within the last year or so) publicity campaigns are arranged, and information may be obtained by prospective visitors to France.

Voluntary Organisations.—Practically every seaside or other holiday or health resort of any importance in France possesses a "*syndicat d'initiative*," or tourist development association, of which there are over 800. They are private organisations of local notabilities (officials, archaeologists, hotel keepers, etc.), which work under the auspices of the National Touring Office. They endeavour to attract visitors to their own particular resort, through the dissemination of advertising matter and the supplying of information respecting hotels, boarding-houses and so forth, to prospective visitors. These syndicates are grouped into 20 regional federations for France itself and ten others for the colonies; and the federations themselves into one great national union which

maintains close contact with the *Office National du Tourisme* and receives annual subsidies therefrom. Their combined expenditure exceeds 13 millions yearly. Other bodies, such as the *Automobile Club de France*, the *Touring Club de France*, the *Club Alpin*, the *Confédération du Tourisme*, all contribute in greater or less measure towards the general work of propaganda in favour of the French touring industry.

Tourist Propaganda Finance.—Although some 2½ millions yearly are expended by the department of the Under-Secretary of State for Tourism and the Higher Council for Tourism, the main body of organised propaganda in favour of tourist development, financed from both public and private sources, is centralised in the *Office National du Tourisme*. Up to 1933 there was allocated to this office from the State budget a yearly subsidy of about one million francs. Its most important source of revenue from official sources, however, comes from its share of 75 per cent. of the surtax levied, in addition to the ordinary sojourn tax, upon all visitors, native or foreign, in hotels in all places classified as hydromineral or climatic stations and the whole of the yield of the corresponding tax in the case of tourist resorts. (In 1927 there were 116 places classified as hydromineral stations, 70 as climatic stations, 111 as touristic stations, 80 as "leading seaside resorts," 86 as mountain or air-cure resorts; and each year sees an addition of from 10 to 20 names to the list of places authorised to levy the visitors' tax). The *Office* also receives a part of the State's share in the profits of gaming at the casinos; grants from the City of Paris, the Seine County and other public bodies; and contributions from various government manufactures (such as the tobacco monopoly) and institutions that exhibit at the *Maison de France*. Railway, steamship and other companies with interests in tourist traffic also make regular and considerable contributions: for instance, in 1929, when the matter of creating a central tourist headquarters in Paris (now existing as the *Maison de France*) was under discussion, the railways undertook to contribute annually two million francs towards the rent of Frs. 4,800,000, if a site upon the Avenue des Champs-Élysées (eventually adopted) were chosen. In the national budget for 1933 the receipts and expenditure of the National Touring Office are set down at 5.84 million francs and the separate budget of the *Maison de France* at 3.78 millions, but their real resources are considerably in excess of these figures. The income derived by the *Office* in 1931 from some of the sources above-mentioned was: 3.6 million francs from the share in the yield of visitors' tax, one million each from the State subsidy and the share in the gaming receipts, about 1½ millions in the form of grants from the City of Paris and the Seine County authorities; a total, from these sources alone, of about seven millions. If the contributions from railway and steamship companies, and from other miscellaneous sources, be included, the total yearly income of the *Office* may be estimated

at 12 million francs or more. Expenditure in 1931 on propaganda abroad and grants to propaganda associations amounted to Frs. 5,400,000. In the eight years 1925 to 1932 a total of 15.15 million francs was expended abroad, for tourist propaganda purposes, in yearly disbursements ranging from a minimum of 1.15 millions (1927) to a maximum of 2.63 millions (1930).

Propaganda Offices in Foreign Countries.—France maintained until quite recently tourist propaganda offices in London, Barcelona, Geneva, New York, Brussels, Berlin, Copenhagen, Amsterdam, Madrid, Seville, Vienna, Cairo, Warsaw, Rio de Janeiro and Buenos-Ayres. The first three were direct branches of the National Touring Office and were supported, through that office, by State subsidies; the sums devoted to that purpose in 1931 and 1932 being: for the London offices, Frs. 689,762 and 480,000; for Barcelona, Frs. 595,080 and 415,000; and for Geneva, Frs. 308,000 and 315,000. The New York office, which in the same two years received Frs. 500,000 and 140,000, was partly supported by the French Chamber of Commerce in New York, and is now entirely dependent upon that body, as it no longer receives any direct subsidy from the French authorities. The offices at Berlin and Copenhagen have been closed for the time being, and the others no longer receive any support from the State. But the present trend of opinion is apparently that touristic propaganda expenditure within France should be greatly reduced and that all possible resources should be applied towards propaganda work in foreign countries.

The National Tourist Office also makes grants to unofficial bodies whose activities are directed towards purposes favourable to the development of tourism. In 1931 and 1932 it paid to the local tourist development associations (*syndicats d'initiative*) 410,000 and 200,000 francs, and proposed in 1933 to allocate to them Frs. 250,000. The sums paid, or proposed to be paid, in the same years to the national federation that groups all the local syndicates were 210,000, 300,000 and 160,000 francs; to three different bodies engaging in publicity in favour of thermal stations, aggregate sums of 170,000, 80,000 and 115,000 francs; to the *Touring Club de France* and the Alpine Club, as a contribution towards the cost of certain improvements in mountain roads or paths, 500,000, 50,000 and 40,000 francs. French railways and steamship companies are reputed to spend about 30 million francs annually in advertising.

Great Extension and Improvements in French Hotel Accommodation.—In the ten years preceding 1932, hotel building and improvement went on apace both in Paris, in the chief provincial towns, and in the tourist and health resorts: in the last two years the grave crisis in the hotel business has brought activity of this kind practically to a standstill. But the net results

of the after-war period have been the creation of about a dozen large new hotels in Paris, and of one or more important new hotels in Lille, Lyons, Grenoble, Tours, Bordeaux, Marseilles, Grasse, Cannes, Nice, Corsica, Nîmes, Avignon, Millau, Le Touquet, Deauville, La Baule, Arcachon, Biarritz and in many other places. Improvements in general equipment in the medium and small hotels throughout France, which have been widespread, have been carried out as part of the systematic touristic programme. The prosperity of the hotel industry enabled these extensions and improvements to be effected by the proprietors themselves for the most part or through ordinary banking credits. Under Government auspices was created, however, in 1925 a special organisation named the *Crédit Hôtelier*, whose functions are to provide long, medium or short term credit facilities to smaller hotel keepers mainly for the purposes of enlargement and of improvement of equipment. Up to the end of 1932 it had advanced 62 millions, which have enabled the construction of 5,600 new rooms and the improvement of 12,000 others.

French becoming Greater Travellers.—The French tourist industry is far from being entirely dependent upon the foreigner. The travel habit has made great headway among the French, who, formerly rather disinclined to wander much afield in their own country, now tend to travel a good deal, largely as a result of the widespread use of the motor vehicle (about 1½ million touring cars for a population of 41 millions). Since 1930, this movement has been marked. French tourists have helped to make good the dearth of the foreigner, and to take his place in many resorts where formerly the foreign element was the more conspicuous. This tendency has been assisted by the drastic lowering of prices which has brought the greater hotels to those price levels which the French are prepared to accept.

They have also begun to travel abroad to a far greater extent. Before the war, it is asserted, not more than 250,000 French people crossed the frontiers yearly, whether for business or pleasure: in 1930 the figure was over 400,000. In 1933, over 2 million are alleged to have gone abroad: roughly 100,000 of them went to the United Kingdom, 38,000 as tourists, 28,000 on business, and 34,000 as week-end or holiday excursionists (the latter are not included in United Kingdom statistics as they travelled without passports). One million French went to Italy, and nearly half a million to Spain. Both Italy and Spain have conducted very active propaganda in France in recent years.

Foreign Tourist Offices in France.—Many European States maintain in the French capital attractive and handsomely equipped offices in commanding positions, for the dissemination of propaganda and the furnishing of information and tickets to the prospective tourist. Among these are the German, Spanish,

Portuguese, Italian, Dutch, Swedish, Greek and Polish offices. The *Travel Association of Great Britain and Ireland* has its office on the Champs-Élysées. The chief British railways concerned have, since January, 1934, a joint office in Paris; various British navigation and air companies, as well as the *Thomas Cook* organisation, are also adequately represented in central positions in Paris. The Belgian State railways, the Swiss Federal railways, and numerous other foreign railway or steamship companies have separate offices, each adding its quota of publicity to the sum total of tourist propaganda.

CHAPTER VIII.—STATE FINANCES

I. PRINCIPAL CHANGES, 1928-33

Brilliant Financial Situation in 1928.—The public finances of France, as a consequence both of the resolute and purposeful measures taken by the Poincaré coalition government between August, 1926, and June, 1928 (which culminated in the legislative stabilisation of the franc at the latter date), and of the concomitant prosperity in home and foreign trade visible and invisible, emerged at the close of 1928 in a brilliant position. The receipts of the financial year yielded the substantial surplus of 1,724 millions over the estimates. The immense short-term floating debt, which had reached 93 milliards on July 31, 1926, stood on December 31, 1928, at 36.7 milliards (of which 36.6 were Treasury bonds and National Defence Bonds): on the same date the medium-term liabilities, and certain indebtednesses with very heavy obligations at the maturing dates, which together amounted to 41.92 milliards, had been reduced to 18.87 milliards, of which only one-third was to fall due in the near future (1931 and 1932). By the necessary conversions the redeemable debt was increased by 58.58 milliards, but the floating debt, as seen above, had been reduced by 56.28 milliards and the medium-term debt by 22 milliards. By similar successful public conversion the value of the outstanding National Defence Bonds was reduced from 41 milliards at the beginning of 1928 to 35.66 milliards at its close.

Financial Situation Maintained, 1929-30.—In the following financial year the budget proper yielded a still greater surplus (2,715 millions), and the first half of 1930 a surplus of 1,100 millions; but, as a result of newly authorised expenditure, the whole year showed a deficit of 2,439 millions. The additional but separate income of the Autonomous Fund for the Redemption of National Debt (created by the Poincaré Government in 1926) amounted in the four years 1927, 1928, 1929-30 and 1930-31 to

6,150, 6,500, 8,502 (15 months) and 11,509 millions. In 1929 five milliards of debt was extinguished: in 1930 the Fund, apart from the 7,450 millions from its assigned sources (*vis.* Tobacco Monopoly, death duties and extra tax on estate transfer) received 2 milliards from the surplus of the budget proper and 3,250 millions from the mobilisation of the French share of the unconditional annuities under the Young Plan. At the end of 1928 and 1929 the Treasury held to its credit in bills and cash no less than 14,980 and 19,250 million francs. On the outstanding National Defence Bonds, which were taken over in 1926 by the Sinking Fund, the interest rate was successively reduced from 6 per cent. in 1926, 5 per cent. in April-June, 1927, to 2½ per cent. early in 1931: subsequently raised to 3 per cent., it was lowered to 2½ in 1932, but was again raised to 3 per cent. on March 1, 1933, to 3½ on December 2, and to 4 on March 6, 1934.

Taxation Reductions.—In view of the repeated surpluses the demand became insistent for reduction of rates of taxation; and within sixteen months from December, 1928, nine relief measures were passed covering 60 different tax reliefs and representing a total reduction of 5,876 millions (12 per cent. of the budget of the time). Commerce, industry and tourist traffic were then so prosperous that the yield of taxation in the financial year 1930-31 (when the reduction first took full effect) was 4,036 millions greater than in 1928 (50,988 against 46,952 millions). Among the modifications securing this large total reduction were: reduction of the standard rate of income-tax from 12 to 10 per cent., additional relief to heads of families, raising of income-tax limit (1,035 millions): reduction of dividend tax from 18 to 16 per cent. for home securities (540 millions) and from 25 to 18 per cent. for foreign securities (484 millions): lower duty on Stock Exchange transactions (198 millions): lower rates for succession and death duties (840 millions): and in respect of other indirect taxation 2,131 millions from reduction in turnover and luxury taxes, in excise duty on sugar, and so forth.

Marked Growth in Expenditure.—The budgets of the last eight years have been characterised by a constant increase in State expenditure. Taking the budget totals as voted, to the exclusion of supplementary expenditure authorised subsequently, there was in the period from 1925 to 1932 an average increase of three milliard francs yearly, as will be seen from the following table:—

Financial year	Expenditure (Million francs)
1925	33,137
1926	37,338
1927	39,541
1928	42,445
1929-30	45,366*
1930-31	50,398
1931-32	50,640
1932	53,468*
1933	49,271
1934 (as voted February 28, 1934)	50,163†

(* In the case of 1929-30 and 1932, which actually covered periods of 15 and 9 months respectively, the totals have been decreased or increased proportionately to represent uniform periods of 12 months.)

† Budget law authorised Government to effect by decree reductions expected to represent about 3 milliards.

From these figures it would appear that from the *de facto* stabilisation of the franc at its new value (in December, 1926), to the end of 1932, expenditure grew by 16,130 millions. Actually the increase is five milliards more than this, as the budget totals do not take into account the liability of nearly two milliards in respect of contractual amortisation taken over by the Autonomous Fund in 1931, nor additional expense of three milliards for which the Treasury has become responsible; so that the real increase in the six years ended 1932 was in round figures 21 milliards.

Increased Cost of Public Administration.—The buoyancy of revenue and its excess over estimates up to 1931 seemed to engender proposals for new ways of spending. The economies effected by the intensive amortisation of the national debt, the capital value of which was reduced by 38 milliards, from 302,203 millions at the end of 1927 to 264,426 millions at the end of May, 1930,† with a resultant reduction of interest charges from 15,534 to 12,195 millions, have been largely offset by the increases in the charges for pensions. In 1914, 1927, and 1932 the numbers of persons in civil employment receiving salaries or wages from the State were 465,457, 547,148, and 651,294, and of persons in military employment 152,293, 154,023, and 190,487: totals 617,750, 701,171, and 841,781 persons. Superannuated State workers advanced in number from 315,000 in 1914 to 535,000 in 1930, while the average amount of their pension rose from 950 to 5,700 francs; the number of disabled soldiers and soldiers' widows in receipt of pensions grew from 70,000 in 1914 to 2,450,000 in 1930, with a corresponding increase in cost from 65 to 5,028 millions: so that in all, expenditure for pensions alone attained in 1930 the sum of 10,258 millions, or 30 times the level of 1914 (370 millions).

Expenditure under the head of Civil Services nearly doubled from 1926 to 1930, a large proportion of the additional amount being due to the five successive increases (1926, 1928, 1929 January

† Exclusive of the funded debts to Great Britain and the United States.

and July, and 1930 October 1st) in the scale of remuneration of State employees and workers effected since 1926. The cumulative effect of these increases brought it about in 1931 that, excluding those officials in receipt of over 25,000 francs (or £1,000) in 1911, the co-efficient of increase for bachelors of various salary or wages groups averaged 5.72 to 8.01; for married men with 2 children from 5.81 to 8.82, and for those with 4 children from 6 to 10.56. Thus in Paris, bachelors paid in 1911 say 20,000, 10,000 and 3,000 francs a year, received in 1931 121,400, 64,500 and 23,160 francs, and married men with two children with same scales received 123,200, 66,300, and 25,590 francs. In the last group, men with four children showed, with 30,810 francs in 1931, a co-efficient of no less than 10.27. In the provinces the co-efficients were higher: in towns of 70,000 to 100,000 inhabitants, married men with two children having in 1911 remuneration of 10,000 and 3,000 francs a year were receiving in 1931 66,800, and 24,460 francs (those with four children in the two categories received 70,600 and 31,680 francs). Military and naval expenditure was steadily mounting, mainly as a result of the application of corresponding pay co-efficients, and in 1930 represented in gold values about 33 per cent. more than in 1913. (In this connection it should be mentioned that the unusually large sum attributed to this heading for 1927 in the table on page 571, was due to the inclusion in the accounts for that year of some 3.2 milliards of expenditure actually incurred in previous years). The budget of 1929 included a provision of one milliard for the organisation of frontier defences, and very substantial additions to that amount were allocated both in supplementary laws and in the budget for the next year.

Social Services.—During the same period the social betterment activities conducted by the Ministries of Labour and of Health accounted for much further outlay. From 1927 to 1930-31 there was an increase from 887 to 2,009 millions, or 126½ per cent., in the sums voted for such purposes. Expenditure by the Poor-law administration grew from 463 to 915 millions, included in this figure being maternity grants and assistance to large families (increase from 230 to 475 millions), aid for aged persons, invalids and incurables (from 175 to 325 millions). Included in an increase from 40 to 110 millions for purposes of public hygiene were 42 millions for enlargement or reconstruction of sanatoria and preventoria, 18½ millions to combat tuberculosis, 10 millions for the treatment of cancer and other chronic maladies. Housing construction was also responsible for a large part of the increased expenditure. From 1927 to 1930 the State paid 447 millions in the form of subsidies and provided 4,640 millions as loans at low rates of interest to facilitate the building of dwellings at small and medium rents; the annual expenditure increased, in these three years, more than threefold in the case of subsidies (from 48 to 152 millions) and tenfold in that of loans (from 250 to 2,500 millions).

Agriculture.—Nor were agricultural interests overlooked. From 271 millions in 1927, expenditure grew to 603 millions in 1930, or more than double. Included in this increase of 332 millions were 105 millions for electrification of rural areas and 47 millions for water supply, besides considerable sums for afforestation, improvement of crops, and so forth.

Miscellaneous.—The sums devoted to roads increased during the same period by 456 millions, 74 millions were expended on school buildings (besides 30 millions for scholarships), and in numerous other branches of the national economy there were substantial developments in expenditure.

Growing Depletion of Vast Treasury Resources.—The cash and bill resources of the French Treasury were 14,988 millions in December, 1928, and in the course of 1929 having been further augmented (mainly for the purpose of meeting the possible maturity of the 10 milliards claim for American stocks maturing on August 1st of that year) they reached 19,250 millions on December 1st, and 17,540 millions on December 31st. At the end of 1930 and 1931 respectively they had fallen to 9.4 and 2 milliards. The Budget deficits of 1930-31 and 1931-32, which together amounted to eight milliards, were met by the gradual depletion of these reserves. They had fallen to less than one milliard by June 1st, 1932. In 1930 had been disbursed by the Treasury 1,332 million in bills to railways, 1,496 million for housing, electrification, 1,483 million as capital advance to the Post-Office, 2,000 million in repayment of the Kreuger loan. Other major calls on these or other Treasury resources were as numerous and heavy in 1931: *e.g.* advances totalling 1,116 million to Poland, Yugoslavia, and Hungary: advances in aid of two banks of 2,985 million (one receiving 2,075 million), to the Railways Common Fund, about 1,600 million, to a shipping company, 383 million. Certain other expenditure, such as national equipment credits for rural electricity schemes, roads, bridges, housing, schools, higher in 1932 than in 1929 by one milliard, required Treasury financing to the extent of 670 millions in 1931; advances to Post-Office for various needs, to Colonial Governments (*e.g.* advances to Algeria stood in July, 1932, at over 1,400 millions), for the new frontiers organisation scheme (which will have added about 3 milliards of new expenditure in 1930-33), contributed to make the strain very heavy, and the enhanced claims had arrived mainly after numerous reductions in taxation had been voted as a result of the Budget surpluses of 3,236 and 8,000 millions in 1928 and 1929.

State Expenditure and Revenue, 1913-1934.—The following table shows the amount of State expenditure, classified under four main headings, and the total annual revenue, from 1913 to

1934. Modifications in the fiscal year were introduced by a law dated 27th December, 1929, which altered the State fiscal year from the calendar period to that of from April 1st to March 31st; the fifteen months from the 1st January, 1929, to the 31st March, 1930, were included in one fiscal year to cover the period of transition. In 1932, however, it was decided to revert to the calendar year and in order to effect this change, only nine months (April to December) were included in the fiscal year 1932. It is necessary to make allowance for the exceptional duration of the fiscal years 1929-30 (fifteen months) and 1932 (nine months) when comparing returns of revenue and expenditure.

It should be noted that the accounts of the postal, telegraph and telephone services (the 1926 census returned 160,800 State employees therein) are not included in the ordinary Budget, but appear in an independent budget annexed thereto. In 1932-34 their receipts (actual or budgeted) were 3,314, 3,569 and 4,944 millions. The Autonomous Fund for Debt Redemption, which controls the working of the lucrative tobacco monopoly and has had assigned to it the death duties and property transfer tax, has also an independent budget, whose accounts are regularly published together with the ordinary budget returns.

With separate legal personality, with independent accounts, normally entrusted with functions of a public or semi-public nature, there have been created, especially in recent years, numerous organisations, entitled *offices* (27 were created since May, 1926, out of a present total of 78), whose budgets, whilst strictly unconnected with the State finances, yet are closely assimilated to them by virtue of the quasi-official status and activity of the organisations in question. Included in this class is the Autonomous Fund for Debt Redemption, whose receipts in 1932 were 7,324 millions. Thirty-four others, whose total budgets in 1932 amounted to 8,221 millions, are also subject to the general supervision of the Treasury, and received in 1932 State grants of 350 millions. Forty-three are, however, attached only in a general manner to divers ministries: so far as ascertainable, eleven of these received in 1932 State grants of 329 millions. The total revenue of the 61 organisations whose revenues are known amounted to over 15 milliards. These *offices* include the State Railways, Alsace-Lorraine Railways, the Saar Mines, Potash Mines, National Tourist Office, Autonomous ports, (Bordeaux, Havre, Strasburg), National Agricultural Bank, National Industrial Nitrogen Office, Overseas Trade Department, National War Orphans' Institution, Sailors' Pension Fund, Intellectual Coöperation Institute, and so forth.

Year	Expenditure					Revenue Total
	Civil Services	Military and Naval Services	Reparations (Recoverable Expenditure)	Service of the National Debt	Total	
1913	1,948	1,815	—	1,304	5,067	5,092
1914	1,698	6,700	372	1,295	10,065	4,549
1915	2,450	16,541	1,914	1,899	22,804	4,131
1916	2,372	24,293	2,947	3,333	32,945	5,251
1917	2,750	29,985	4,081	4,864	41,680	5,811
1918	3,402	38,096	5,952	7,087	54,537	6,986
1919	5,228	20,343	15,481	7,987	49,039	10,176
1920	12,436	6,693	21,254	12,026	52,409	18,176
1921	9,728	5,705	16,259	12,086	43,778	21,217
1922	8,305	4,873	11,055	13,195	37,428	21,383
1923	6,509	4,843	13,782	12,810	37,944	23,495
1924	10,415	5,945	11,780	13,074	41,214	27,574
1925	7,654	5,989	1,062	19,481	34,186	32,957
1926	9,505	7,228	1,045	22,578	40,356	41,337
						1,018*
1927	10,929	11,774	1,240	23,148	47,091	43,297
						6,150*
1928	11,632	9,642	—	22,785	44,059	47,294
						6,502*
1929 + 3 months of 1930	13,239	10,001	—	22,127	45,367	62,930
	6,210	3,320	—	4,156	13,686	8,502*
1930-31	13,819	16,424	—	23,381	53,624	51,185
						11,509*
1931-32	20,064	12,577	—	20,675	53,316	47,705
						6,036*
1932 (9 months)	15,711	10,966	—	15,412	42,089	37,098
						5,661*
1933	20,864	10,587	—	19,432	50,487	36,118
1934 (Budget law, 28 Feb.)	18,864	11,185	—	20,114	50,163	6,520*
						48,281
						5,437*

* Separate revenue of Autonomous Fund for Debt Redemption (calendar years).

The substantial debt redemptions effected since 1927 and the transfer of certain liabilities in respect of contractual debt amortisation from the Budget to the National Sinking Fund resulted in relieving the budget proper of 2,608 millions under the head of interest charges. The continued advance of the State revenue reached its extreme point in the fiscal year 1930-31 with about 62.7 milliards (of which, 51.2 from ordinary sources and 11.5 separate revenue of the Sinking Fund)—a sum representing, after due allowance for the devalorised franc, an increase of 150 per cent. on the revenue of 1913. As a result of the reductions in taxation voted in the course of 1929 and 1930, the yield of taxation in subsequent years was expected to be about six milliards less. The extent to which these expectations were realised will be seen in the following paragraphs.

Development and Yield of Certain New Taxes.—It will be seen from the following table, which indicates the development of certain new French taxes since their introduction, that two taxes—one direct, brought into operation in 1916-18, and the other indirect, introduced in 1920—have consistently produced upwards of one-third of the total taxation revenue. The yield of the tax on dividends, which really is a part of the income-tax, was also striking. In the five years 1924-28 the combined yield of these three taxes averaged 41.5 per cent. of the total revenue (the respective proportions being 17.1 per cent. for the income-tax proper, 6.7 per cent. for the tax on dividends and 17.6 per cent. for the business turnover tax). In the 15-months fiscal year 1929-30 they attained 43.4 per cent., owing to exceptionally high yields of 8.1 and 19.2 per cent., respectively, for the dividend tax and the business turnover tax; but in 1931-32, the first year to be affected throughout by the depression, there was a decline to 41.2 per cent. (of which, 18.5 per cent. for the income-tax, 6.9 per cent. for the duty on dividends and 15.8 per cent. for the business turnover tax).

It should be explained that the French income-tax operates in two guises: in the first, as "special" tax, it levies its relevant quota on each component part of the income (receipts from wage-earning or salaried occupations, from agriculture, industry or commerce, as a member of a liberal profession, the part from each source being subject to its special rate); and in the second, as "general" tax, it levies a quota at graduated rates on the whole assessed income, minus the amount paid as "special" income-tax or taxes. The turnover tax is a levy upon all commercial transactions in goods or services, its rates being higher on goods classed as luxury either by virtue of their nature (*e.g.* perfumes, jewellery, antiques, wireless sets, motor-cars, etc.) or of their price (*e.g.* books, wearing apparel, meals, etc., when these exceed certain price levels). The normal rate is 2 per cent., but varies from 3 to 6 per cent. on "luxury" goods (until April, 1930, the latter rate was 12 per cent.).

PRODUCTIVITY OF CERTAIN NEW FRENCH TAXES.

Income-Tax (since introduction in 1916): Separate Tax on Income from Investments, Deposits, etc.: and Business Turnover Tax.

(Million francs).

Year	Income Tax,		Yield of tax on income from investments, deposits, etc.	Yield of Business Turnover Tax
	Yield of General and of Special Tax	Part represented by Special Tax		
1916	51	—	181	—
1917	271	—	244	—
1918	958	360	253	—
1919	1,028	388	290	—
1920	2,169	975	568	942
1921	3,069	1,462	920	1,897
1922	2,799	1,426	1,010	2,280
1923	3,239	1,551	1,166	3,016
1924	4,787	2,233	1,680	4,090
1925	6,877	4,224	1,937	4,535
1926	5,980	2,939	2,437	7,468
1927	7,678	5,505	3,385	8,605
1928	7,575	5,266	3,503	9,262
1929	8,610	5,882	3,980	9,874
1930	8,059	5,497	3,798	8,968
1931	7,743	5,296	3,526	7,882
1932	6,560	4,540	2,639	6,428
1933*	5,750	3,888	2,677	6,465
1934†	7,032	4,525	2,963	6,902

* Position at 31st December, 1933.

† Revenue estimated in Budget Law.

These figures are not strictly comparable as an index of industrial and commercial activity, owing to changes in the scale of taxation in recent years. Especially is this the case with the business turnover tax (including the importation tax which is assimilated to it). Thus, instead of a uniform rate of 2 per cent. in its early years, there are now as many as ten different variations possible. A reduced rate of 0.55 per cent. is levied on 46 different categories of foodstuffs; 39 classes of products (principally foods, but a number of raw materials and manufactures are also included) are either exempt altogether, or subject to a single tax in lieu of the cumulative turnover tax levied each time the ownership of the goods changes; and the uniform importation tax of 2 per cent. was altered, as from the 1st April, 1932, to 2 per cent. for foodstuffs, 4 per cent. for raw materials and 6 per cent. for manufactured articles.

II. BUDGET RESULTS AND BUDGET MAKING, 1930-32

Deficits are seen to have made their first reappearance in 1930-31, chiefly as a consequence of the large supplementary credits voted in the later months of the fiscal year. Revenue (51,185 millions) exceeded the estimates by 720 millions (and had in the middle of the year shown an excess of more than a milliard), but expenditure (53,624 millions) was in excess of the original budget figures by 3,226 millions, resulting in a deficit of 2,439 millions. As the signs of diminishing industrial and commercial activity had become marked as 1931 progressed, budget making for 1931-32 became difficult. Equilibrium was only established (on paper) by transferring from the ordinary budget to the separate resources of the National Debt Sinking Fund a liability of 1,962 millions in respect of contractual redemptions. Even this did not suffice, as the yield of taxation in May, 1931, and in the last six months of the fiscal year fell seriously short of the estimated revenue. Finally, with expenditure exceeding the estimates by 2,675 millions and revenue failing by 2,936 millions to come up to expectations, the year (ended 31st March, 1932) showed a deficit of 5,611 millions.

The financial year 1932 was limited to the nine months from April to December, to pave the way for a return to the calendar year as the period of State accountancy. Although the appearance of a balanced budget was given to the Finance Act passed on the 31st March, 1932 (revenue 41,101 millions; expenditure 41,098 millions), this balance was achieved only by means of a number of accounting and financing expedients. In the first place the adoption of a 9-months financial year was equivalent to a gain of 1,800 millions, as, owing to the periods of collection of direct taxes, it placed at the disposal of the Treasury direct taxes based on a full twelve months, with which to meet expenditure of nine months; secondly, 700 millions were to be drawn from the reserves of the alcohol fund and 534 millions from the profits accruing from the minting of the new silver coinage, neither of which could be regarded as a normal or recurrent source of revenue; and thirdly, there was included on the revenue side a net sum of 1,173 millions due from Germany, which was destined to be suspended as a consequence of the Hoover moratorium. It was furthermore declared from the outset by financial experts that the estimates erred on the side of optimism. In fact, as early as April, 1932, a member of the Finance Committee of the Senate publicly foreshadowed a deficit of five milliards, of which he estimated that 1,700 millions would be due to increased expenditure already voted or inevitable (the principal items being 572 millions for various allowances to ex-service men, 330 millions for national defence, 296 millions for social insurance, 280 millions for local authorities for road maintenance and water supplies), and

about three milliards would result from the lower yield to be expected from taxation (576 millions from stamp duties, 243 millions from taxes on stocks and shares, 171 millions from the tax on stock exchange operations, one milliard from the business turnover tax). In all, 4,778 millions of the resources included in this budget were exceptional and non-recurring.

Task in 1932.—When, after the general elections in June, 1932, the new government took office, it was faced not only with this depleted Treasury situation, but with an estimated budgetary deficit for the fiscal year April-December, 1932, of four milliards (it eventually proved to be 8.4 milliards), and, in default of reduction in expenditure or new revenue, a prospective deficit for the year 1933 officially estimated at 6½ milliards. To meet these difficulties the new government introduced a Bill which would have given budgetary relief to the extent of 918 million francs for the nine months fiscal year 1932 and of 4,060 millions for 1933. Modifications in the course of parliamentary discussion whittled down these figures to 333 and 2,570 millions, respectively, before the Bill was passed into law. The immediate strain on the straitened Treasury resources was thus increased, and the Government was obliged to secure the passage of a bill raising to 7 milliards the maximum of the Treasury bond issue, which in 1926 had been fixed at 5 milliards. At the moment of this vote (16th July, 1932) the Treasury had already issued 4.4 milliards of these bonds, and had at its disposal only 1.3 milliards from this source, against outlay to the end of 1932 of about 3 milliards. On the last day of the session, the Government also obtained powers for the Treasury to make a public issue for 1,436 millions, to secure the refund to the Treasury of the advance to that amount which it had made to the Algerian Government.

Measures to Restore Budgetary Balance.—Efforts were made to remedy the serious position and future prospects of the public finances, first realised by the public in the first half of 1932 as a result of the great fall in taxation revenue. The first measure was a law of the 15th July, 1932, effecting economies of 1,695 millions in outgoings and providing for 55 millions of additional revenue from the so-called "fiscal adjustments." The former comprised 1,485 millions from reductions in military expenditure and 210 millions from a cut of 5 per cent. in administrative expenditure, and the latter included increases in the tax on stock exchange operations, in the tax of dividends from foreign investments (from 18 to 20 per cent.) and in the scale of the general tax on incomes (under the new graduated scale, incomes of 10,000 francs pay 1.50 per cent. instead of 1.33 per cent., while incomes of 1,800,000 francs upwards pay 40 per cent., instead of from 29.66 to 33 per cent.). Next came a law of the 19th September, 1932, authorising the Ministry for Finance to

make a conversion issue, whereby the general budget was relieved to the extent of 1,407 millions net. The third step was a law of the 31st December, 1932, by which the Autonomous Fund took over from the Treasury additional liabilities to the extent of 293 millions in respect of debt redemption, and at the same time yielded up 343 millions of minting profits; the combined operation resulting in a gain of 636 millions for the Treasury. The fourth and most important step, having regard to its far larger yield, was the law of the 28th February, 1933, calculated to lighten the budgetary burden by 4,812 millions, of which 1,953 millions represent compressions in expenditure, 1,834 millions were expected to be yielded by new, or increases of existing, taxation, and 1,025 millions from non-recurring resources benefiting only the 1933 budget. Included in the first group were: 813 millions from reduction of allowances to civil servants, the cessation of recruiting for the civil service, and sundry other administrative reforms, 608 millions from reductions in military expenditure, 462 millions from economies in the national equipment scheme, and 170 millions from pensions revision. The second group included a host of items, largest among which were 235 millions from a new tax on large motor vehicles, 200 millions from fees to be levied for the grant of import licences, and 162 millions from an increase of excise duty on petrol and kindred spirits. The non-recurring sources of revenue comprised 720 millions of profits from the minting of nickel coinage, 175 millions from the funds set aside for the replacement of worn-out coins, and 130 millions from the mobilisation of credits relating to German deliveries in kind.

III. POSITION IN 1933-4.

On the 31st March, 1933, Treasury liabilities amounted to 4,383 millions, and other liabilities in the form of Treasury bonds and Treasury deposits totalled 25,342 millions. As against these liabilities, the liquid resources of the Treasury were reduced to 345 millions, and the sums available at short notice to 2,027 millions (of which, however, a considerable part could only be realised by new loan issues on the part of the debtor Departments concerned). There remained also a sum of about 2 milliards to be collected in respect of the 4½ per cent. issue.

Early in May, 1933, the Treasury still enjoyed powers of public issue to the extent of 10,500 millions (15,500 millions authorised, less 5,000 millions already utilised), and borrowing powers for 4,824 millions represented by the balance, not yet issued, of the 10 milliards sanctioned by the law of the 9th March, 1933. It was then also faced with the task of providing in the 1933 fiscal year charges of rather more than two milliards introduced by recent legislation (720 millions for frontier defence, 720 millions as the second "slice" for the National Equipment scheme, 290 millions for the Railways Common Fund, 270 millions for war reparation compensation payments and 27

millions in respect of soldiers' graves). The Government was further faced by the fact that revenue for the first four months was inferior to the estimates by over 600 millions, and that assuming a similar rate of shortage in receipts, the deficit on the estimates for the year would amount to over 1,800 million. The shortage in receipts compared with estimates actually amounted for 1933 to 2,316 millions. Under the above-mentioned powers for the borrowing of 10 milliards, a second instalment was offered for public subscription on the 4th July, 1933, in the form of 4½ per cent. decennial bonds at issue price of Fcs. 960.50. The amount taken up was 3,220 millions, making with the 5,176 millions issued in March, a total of 8,396 millions, out of the 10,000 millions authorised: the balance of 1½ milliards was issued in November, 1933.

The Budget for 1933.—After several monthly Votes on account, the Budget Law for 1933, as voted by Parliament on the 31st May, 1933, provided for an expenditure of 49,271 millions and a revenue of 45,646 millions, leaving an estimated deficit of 3,625 millions. The suspension of debt redemption in 1933, which would normally have involved an expenditure of about 3,200 millions, reduced the net deficit, on paper, to about 425 millions. The total expenditure showed a reduction of 4,197 millions as compared with that of the 1932 budget calculated on 12 months instead of nine. Four-fifths of this reduction result from the various economy measures adopted during 1932, notably the law of the 15th July, 1932, providing for economies of 1,491 millions in military and naval expenditure and 210 millions under sundry other heads; and the conversion in September, 1932, of 84 milliards of various State issues carrying 5, 6 and 7 per cent., into 4½ per cent. stock, which reduced the charge on the State budget by 1,407 millions net. The balance of 853 millions was to be derived principally from reductions in subsidies (*e.g.*, to mutual aid societies, to steamship companies carrying mails, to county authorities for road making and upkeep) and compressions in expenditure under military heads (purchase of stores, construction of aeroplanes, reductions in military personnel).

On the revenue side the estimates exceeded by only 4,546 millions the corresponding total in the 9-months fiscal year 1932. No changes of importance were made in the existing scales of taxation, but various measures were introduced with a view to ensuring a more effective collection of taxes. An increase of 200 millions yearly in the yield of the business turnover tax was expected to result from the appointment of a committee, within the Ministry for the Budget, to scrutinise the returns of traders for purposes of this tax. Declarations for income-tax purposes were in future to include a statement of certain particulars of external signs of wealth (rent of all residences, whether in France or abroad; numbers of male and female servants employed; number of motor-cars,

private yachts or aeroplanes, race-horses; shooting rights) capable of affording the authorities a check upon the exactitude of the declarations: this innovation is calculated to give an increased yield of 100 millions yearly from the income-tax. The accounts of companies controlling, or controlled by, foreign concerns are subjected to more rigorous regulations. The net profits of co-operative societies (after deduction of the dividends paid to members *pro rata* to their purchases), which have hitherto been exempt from taxation as business profits, are no longer exempted, and are expected to yield 30 millions yearly. Under another provision of the Act, a national jury was to be set up to scrutinise war and reconstruction contracts, with a view to (a) detecting under-payments on the score of war profits tax, and (b) disclosing instances in which an excessive rate of profit was made, and providing for recovery of the excess in appropriate cases.

The proposal for a State monopoly of the importation and refining of petrol, to which there was much opposition from some quarters was temporarily shelved by the appointment of a committee of enquiry as to the best means of establishing such a monopoly: its report was hostile to the principle. A partial realisation of the long-awaited legislation regarding wireless broadcasting was embodied in the budget, by the institution of taxes of receiving sets and on wireless valves (particulars of which are given in the chapter on the wireless industry), the yield of which is to be devoted to broadcasting purposes.

Prospects for 1934 Budget.—Prospects for the 1934 budget were long viewed with concern. The Senate Finance Committee in its Report in May, 1933, was distinctly pessimistic: it observed that present liabilities would be augmented by 1,434 millions, of which six-sevenths would arise out of the interest charges on fresh loans; that the 1,450 millions of exceptional resources accruing to the 1933 Budget would no longer be forthcoming; and that 470 millions of ordinary revenue would be sacrificed by the State, if the amount of the reduction of the existing 32 per cent. tax on railway tickets were handed over to the Railways Common Fund. Besides the prospective falling away of 3,354 millions under these three heads, in the light of the fall in revenue for the first five months, there had to be anticipated, according to the Report, taxation receipts for the whole year lower than those estimated by about 2,000 millions; and further charges were likely to arise out of the issue of fresh loans expected in the late summer and autumn. Compensation to a certain extent might be found in the yield of the economy measures voted between July, 1932, and May, 1933, but their full effect could hardly become operative until late in 1934. Unless there were a pronounced recovery in business, evidence indicated therefore the probability of a higher budget deficit in 1934.

In July, 1933, the Minister for Finance stated that the deficit to be faced before the adoption of the measures to restore budget

equilibrium, had not yet been completely determined, but it could be already presumed that it would be considerably higher than the 1933 deficit. He considered that to balance the budget completely a formidable effort would be necessary, and that this effort would be all the more painful in that the measures easiest to vote and easiest to accept by the country had already been proposed and accepted. The Prime Minister announced on the same date that he proposed to assemble Parliament at the beginning of October and to insist upon the passing of a special measure of fiscal reform so as to restore completely the public finances.

Emergency Financial Measures Rejected, October, 1933.—When the extraordinary session of Parliament was summoned in October, 1933, solely to deal with the financial problem, the probable deficit for the 1934 budget was estimated at 7,718 million francs, of which 3,625 millions would represent the foreshadowed deficit of the 1933 budget itself, 1,679 millions the progression in expenditure resulting from recently introduced social legislation, 1,216 millions from the failure to put into operation retrenchment provisions included in the 1933 budget, and 1,198 millions the anticipated decline in the yield of taxation. A reduction of 1,668 millions on the originally estimated deficit of 7,718 millions was made possible by Departmental cuts in estimates of requirements for the coming year (339 millions from reductions in, or the suppression of, subsidies; 341 millions from reductions in the cost of public works contracts; 335 millions from economies in the supply of materials; 140 millions from the postponement of the third step in the perequation of pensions; 69 millions from the winding up of the liberated regions department and the abolition of a number of other redundant posts). The net amount still to be found was therefore 6,050 millions.

On the 18th October, the Government introduced proposals for dealing with 5,424 millions (of which, 1,858 millions by means of further economies and 3,566 millions from increased revenue) in a preliminary measure, as well as proposals for removing the deficit as regards the remaining 626 millions under the 1934 budget. Of the two proposed economy measures, one provided for a yield of 1,300 millions from a special levy of 6 per cent. on the salaries, wages or pensions of all State-employed persons in receipt of assessable incomes exceeding 10,000 francs, supplemented by a graduated surtax of 1 to 3 per cent. on incomes assessed at over 25,000 francs. The second measure provided for a yield of 558 millions from the revision or suppression of various allowances to civil servants (400 millions), the elimination of redundant posts (100 millions) and a reduction of subsidies (58 millions). New revenue, or increased revenue from existing sources, was to be procured by: more stringent and penetrating methods of tax collection (700 millions); new State monopolies (245 millions, including the levy of 180 millions on the net profits of oil importing companies); profits from

a national lottery and from the issue of new nickel coins (1,321 millions); and financial reforms (550 millions). The required extra revenue under the 1934 budget included: 195 millions from a further tightening-up of tax collection; 189 millions from the suppression of additional privileges; 150 millions from economies in expenditure on poor-law administration; and 92 millions from fiscal reforms. The chief items of particular interest for the British exporter in this programme were those imposing the levy of the 180 millions on oil company profits and an increase of 106 millions in customs revenue from an extension of the principle of levying customs duties on *gross* weight, from the removal of sundry customs exemptions, and from modifications in duties.

Opposition to the Government's projects was mainly directed against the proposals for the levies on civil servants' earnings, the levy in advance (*précompte*) of the general income tax at a rate of 15 per cent. in addition to the existing levy of 16 per cent. as tax on dividends, and the higher taxation by 400 millions on petrol by the substitution of a single tax instead of the series existing on car, petrol, etc. The Government, having been defeated by an adverse vote on October 24th, resigned. At the first parliamentary sitting of the new Government on November 3rd the new Premier announced a fiscal policy not dissimilar in its broad outlines to that of the late Government.

Renewed Efforts towards Budgetary Equilibrium.—The successive unfavourable monthly returns of revenue, as well as the ever narrowing resources of the Treasury, continued to increase public misgivings respecting the State finances. Some seven weeks later the Government succeeded in hurrying through parliament (December 23rd) a measure described as the law for re-establishing budgetary equilibrium. Included in its 26 articles were 13 affecting already prescribed taxation, seven of a retrenchment character, and four creating exceptional sources of revenue. Probably of special interest to British importers was the confirmation of the principle (introduced as a temporary expedient in a financial law of February, 1933) of levying fees for import licences for goods subject to quota; and a noteworthy innovation of general importance was the replacement of the tax on motor vehicles by an increase of 50 francs per hectolitre in the petrol tax. In order to reduce income tax evasion in its various guises, banks and other financial institutions were forbidden as from April 1st, 1934, to pay interest, dividends or other income from negotiable securities, to any person not producing a fiscal identity card issued by the direct taxation department; persons in the liberal professions were required to keep accounts for production; a declaration of income must be made by every person whose principal residence is of a rental value exceeding one-fourth of the minimum income (10,000 francs) liable to the general income tax (or one-fifth in towns of less than 100,000 inhabitants); and tax assessors are empowered to require

a taxpayer to produce proofs in support of his income-tax declaration. The issue of the fiscal identity card has since been postponed to a later date: it is estimated that from 9 to 12 million individual cards would be needed owing to the immense number of holders of securities among the French population. The taxation reliefs granted under the five fiscal laws between December 30th, 1928, and April 26th, 1930, were reduced by 50 per cent. (e.g., on share certificates, share transfers, dividends, on bills of exchange drawn abroad and payable in France on the sale of house property or of a business). The retrenchment provisions in the law, apart from a progressive levy upon wages and salaries of State employees, designed to yield at most 275 millions, consist chiefly of an article that prepares the way for the effecting of 300 millions of economies, in the 1934 budget, by means of administrative reforms. The four exceptional resources were: the institution of a national lottery (estimated to yield 700 millions); the profits accruing from the issue of new silver currency (628 millions); and a scrutiny of wartime contracts (50 millions) and of debts owing to the State (200 millions).

The 1934 Budget.—The 1933 State revenue of 36,318 millions was less by 9,328 millions than the estimates, and less by 13,000 millions than the originally authorised expenditure (or by 14,170 millions if subsequent credits are included). The budget for 1934 not having been voted before the New Year, monthly votes on account were necessary for January and February. The Daladier government in February, which had announced its intention of adopting the 1934 Budget estimates of the previous Chautemps government, fell before it presented its proposals. Finally, the Doumergue national government, which came into office on February 9th after the serious disorders, proclaimed as its primary task the restoration of the public finances, and succeeded in getting the 1934 Budget through both Chambers by February 28th. The State expenditure was fixed at 50,163 millions, of which 20,714 millions, or 40.1 per cent., for the service of the national debt, 11,185 millions, or 22.3 per cent., for the defence services, and 18,864 millions, or 37.6 per cent., for the civil services. Revenue was assessed at 48,281 millions, or 1,882 millions less than expenditure. Under the powers given to the Government, in the budget law, to effect by decree reductions in expenditure, which were expected to achieve economies of about four milliards, one decree issued on March 6th is calculated to reduce the prospective deficit to 1,718 millions, by increasing revenue to 48,303 millions and reducing expenditure to 50,021 millions.

In previous years budgetary expectations of expenditure (and in a lesser degree, of revenue) have been apt to be upset either by the passage of legislation that involved additional expenditure (or reduced revenue), or by the tendency of government departments

to overspread their authorised allotments, thereby rendering necessary the passing of supplementary credits. By the inclusion in the budget law of a clause barring any parliamentary project that contains proposals liable to increase expenditure or to reduce revenue, an attempt is being made this year to check these tendencies.

Special Retrenchment Decrees.—On April 4th were signed 14 more retrenchment decrees, whose combined effect is calculated to result in 2,760 millions of economies. The largest single item is the 750 millions to be realised by a reduction of 10 per cent. in the number of civil servants (their total is officially stated to have grown from 619,000 in 1914 to 857,000 in 1933), this reduction to be achieved mainly by pensioning the large number of State employees who have continued in their posts beyond the statutory age of retirement and retiring others (on full pension) before attaining the age limit. Reductions in budgetary credits under all heads except national debt and personnel are to yield 628 millions; the recasting of pensions 500 millions; the abolition of overlapping or redundant posts (in particular, the drawing of two or more salaries by a person holding more than one post, the occupation of an auxiliary salaried post by a person already in receipt of a superannuation allowance from State funds, or the cumulation, on different grounds, of various allowances in respect of the same children) 190 millions; reductions in subsidies (silk-worm cultivation, silk spinning, contributions to expenses of prefectures, sub-prefectures and communes) 32 millions. A fundamental change is made in respect of the special levy of from 2 to 8 per cent. on civil servants' salaries, mentioned in an earlier paragraph of this chapter. Whereas, under the former dispensation, nearly 462,000 State servants, or 55 per cent. of the whole, receiving incomes of less than Fcs. 12,000, were exempt from the levy, and another 276,000, earning from 12,000 to 20,000 francs, paid only nominal sums (maximum Fcs. 160), the new decree applies to the whole incomes without any such rebates, and the rate is fixed at 5 per cent. for the lower salaries and 10 per cent. for the higher. A yield of 360 millions is expected from this source. To set an example to the lower grades, the President of the Republic is foregoing 20 per cent. of his emoluments, and the cabinet ministers 15 per cent. each. Finally, 300 millions more are to be recouped from the financial and administrative organisation of the unemployment relief and social insurance departments, and the adoption of measures to reduce the chronic deficit of the railways.

The Minister for Finance on the 4th April estimated the 1934 Budget deficit at over four milliards. The estimated yield of the retrenchment decrees issued since the voting of the Budget represent approximately 2,900 millions. The balance of 1,100

millions is expected to be partially covered by a further series of economy decrees. The original intention of retrenching 400 to 500 millions on the vote for the State social insurance scheme was abandoned in favour of utilising the same and further resources of the social insurance scheme for the financing of a new national equipment programme of a productive nature destined to provide work for the unemployed.

Further Economy Decrees.—Under six more decrees issued in mid-April to effect further economies of 1,200 millions, a total retrenchment of 4 milliards is calculated to result from the 20 decrees issued in that month. The six new decrees, which aim at the repression of abuses in connection with pensions and other allowances to ex-service men, or at the reduction of their pensions, affect about three million persons. As from the 6th April, 1934, is made a cut of 3 per cent. in all pensions and allowances to disabled soldiers, save in the case of those suffering total disablement, and in pensions paid in respect of maladies attributable to military service. Disablement and sickness pensions are to be reviewed, in order to eliminate large numbers of cases, known to exist, in which the pension has been awarded on insufficient grounds or contrary to the regulations. Future contributions to the pensions fund for the "retraite du combattant" from budget sources will be restricted to 500 millions yearly, to which will be added the profits from the national lotteries (one series already held in 1933 and 1934, and the second in progress). An important source of retrenchment (175 millions) is awaited from the reform whereby doctors who were qualified to practise also as chemists may no longer claim payment both for medical services and pharmaceutical supplies.

Large Budget Economies from Railways Reorganisation.—The heavy deficits of the railway companies, which have to be covered by the State contribution to the railway common fund, entailed, in 1933, State advances of 1,895 millions and interest payments of 575 millions on loans issued. Steps were taken in April to effect economies calculated to amount to 2,000 millions yearly, by means of reforms applied to wages, number of staff and methods of working. Railwaymen being assimilated in practice to steelworkers, wages and salaries are to be reduced by similar proportions, namely from 5 and 10 per cent., reducing the coefficient of increase from 8.48 times the pre-war level to 8.05. The normal method of pensions financing, as applied in the civil services, is henceforth to take the place of the capitalisation system hitherto employed by the railway companies, which had the disadvantage of necessitating the immobilisation of considerable sums of money for long periods; and reductions, which may in some cases attain 15 per cent., will be applied to the rates of pension

payable. A certain number of railway workers will be retired on full pension before attaining the regulation age limit.

As regards economies in operation of the lines, an effort is being made to eliminate wasteful competition between railway and road transport services. Contrary to the recommendations of the National Economic Council in February, 1934, which favoured preferential treatment for the railway companies in the realm of road transport, it is now intended to adopt the principle of railway transport for long distances, with road motor services acting as feeders. Some 10,000 kilometres (6,200 miles) of railway lines of secondary or local interest will be suppressed, a few of them being replaced by rail-motor services assured by vehicles of the Micheline type. Considerable improvements are expected to result from an extended use of the "container" system and from the more general adoption of the recently-instituted "truck-kilometre" method, which enables senders to effect considerable economies, either singly or in co-operation with other senders, as well as greatly simplifying their clerical work. (Under the system hitherto in use, widely differing charges are made for the transport of different classes of merchandise.) Regional arbitration committees are to be set up, to settle any disagreements between the interests of the railways and the motor transport companies.

IV. THE PUBLIC DEBT

In the three years from the end of 1927 to the end of 1930 the capital amount of the French public debt (exclusive of the external political debts to the United Kingdom and the United States, funded in 1926) was reduced by nearly 33 milliards, from 302,203 to 269,347 millions; but by September 30th, 1933, it had increased again by 37,197 millions to a total of 306,544 millions. The difference of 14,369 millions between the total shown at the end of 1932 and that obtaining on the 30th June, 1926, namely, 305,256 millions, approximates to the profit that accrued to the State through the revaluation of the metal currency held by the Bank of France at the time of the stabilisation law. In other words, the whole of the gain represented by the massive debt redemptions up to the end of 1930 was lost in the next two years. Moreover, these figures take no account of the long-term loans on behalf of the postal services, amounting to about 7,700 millions, issued since the beginning of 1933, nor of the 8,396 millions of Treasury bonds issued in March and July, 1933.

The following table, based on an official report on the 1933 budget proposals, shows the recent variations in the composition of the internal debt :—

Million francs.

	Position at 31st December			At 30th September
	1928	1930	1932	1933
Perpetual debt	101,788	95,778	52,336	52,145
Long-term redeemable	104,466	106,324	160,701	169,179
Medium and short-term	22,077	22,075	15,824	19,004
Floating	44,565	37,560	52,434	54,279
Posts, telegraphs and telephones	2,244	2,704	5,401	7,798
Total	275,140	264,441	286,696	302,405

The reduction of the perpetual debt by 49,643 millions between the end of 1928 and September, 1933, was due mainly to conversions into long-term redeemable bonds, and in lesser measure to purchases effected by the Autonomous Fund for cancellation. The redeemable bonds show an increase of 64,713 millions, of which the part not due to the above-mentioned conversions is attributable to four causes: (1) Treasury borrowings from the *Caisse des dépôts et consignations* to cover advances made for various social welfare schemes (agricultural credits, cheap housing, distribution of electrical energy, road restoration, and so forth), which amounted to 12,235 millions in the years 1931 and 1932 alone; (2) the financing, to the extent of 3,735 millions, of national equipment; (3) the loan of 2,700 millions for extensive postal, telegraph and telephone improvements; and (4) the Treasury bond issues in 1933. The reduction of 3,073 millions in the medium and short-term debt is due to massive redemptions, chiefly of National Defence sexennial debentures of the 1925 issue (3,029 millions) and of Treasury bonds issued in 1921 and 1922 (2,636 millions). The floating debt, after having been reduced by 7,005 millions in the years 1929 and 1930, advanced by 16,719 millions in 1931-1933; the causes of the increase being new issues of Treasury bonds to the extent of 9,777 millions, and the growth of deposits in postal cheque and other accounts.

Of the external commercial debt, which stood at 17,739 millions at the end of 1927, over three-fourths have been redeemed, leaving 4,191 millions outstanding at the end of 1932 and 4,131 millions at the 30th September, 1933.

Between October 1st, 1933, and March 31st, 1934, the public debt was further increased. The Reporter of the Finance Committee gave in the Senate (December 18th) the total at over 300 milliards (apparently exclusive of the postal service indebtedness), which would represent an increase of $5\frac{1}{2}$ milliards since September 30th. Available public records show that the following issues were subsequently made: (1) January 4th, 5 per cent. Treasury bonds

of 5, 10 or 15 years, 4,065 millions; (2) February 17th, 5 per cent. bonds of 30 years, 1,000 millions; (3) in March, 1934, issue of Treasury Bills to Dutch banks, about 1,000 millions.

Interest on Public Debt.—The yearly interest charges borne by the ordinary State budget have been reduced from 15,534 millions in 1927 to 14,007 in 1929, to 13,195 in 1930-31, to 11,003 in 1932, and to 10,067 in 1933. (Of the apparent saving of 3,004 millions in 1932 nearly two-thirds, or 1,962 millions, were due to the taking over by the Autonomous Fund of the liability for contractual redemptions.) To the foregoing totals should be added the charges for the service of annuities, which advanced by 1,427 millions from 8,119 millions in 1929 to 9,366 millions in 1933; the greater part of this increase being due to the adjustment of war disablement pensions (476 millions), other military pensions (296 millions), civil pensions (457 millions), legion of honour and military medal awards (102 millions). In the 1934 budget law a sum of 20,112 millions, or 40.2 per cent. of the total budget expenditure, is allotted for the services of that portion of the debt which still remains a charge on the Treasury.

National Autonomous Fund for Debt Redemption.—Very substantial relief for the main budget has resulted from the operations of the autonomous fund constituted in October, 1926, for the management and gradual redemption of the national debt. It will be remembered that the yields of the tobacco monopoly, the death duties and the complementary tax on estate transfers are all earmarked for this fund, to which also are to be applied any budget surpluses remaining after the close of each financial year, and sundry other resources relatively small in amount. A law of the 7th April, 1930, provided that the proceeds of the mobilisation of the unconditional annuities due from Germany under the Young Scheme should be handed over in their entirety to the Autonomous Fund, thus considerably swelling its resources. On the other hand, additional obligations have been imposed upon the Fund since 1930, as a result of the expedients (noted elsewhere in this chapter) adopted to enable the balancing of the State budgets.

The net income of the Fund in the five years 1928 to 1932 was 6,502, 8,502, 11,509, 6,036 and 5,661 millions, the high figure attained in 1930 being due to the exceptional resources constituted by the 2,000 millions on account of budget surpluses and the 3,252 millions resulting from the mobilisation of the Young Scheme annuities; and the total revenue from the inception of the Fund in 1926, down to the end of 1932, was 45,378 millions. After making provision for the interest on the loans for which the Fund was responsible, the balance remaining has permitted the redemption, from 1926 to the end of 1932, of State bonds of all kinds to a

capital value of 26,581 millions, of which 4,660 millions formed part of the debt taken over by the Fund in October, 1926, and 21,921 millions other sections of the State debt.

The income of the Fund in 1932, according to budget estimates, was expected to be about 7,800 millions, the decline being due largely to reductions in the rates of death duties and estate transfer taxes effected by various laws between the 31st July, 1929, and the 31st March, 1931. In 1933 the gross revenue, subject to deductions in respect of the expenses of working the tobacco monopoly, was 6,520 millions; and in 1934 it is expected to be about 5,437 millions.

Three Phases of Activity, 1926-1932.—From the inception of the National Autonomous Fund in October, 1926, to the end of 1928, the principal concern of its directors was the avoidance of the danger presented by a short-term floating debt of 48½ milliards. This danger was staved off, partly by the transformation of about one-fourth of the total capital amount of these loans into long-term issues maturing in 40, 50 or 75 years, and partly by the adjustment of replacement issues of National Defence Bonds so as to level up the amounts falling due for repayment month by month. All bonds maturing in one year or less were either redeemed or replaced by others having a uniform maturity of two years. By the end of 1928 the 48½ milliards of short-term issues (ranging from one month to one year) had been transformed into 36,665 millions of 2-yearly National Defence Bonds and 12,470 millions of long-term bonds, and interest charges had been reduced by 470 millions from 2,700 to 2,230 millions. At this time there was no power to effect any reduction in the capital amount of the public debt, otherwise than by the cancellation of stock deposited in payment of taxes, or the redemption of National Defence Bonds and other scrip issued in replacement thereof.

The commencement of the second period, which extended throughout 1929 and 1930, was heralded by the passing of a law, on the 30th December, 1928, which empowered the Fund to purchase on the stock exchange Treasury and Crédit National bonds and State annuities with a view to their cancellation, thus enabling substantial reductions (5,619 millions in 1929 and 3,945 millions in 1930) in the volume of these bonds in circulation, and preparing the way for a conversion loan issue on favourable terms. The same law authorised the Fund to convert, at the request of holders, pre-war perpetual annuities of 3 per cent. into life annuities; and a further law of the 7th April, 1930, extended the powers of the Fund in the matter of redemption, or repayment by anticipation, of various State securities. The conversion issue resulted in the transformation of 2,170 millions, or 96 per cent. of the 6 per cent. 1926 bonds in circulation, into 4½ per cent. bonds, and only 168½ millions required to be repaid to holders of the old issue who did not wish to convert. The operations of the two years 1929 and 1930 may be summarised as follows:—2,877 millions of old issues (chiefly

6 per cent.) and 7,472 millions of National Defence Bonds redeemed; 7,528 millions of new bonds at $4\frac{1}{2}$ per cent. issued; burden of interest reduced by 463 millions from 2,230 to 1,767 millions.

After the first period of consolidation and the second of conversion and redemption on a large scale, the third, from the beginning of 1931 onwards, was a period of relief to the general State budget, in the course of which the Fund has extended its operations to all sections of the National Debt. By a new convention between the Treasury and the Autonomous Fund, concluded on the 12th September, 1930, and subsequently embodied in the Finance Law of the 31st March, 1931, the Fund took over liability for the contractual amortisation of State loans under 26 headings, thereby relieving the budget of a charge of 1,962 millions yearly. The Fund also relinquished its claim to 375 millions of profits resulting from the issue of the new silver coinage, which it should normally have received in 1932. A new convention of the 7th November, 1932, resulted in a gain of 636 millions for the budget of 1933, of which 343 millions were to be yielded by minting profits in 1933 and 293 millions to come from the taking over by the Autonomous Fund of additional liabilities for amortisation. The Fund's activities during 1931 resulted in the redemption of a further 1,002 millions of short-term and 131 millions of long-term bonds; and in 1932, of 7,684 millions. Thus in the entire period from October, 1926 to the end of 1932, the total capital value of bonds redeemed attained 26,581 millions and (taking into account the increase to 3 per cent. of interest on National Defence as from the 1st March, 1933) interest charges have been reduced from 2,700 to 1,607 millions, a saving of 40 per cent. On the 30th September, 1933, the total redeemed had reached 28,502 millions.

Circulation of National Defence Bonds.—In October, 1926, the volume of National Defence Bonds in circulation was 48,385 millions, all of which were for periods of one, three, six or twelve months. In less than four years the total was reduced by 22,940 millions, or 48 per cent., and all those remaining were of two years' maturity. Their capital value at the end of 1928, 1931, 1932 and 1933 was 35,794, 27,246, 28,385 and 26,488 millions, respectively. The issue of replacement bonds has been so controlled that the sums fall due for redemption month by month are practically constant. Whereas in 1926 there were monthly maturities of 7 or 8 milliards at a time, the average in 1931 had fallen to 1,200 million and in 1932 to 1,160 millions, while in 1933 they averaged 1,080 millions, with a maximum in any one month of 1,192 millions. The rate of interest, originally 6 per cent., was reduced in successive stages, and stood at $2\frac{1}{2}$ per cent. from the 29th June, 1932, till the 1st March, 1933, when it was again raised to 3 per cent.: in March, 1934, it stood at 4 per cent. It is intended for the next

few years, at any rate, to limit to 322 millions the value of National Defence Bonds to be redeemed each year, in order to reserve as large sums as possible for the redemption of more onerous loans.

Conversion Issues.—The first great consolidation issue undertaken by the Autonomous Fund within the period covered by this report was in May, 1928, when holders of ordinary National Defence bonds were invited to subscribe to a 5 per cent. issue, redeemable in 75 years or less, the price of issue giving an actual yield of 5.66 per cent. The issue brought in 5,822 millions of National Defence bonds, of which 2,850 millions were redeemed, and 2,472 millions converted into the new 5 per cent. bonds. By another operation conducted in February, 1929, by the Autonomous Fund, the 6 per cent. bonds of 1926 were converted into 4½ per cent. bonds redeemable in 40 years or less by half-yearly drawings. These were issued at a price of Fcs. 935 for a face value of Fcs. 1,000, resulting in an actual return of 5.03 per cent. The total yield of the issue was 7,527½ millions, of which 5,357 millions were in the form of National Defence bonds. Out of 3,013 millions of the 6 per cent. bonds originally issued by the Autonomous Fund in 1926, there remained in circulation 2,337 millions in February, 1929; and of these 2,170 millions, or 96 per cent., were presented in exchange for the new 4½ per cent. issue.

The greatest conversion operation, authorised by the law of the 17th September, 1932, related to the 5 per cent. 1915 and 1916, the 6 per cent. 1920, the 6 per cent. 1927 and 5 per cent. 1928 funds, the 6 per cent. 1927 debentures and the 7 per cent. 1927 Treasury bonds, representing a total capital value of 84.4 milliards, of which 2.71 milliards bore interest at 7 per cent., 47.71 milliards at 6 per cent., and 33.97 milliards at 5 per cent. As in the case of the 1929 operation, the new bonds carry interest at 4½ per cent. Holders of only 4.6 milliards (or 5.44 per cent. of total capital) applied for repayment instead of conversion, and as these repayments were partly offset by new cash subscriptions to the extent of 2.94 milliards, the net balance showed repayments of only 1.66 milliards, or less than 2 per cent. of the total volume in circulation.

Inter-Allied and War Debts.—The amount of the French war debt to the United Kingdom, as funded on the 12th July, 1926, was 600 million pounds (net), payable in 62 annuities rising from 4 millions in 1926-27 to 14 millions from 1957 to 1988, and equivalent on a 5 per cent. basis to a flat annuity of rather less than £12 millions a year, or (in 1926) a present value of £227 millions. The debt to the United States was funded (June, 1925) at 4,025 million dollars, payable in annuities rising from 30 millions in 1926 and 1927 to 125 millions from 1942 to 1986, with a final payment of \$117,675,000 in 1987. This scale was equivalent on a 5 per cent. basis to a flat annuity of \$88 millions, and represented a present value of \$1,681,400,000. As against these liabilities, France was

owed: (a) non-consolidated debts amounting in all to Fcs. 8,943.7 millions by the U.S.S.R., Italy, Portugal, Latvia, Georgia and Albania, the bulk of this amount (7,614.6 millions) being due from the U.S.S.R.; and (b) debts by Austria, Greece, Lithuania, Poland, Roumania, Czechoslovakia, Yugoslavia, consolidated at various dates between June, 1928, and February, 1930. The total sum that France should have received in respect of these consolidated debts during the financial year 1931-32, had the Hoover moratorium not intervened, was 76.8 million francs.

German Reparation Payments.—Within the period covered by this report profound modifications have been introduced as regards both the amount and the methods of payment of Germany's war debts to the Allied Powers. Under the Dawes Plan of 1924 no definite figure had been fixed as the sum total of Germany's reparations liabilities; the number of years during which payments should continue was not specified, and the system under which a large proportion of these payments could be effected by means of deliveries in kind has been vigorously criticised. The Young Plan, as adopted by the Hague Conferences of August, 1929, and January, 1930, took effect as from the 1st September, 1929, and provided for the definite and final liquidation of all war debts by March 31st, 1938. The amount of Germany's payments was considerably reduced and deliveries in kind, after forming a constantly diminishing proportion of the annuities, were to cease altogether within ten years. The total payments were to rise gradually from 676.9 to 2,352.7 million gold marks, and to average 1,890 millions. The total value of deliveries in kind, during the ten years 1929-39, was limited to 5,250 million gold marks. The French share in Germany's payments remained, as under the Dawes Plan, 52 per cent. of the whole; and the effect of the reductions brought into operation under the new scheme was to reduce the average yearly payment to France from 1,300 million marks, or 7,904 million francs, to 982.9 million marks, or 5,976 million francs.

By the middle of 1931 the effects of the world depression had brought about conditions under which it was no longer possible to continue the large transfers of funds decreed by the Young Scheme; and under the Hoover moratorium all payments by Germany on reparations account were suspended as from the end of June in that year. The total payments to the Allies by Germany since the Armistice had then attained 20,678 million gold marks, of which the part received by France was 8,151 millions. Since the Hoover moratorium came into force, France has received from Germany in the 15 months from the 1st July, 1931, to the 30th September, 1932, reparations in kind to a value of 671.4 millions in respect of works in course of execution, and should receive a further 82.5 million gold marks, or about 499 million francs. Budget equilibrium in the fiscal year 1931-32 was affected by the non-receipt of 1,200 million francs out of 1,959 due, and in the

fiscal year 1932 by the inclusion in the revenue estimates of 1,173 millions that were not forthcoming. In the 1933 budget no payments by Germany were foreshadowed (2,000 millions should normally have been received).

V. CURRENCY

Note Circulation.—In the last weekly statement of the Bank of France (21st June, 1928) before the legal stabilisation, the total volume of notes in circulation was 58.88 milliards. There ensued a steady advance until the end of the year 1931, the totals attaining 68.57, 76.44 and 85.72 milliards at the end of 1929, 1930 and 1931 respectively. Since the beginning of 1932, concurrently with the shrinkage in the total business transactions of the country, there has been a small decrease in the note circulation (to 82.61 and 82.83 milliards at the end of December, 1933, and March, 1934, respectively).

The note issue may conveniently be divided into two categories: the first comprising the notes of 500 and 1,000 francs, and the second those of denominations from 5 to 100 francs. Of those in the first group, the total volume grew from 26,228 millions at the end of 1926 to 52,884 and 52,856 millions at the end of 1932 and 1933. Such notes are very little used for ordinary everyday transactions and, as the extent of the increase is out of all proportion to that which has occurred in the case of denominations of 100 francs or less, it is estimated that at least 25 milliards, or roughly half the total amount, is withheld from circulation, being kept in reserve by large concerns or hoarded by individuals. Of notes in the category of from 5 to 100 francs, the total volume in circulation grew from 26,221 millions at the end of 1926 to a maximum of 31,563 millions at the end of 1930, declining in the next three years to 27,732 millions. This reduction, while partly due to a smaller demand for money as industrial and commercial activity grew less, may be attributed in the main to the withdrawal from circulation of the small notes of 5, 10 and 20 francs, of which at the end of 1931 and of 1933 there were totals of 2,941 and 1,286 millions in circulation. These notes ceased to be legal tender at the end of 1933, their place being taken by the new silver and nickel coinage of which particulars are given in a later paragraph in this section. The effective and active note circulation may therefore be regarded as consisting of 26½ milliards in notes of 50 and 100 francs, and about the same amount in notes of 500 and 1,000 francs.

Metal Cover.—A striking feature of the currency policy followed ever since the revalorisation of the franc and of certain converging world influences is reflected in the exceptionally strong position of the Bank of France as regards the proportion of its metallic cover to the total of its notes in circulation and deposits. Under the Stabilisation Law of the 25th June, 1928, the Bank is obliged to maintain a minimum gold cover of 35 per cent. of its

note issue and deposits. Its reserves have consistently been far in excess of this legal minimum. Gold stocks were doubled between December, 1929, and December, 1932 (from 41,668 to 83,017 millions), raising the percentage of cover from 47.27 to 77.29; and although there ensued an exodus of gold to a value of six milliards, reducing the stock to 77,098 millions at the 29th December, 1933, concurrent liabilities have been reduced in greater proportion, so that the gold cover had advanced, at the same date, to 78.39 per cent.: the maximum attained was 79.95 (November, 1933). On March 30th, 1934, it was 76.77: the gold stock had then sunk to 74,613 millions.

Metal Currency Tokens.—Silver coins of 20 and 10 francs, nickel coins of 5 francs, aluminium-bronze coins of 2 francs, 1 franc and 50 centimes, and nickel-alloy coins of 25, 10 and 5 centimes, constitute the present metallic currency in France. The 1928 Stabilisation Law expressly contemplated the withdrawal from circulation of bank-notes of all denominations below 50 francs (*i.e.*, 5, 10 and 20 francs) and their replacement by a silver coinage, up to a total amount not exceeding 3 milliards of francs. After much delay, the minting of the new 10- and 20-franc silver pieces was begun in 1929, and by the end of 1932 the Bank of France held a stock, awaiting issue, of 64.7 millions in 20-franc pieces and 1,290 millions in 10-franc pieces. As these were not sufficient to replace entirely the notes of 5, 10 and 20 francs (amounting, at the end of 1931, to 2,941 millions) which were to be withdrawn by the end of 1932, a law was passed postponing until the end of 1933 the date at which these notes would cease to be legal tender. The new silver coins, to a value of 782 millions, were put into circulation during 1933. During 1931 and 1932 also new aluminium-bronze coins to a value of nearly 186 millions, in denominations of 50 centimes, 1 and 2 francs, were put into circulation, replacing the Chambers of Commerce tokens of like denominations and similar appearance, that were concurrently withdrawn from circulation. The necessity for a coin of an intermediary value between 2 and 10 francs having been urged from many quarters, it was at first proposed to issue a small silver coin with a denomination of 5 francs, but finally a pure nickel coin was decided upon, and its minting authorised by a law of the 28th February, 1933. The definite issue is to be of nickel 980/1,000 fine, with a weight of 12 grammes, but a temporary issue of five-franc coins weighing 6 grammes was put into circulation in October, 1933, to serve until a sufficient quantity of the definite issue could be struck at the Mint.

Foreign Exchange Rates.—The French currency, since its *de facto* stabilisation at about 122 francs from the 21st December, 1926, and at about 124 francs from the early months of 1927, has remained one of the steadiest currencies in the world. The new par rate fixed by the 1928 Stabilisation Law corresponded to a value

of Fcs. 124.21 to the £; and the relation between the franc and the pound sterling deviated very little from this figure until the suspension of the gold standard by the United Kingdom on the 21st September, 1931. The average daily rates had been 124.11, 124.016, 123.87, and 124.05 for the years 1928 to 1930 and the first eight months of 1931. Since that suspension fluctuations have alternated with periods of comparative stability, but on the whole the pound has depreciated in relation to the franc. It first fell below 90 at the end of November, 1931, and, save for two months towards the end of 1932, hovered between 85 and 95 throughout the period up to August, 1933; but the average daily quotations for September, October, November and December were only 80.28, 80.22, 82.33 and 83.58 francs. In the new year a decline was manifested, the average quotations for the first three months having been 81.26, 77.80 and 77.37 francs. The lowest Paris quotation was 76.80, early in February, 1934. The following table shows the rates for 1914 and from 1920 to March, 1934.

Year	Average	Year	Average	Extreme rates since 21st September, 1931	
				Highest	Lowest
1914	25.13	1927	123.88	—	—
1920	51.21	1928	124.11	—	—
1921	51.93	1929	124.016	—	—
1922	54.80	1930	123.87	—	—
1923	75.74	1931	115.663	104.75	82.81
1924	85.18	1932	89.219	96.60	80.71
1925	102.58	1933	84.60	89.10	78.425
1926	153.25	1934 (Jan.-Mar.)	78.80	83.43	76.80

Present External Value of the Franc.—From June, 1928, until mid-October, 1933, thanks to the unusual world position of the French currency resulting from the weakening of the major, and even minor, currencies and from the remarkably high gold cover held by the Bank of France, the franc remained at a premium in relation to practically all other currencies. The uncertain political situation that arose in the second half of October, 1933, when the Government was defeated over its proposals for meeting the budgetary deficit, caused some temporary weakness, and on the 19th October, 1933, the franc was slightly below par in relation to the currencies of the four other countries still adhering to the gold standard. The closing rates of exchange at Paris on that date and at the end of March, 1934, are given in the following table. In cases where no transactions took place the latest prior quotations are shown in parenthesis. Exchanges on Germany, Argentina, Brazil, Bulgaria, Hungary and Austria

have ceased for some time to be officially quoted on the daily Exchange. The German mark unofficial quotation has tended to be about 6.04 francs.

Country	Unit	Par value	Oct. 19, 1933	Mar. 29, 1934
(I) Countries on gold standard				
Belgium ...	100 belgas	354.90	356.00	354.00
Holland ...	100 florins	1025.95	1030.50	1024.50
Italy ...	100 lire	134.34	134.60	130.85
Switzerland	100 francs	492.49	495.125	490.625
(II) Other countries.				
Great Britain	£1	124.21	81.80	78.06
United States	\$100	2552.38	1815.00	1520.25
Canada ...	\$100	2552.38	(1595.00)	(1545.00)
Denmark ...	100 kronen	684.02	(356.00)	(345.25)
Spain ...	100 pesetas	492.49	(213.75)	207.00
Finland ...	100 marks	64.28	(35.25)	(34.50)
Norway ...	100 kronen	684.02	(398.00)	391.00
Portugal ...	100 escudos	2758.02	(78.00)	(76.00)
Czechoslovakia	100 crowns	75.62	(75.90)	—
Roumania ...	100 lei	15.27	(15.25)	(15.15)
Jugoslavia ...	100 dinars	492.49	(35.20)	(35.30)
Sweden ...	100 kronen	684.02	(415.00)	404.90
Poland ...	100 zlotys	286.33	(286.50)	286.00

Clearing House Returns.—The Parisian Bankers' Clearing House (*Chambre de Compensation des Banquiers de Paris*), consisting of 48 members, among which are to be found the principal foreign banks established in France, does not correspond precisely to the Bankers' Clearing House in England, as the bulk of the transfers are still effected through the Bank of France. That institution, unlike the Bank of England, has a very large number of banking offices throughout France: 18 large branches in Paris, 159 branches in provincial towns, 84 sub-offices, and 399 more 'villes rattachées,' or places where five times a month agents of the Bank transact bill discount business. The total business offered to the House in 1932 amounted to 332.4 milliards (of which 84.40 per cent. involved no cash transfer), as against 460.5 milliards in 1931 (84.15 per cent. cleared) and 556 milliards in 1930 (86.63 per cent. cleared). In 1933, out of a total of 378.5 milliards presented, the percentage cleared was 86.39. The following table shows the figures of the actual transactions of the Clearing House and those of the Bank of France for the years 1913, 1923, 1926 and 1928 to 1933:—

CLEARING HOUSE RETURNS.

(Million francs).

Year	Paris Bankers' Clearing House	Bank of France	Total
1913	14,483	165,239	179,222
1923	212,095	740,014	952,109
1926	496,814	1,331,665	1,828,479
1928	353,971	1,357,560	1,711,531
1929	442,326	1,404,713	1,847,039
1930	482,808	1,424,860	1,907,668
1931	387,563	1,303,966	1,691,529
1932	280,543	1,057,728	1,338,271
1933	327,053	1,168,552	1,495,605

VI. BANKING

General Banking Prosperity, 1927-30.—The prosperity of banking institutions in France in the years 1927-29, and up to the autumn of 1930, reflected faithfully the general trend of bounteous economic prosperity in home and foreign trade both visible and invisible. The Poincaré Government had restored the State finances in 1926-27: State budgets began to yield surpluses in place of deficits: public confidence became buoyant at home, and foreign confidence was so exuberant that in 1928 the Bank of France was reported to be holding about 43 or 44 milliards of foreign bills. The demand for State securities was so strong as to prove embarrassing for some categories like those of the National Defence Bonds, and interest yields were reduced. The currency stabilisation of June, 1928, proved almost a starting point for a fresh burst of prosperity. The magnificent and even unprecedented trade of the years 1928 and 1929 persisted after the American financial collapse in September, 1929, and after most nations in both hemispheres had severely suffered from the catastrophic fall in world prices for foods and raw materials. The banks shared in full measure this good fortune, paid good dividends, gathered good reserves, increased in many cases their capital, undertook the expansion of their operations and the multiplication of their offices. In the midst of the bounding prosperity and inevitable speculation in many quarters, the greater banking institutions were not carried off their feet: nearly all had taken to heart the severe crisis of 1920-21, and certain premonitions early in 1927 had reminded them of caution.

Banking Shocks.—The French stock exchange and finance generally were not spared in the grave reactions of the great North American slump subsequent to September, 1929; and French

investors shared in the losses entailed by the headlong fall even in the greatest standard securities. The falls in standard European and French securities from the high figures of 1927-29, partly a consequence of the American prices *débâcle*, partly of the ever more accentuated economic and political uncertainties, tended to render suspicious those nearly or remotely connected with banking and financial matters. The first shock in the French banking world, and that a serious one, was the Oustric bank failure in October, 1930: it came not long after the September elections in Germany had vividly stirred popular opinion in France, and when rumours had been afloat for some time that certain of the rather greater banks had been financing to an unduly heavy extent luxury trades of several types, loans in Southern or Eastern Europe, colonial business, and so forth.

The effects upon public opinion of the *Oustric* bank failure, far greater than the importance of the Bank itself or of its direct deprecations warranted, were widespread and penetrating. It involved immediately the financial collapse both of several banks (one having about fifty branches in Northern France) and of several industrial undertakings with which it was connected, but it engendered most damage through the fact that, on the charge of certain alleged improper influences exercised by ex-Ministers and other politicians or officials, it gave birth to a lengthy parliamentary enquiry and to arraignment of several persons implicated before the Senate as tribunal. These public proceedings, chronicled column in length in the daily press for many months, inevitably ventilated throughout the population serious implied or outspoken aspersions by witnesses on financial, political and other persons and institutions. Home and foreign trade conditions, already bad and growing worse, were causing difficulties, the stock exchange had been suffering heavily since the autumn of 1929: these public proceedings between October, 1930, and the end of 1931 inevitably precipitated events for weaker undertakings. Failures or embarrassments of financial agencies, such as banks, stockbrokers, lawyers, not to mention those of several important industrial or commercial undertakings, came into the light of day both in Paris or in provincial towns during or not long after these proceedings.

The banks forced to suspend payments in 1930-32 (1931 was the far most fatal year) included an appreciable number of long-standing, mostly private or regional banks, or banks with rather specialised trade relations (*e.g.* in silk, metallurgy, etc.) that were hit by the trade depression; but there were also half-a-dozen failures of considerable magnitude. In the case of one of the latter, the consequences for the whole French banking system of an open and direct crash were deemed so serious by the Government that it made advances of two milliards to save the situation: in another it advanced 900 millions. In a third case, two groups collectively intervened, absorbed in major part the assets and liabilities and shared the widespread branches: a similar and unobtrusive settlement occurred in the case of a bank with numerous branches in the

South-East. A fifth bank operating in the Northern area was reformed in a modified form with financial support of a Paris bank. Failures in provincial towns included banks in Grenoble, Lyons, St. Etienne, Nîmes, St. Claude, Boulogne, Lille, Arras, St. Quentin, Rheims, Charleville, Strasbourg, Nancy, Havre, Elbeuf, Avranches, Tours, Nantes, Angoulême, Bordeaux, and a few other places. The Grenoble and Nancy failures were those of two mainly business banks of excellent standing, closely identified with the industrial interests of their region, as were those at Lyons, St. Etienne, Rheims, and elsewhere.

Depositors grew accordingly somewhat restive, and began to withdraw their deposits to an abnormal extent from ordinary and specialised banks and either to entrust their funds preferentially to the Bank of France, to the four or five greatest joint-stock banks, and to the official savings bank, or simply to hoard them. This growing frame of mind enforced on the banks the greatest prudence so as to guarantee their liquidity in the event of maximum withdrawals (which in fact proved considerable only in a few cases or localities and for brief periods); but their policy caused the recall or large reduction of their outstanding credits, checked any credit-giving proclivities, and further worsened the slackness of trade, whilst curtailing their own earning possibilities. A study of the movement of deposits of the leading banks gives some indication of the ebb and flow of the confidence of depositors. In 1928, when possessors of funds were converting into stabilised francs their holdings in gold and in foreign currencies, and when the abundance of cash and credit and the soaring quotations of securities made scarce investments yielding the formerly high rate of interest, the total amount of sight deposits and current accounts in the four leading joint-stock banks (*Crédit Lyonnais, Comptoir d'Escompte, Société Générale, Crédit Industriel et Commercial*) advanced from 26.4 to 34.4 milliards or 6.37 times as great as their total deposits in 1913. In 1929 transfers tended to be effected from these leading banks to banks more prominently associated with industry and commerce, which offered prospects of higher yields; and by the end of that prosperous business year the deposits had fallen from 34.4 to 32.8 milliards. As a result of the events in the autumn of 1930 a reversal of the tendency occurred and despite hoarding and certain suspiciousness, these banks showed the figures of 34.2, 36.7 and 37.8 milliards at the end of the years 1930, 1931 and 1932 respectively. In the case of the Bank of France the movement was far more marked, especially in 1931, when the current accounts rose from 15 to 18 milliards between August and September and to 24 milliards later in the year. The number of new private current and deposit accounts amounted in 1931 to 26,000. Similar movements of deposits, but on a smaller scale, occurred in the case of the *Crédit Foncier*, the great semi-State mortgage bank, and far greater resort was had to the public savings banks (municipal, post-office and other), whose deposits swelled considerably.

External Shocks, 1931-32.—The bulk of the internal financial mishaps and misgivings had spent their most mischievous force when several major external financial events caused grave prejudice to the earning power and the general peace of many French banking institutions. They included the far-reaching reactions of the Austrian *Kreditanstalt* failure (May, 1931), which, by reason of its enchainments in Central and South-Eastern Europe and of the recent and the old French loans or credits in these areas, weighed heavily on certain banking interests: the Hoover moratorium (June, 1931) with its effects on the French budgetary position and the standstill agreements (since August, 1931) concerning German private indebtedness abroad: in September came the greatest shock of all, that of the suspension of gold payments in London, which entailed losses on sterling holdings in London which, however, had been very greatly reduced between July and September, except in the case of the Bank of France. In succession there came the prohibitions or restrictions by numerous States on foreign transfers, which limited or forbade payments abroad of sums due, whether capital and interest on investments or even payment for ordinary imports received. As French investments are very large, whether in ports, railways, in industrial and commercial concerns, in South American and in many European States with such restrictions, and her current commerce is also considerable, French banks having specialised in particular countries have been considerably affected. The numerous other impediments to free trading (quotas, higher duties or even prohibitive duties on luxury and other goods), and the vast shrinkage of the foreign tourist traffic, also proved highly prejudicial to French bankers. The cumulative effect of these international events was the more felt by French finances in that French participation in international finance generally had greatly advanced in the boom years 1927-30.

Situation in 1932-33.—The collective harm of the mass of combined circumstances was probably felt most keenly by the banking world in 1931 and 1932. The most signal failures and the greatest dangers of losses and of public panic had occurred notably in 1931, but the ill-effects were patent in 1932, and that year itself was one of the most profound depression in home and foreign trading. The head of the greatest 'business' bank stated at its annual meeting that in 1932 "good commercial paper had been rare, discount rates low, and industrial and commercial failures numerous." Since early in 1932 the French banking situation has been stabilised in the sense that the comprehensive and rigorous calling-in of credits and recovery of claims has rendered great liquidity to the banks and placed the vast majority of banking undertakings in a firm position. It has, however, its unfavourable aspect in that the earning power is reduced by the comparative stagnation of business, by the restriction of credits, reduced volume of bills and acceptances, of private French or foreign issues, of general stocks and shares

business. It has been often observed accordingly that, if in 1932 and 1933 the State and other public authorities had not been great borrowers, the banks would perhaps have fared only moderately. In 1932 great earning possibilities were provided by State issues of various kinds, Treasury bonds, loans, and notably by the great State conversion in the autumn. The State has again in 1933 provided great custom by its further borrowing, its new issues, and its four great lotteries. The innate strength and the enormous resources of the French banking structure are, of course, incontestable; and to this fact France largely owes that financial prestige which for years past has made her one of the chief refuges of a world in quest of a safe haven for their capital.

The situation of the great joint-stock banks, which remained very strong throughout 1933, was mainly affected by the reduction of deposits (for the four leading banks the total deposits fell between the end of 1932 and 1933 from 37,042 to 31,875 millions). This movement was due to various principal causes such as pure hoarding, higher rate of interest of savings banks and of National Defence and Treasury bonds, six or seven State lotteries, and, of course, to reduced earning powers compelling withdrawals, either by native or foreign depositors.

Recent General Developments in Banking Organisation.—Perhaps the most noted developments in the general organisation of banking services in the last few years have been the further consolidation of the position of the greater banks with headquarters in Paris, and the reduction in number, the disappearance, the absorption, or the taking over of their control by the greater banks, of the local and regional banks. Up to 1930 certain leading joint-stock banks actively pursued their policy of penetrating further into places and into business hitherto served mainly by local or district banks: thus in 1929 one bank created 150 new offices, two others over 30 apiece, a fourth, fourteen, and so forth. In 1931 and 1932 few new offices were opened: many, formerly the appanage of some of the greater failed banks, were indeed suppressed. But as the others were taken over by the absorbing banks that came to the rescue, there has resulted a further strengthening of the multiple bank office system.

Decentralisation Tendencies.—Despite the general trend towards elimination of the smaller local and regional banks and the concentration in half-a-dozen banks of the bulk of the banking offices, yet there is apparent a marked tendency towards effectual decentralisation. The Bank of France itself has always stood as an example of centralised direction with highly decentralised and responsible local or district management. It possesses, besides its head offices in Paris, 18 large branches in the Paris area and 159 in the provinces, besides 84 sub-offices and 399 banking places (*i.e.* places in which agents of the Bank attend five times a month to transact bill discount business). But it is important to note that the 177 branches have each their own separate capital, fixed by head-

quarters, that the director or manager, who is appointed by decree of the President of the Republic, must possess and retain during his period of office 15 Bank of France shares (this may represent a personal holding of nearly £5,000 on the basis of the stock exchange quotation in recent years), and that he is assisted by a board of directors of from 6 to 12 persons resident in the particular area. Such responsible and comparatively independent branches have peculiar facilities for knowing and for keeping in permanent touch with the conditions within the area, of gauging either personal character or the business position of trading concerns. The intimacy of the relations of the Bank with the French public is very great, both by virtue of the universality of the bill discount business (three signatures as a rule) often for very small sums (even 10 or 20 francs) and by the great number of deposit accounts.

This centralisation plus decentralisation policy is being effected in several ways by other banks. The most notable example is perhaps that of the *Société Générale de Crédit Industriel et Commercial* (usually known by the last four words). In itself essentially a bank working in the Paris region, wherein all its 56 branches lie, it has followed, since as far back as 1865, the practice of organising independent companies to conduct banking operations in specific areas (in 1856 at Lyons and at Marseilles; in 1880 at Bordeaux; in 1881 at Nancy; in 1919 at Alsace; in the last four years for the Toulouse region at Toulouse, for Normandy at Caen, for Brittany at Nantes). These companies, apparently always controlled by the parent bank, conduct their business independently in these areas, and in some cases have opened also their own important offices in Paris. In their respective areas they have numerous branches (over 200 apparently in some cases). The Paris bank appears also to have interests in other important regional banks (e.g. at Valenciennes). In 1930 it was the leader in establishing with other banks a central bank entitled the *Union des Banques Régionales*, destined mainly to undertake medium and long-term business for its participating founders. Under this system of provincial organisation the regional banks are in excellent position to cater for the particular needs of their areas, whilst having the advantage of a Paris leader, of a central bank of their own for non-short-term business, and being able to enter independently the Paris market if their own regional business requires it. Other great banks, although they have followed this policy in equally clear-cut and positive fashion, have adopted measures with a view to obviating the patent drawbacks of over-centralisation. The historical process of development in France has been unlike that in the United Kingdom. The present great British banks mostly had their origin in the provinces and worked their triumphant way up to the capital by their own development and by the gradual absorption of numerous local or district private banks. The present great French banks, on the other hand, had their origin usually in Paris (the *Crédit Lyonnais*

is a notable exception) and set out later to capture the provinces. In most cases the policy pursued was not to absorb local banks but to enter a provincial town, take a permanent site, and rely on their Paris prestige to succeed in attracting deposits, in selling securities, and in capturing the local discount bill market by their favourable rates. Since the war, they have adopted to a greater extent the system of purchasing or absorbing or getting control of local interests, notably in the Eastern and Northern parts of France. By this means they are instituting more effective decentralisation, and in especially important industrial regions (Lille, Roubaix-Tourcoing, Rouen, Lyons, Nancy, Alsace generally) they are said to put into practice more local responsibility, or in cases where they work through the larger regional banks of long standing and with networks of branches, to have the local directorates composed of men of local industrial and commercial importance with a sprinkling of persons with banking experience.

VII. CREDIT FACILITIES FOR PRODUCTION PURPOSES.

Abundant and Varied Credit Sources.—For production purposes, whether in agriculture, the extractive industries, public utilities (*e.g.*, electricity), manufacturing industry, commerce or transport, abundant facilities are provided in France, not only by the familiar banking institutions common to all highly-developed commercial and industrial communities, but also by many credit agencies of distinctive types, State, semi-State, and private. In a general way, three main forms of credit transactions are recognised as appropriate to special kinds of banking organisations. The joint-stock and other commercial banks undertake normally the ordinary commercial credits, or that temporary accommodation for current needs, which is classed as short-term, and is in principle accorded for three months, but is frequently renewable twice, even thrice or more.

Medium-term credit, at times somewhat elastic in its interpretation, but normally arranged as such for from two to five years, is deemed to relate to accommodation for outlay for needs of a non-recurrent or quasi-permanent character, from which rapid direct returns are not to be anticipated (*e.g.*, the acquisition of rights, improvement of plant, purchase of factory requisites) or from which only indirect monetary returns are assumed (*e.g.*, building of workers' dwellings, or other welfare creations). The great French commercial banks to a very limited degree, and the lesser to a certain degree, but especially the 'business' banks (*banques d'affaires*) both large and small, and certain specialised institutions, are purveyors of this credit. Many special institutions exist for long-term credit. The bounds between the latter and medium-term are not always easy to determine: guarantees and

liens are similar, first charges, contractual assignments of fixed percentages of earnings, share or debenture participations, and kindred security independent of trading or other vicissitudes being required. And the partitions between medium and short-term credit may also be somewhat slender, where triple extensions of bills, or revolving credits, or standing banking facilities (*facilités de caisse*), are generously accorded on sufficient grounds to customers reputed solvent.

The Greatest Paris Commercial Banks.—Paris is the effective headquarters of the half-dozen greatest 'joint-stock' banks endowed with a national character—in the sense that they tend to extend their operations throughout the country. Of these, the *Crédit Lyonnais* (founded in 1863, legal headquarters still in Lyons, with a capital of 765 millions, of which 400 millions paid up) possesses the largest number of banking offices, having 1,300 to 1,400 in France, of which 110 in Paris and suburbs: it also shows the greatest total deposits. The *Société Générale* (1864: 625 millions, of which 321 paid up) possesses about 1,200 offices, of which 102 in the Paris area; the *Comptoir National d'Escompte de Paris* (1889: 400 millions entirely paid up) about 530 offices, of which 80 in the Paris area; and the *Crédit Commercial de France* (1894: 210 millions entirely paid up) about 110 offices, of which 60 in Paris area. The *Banque Nationale pour le Commerce et l'Industrie* (capital 100 millions paid up), which issues from the reconstruction in 1932, with the co-operation of the Bank of France and of several great banks, of the former *Banque Nationale de Crédit* (capital 500 millions, 318 paid up, 44 offices in Paris and 600-700 in the provinces), has about 30 branches in Paris and about 500 in the provinces. The *Crédit Industriel et Commercial* (1859: capital 100 millions paid up), occupies, as already explained in the Banking Chapter, a special position: it operates directly only in the Paris area (56 branches), but it has created separate affiliated banking companies, each with numerous branches, for separate regions (Lyons, Marseilles, Bordeaux, Nancy, Strasbourg, Toulouse, Caen, Nantes) and has apparently large interests in an important many-officed bank in the North (Valenciennes). Other great banks in this class have not entirely eschewed the same course: one has controlling interests in a Strasbourg bank, others have interests in certain local or regional banks elsewhere (e.g., in the North and East).

Provincial Commercial Banks.—The provinces are not entirely bereft of substantial local or regional banks, although the ever-growing scale of business since 1921, its increased administrative and financial concentration, and the depression of the last three years, have reduced their numbers and weakened the position of a number of the less important. The industrial North, in particular, shows several large and prosperous locally-born commercial banks:

at Lille are three with 150, 100, and 60 millions share capital and approximately 62, 60, and 25 branches apiece : at Valenciennes one with 100 millions and about 50 offices : at Boulogne one with 50 millions and about 50 offices. At St. Quentin, Dunkirk, Havre, Rouen, Rheims, Bar-le-Duc, Charleville, Strasbourg, Mulhouse, Lyons, St. Etienne, Clermont-Ferrand, Roanne, Grenoble, Nimes, Montpellier, Marseilles, Bordeaux, Bayonne, Toulouse, Blois, Tours, Angers, Rennes, and at other places, exist local commercial banks of greater or lesser importance, whether company or private banks, with single office or with many branches. Despite the marked tendency towards disappearance through absorption and elimination from particular and general causes, such banks are far from having vanished from the French provincial scene of industry and commerce to the same extent as they have from that of the United Kingdom.

General Industrial or 'Business' Banks.—The well-recognised and generally regarded as distinct, class of French banks known as *banques d'affaires*, are assumed to devote their main attention to the preparation and launching, or the development, and general financing, either in France or in foreign countries, of industrial and commercial undertakings having a certain importance. Largely in pursuance of these functions they have been wont, either alone or in collaboration with other bankers and capitalists, to make loan issues for the provision of funds, either to consolidate by long-term loans the financial position of undertakings, or perhaps to recoup advances made to these undertakings out of their own resources, or perhaps to convert onerous liabilities or previous loans at high interest into engagements having more favourable conditions. Most of these banks, as a result of their own or their clients' activities and investments in foreign lands, whether in railways, ports, mines, public utilities, real property or in other industrial or commercial undertakings, have displayed a marked predilection for acting as principals or collaborators in issuing foreign loans, both public and private, on the French market. The greatest among them cover all manner of industry and commerce and take the world as their field of operation : of the many others of uneven importance, some may follow in the wake of the greater for many classes of business, or may confine themselves to financing industry and commerce in a few selected branches and may specialise in one or more foreign territories.

They all make full use of the facilities of the joint-stock banks with their extensive branch system for various purposes, including discounting and the sale to the public of their issues of shares and bonds. As distinguished from the joint-stock banks, business banks with their single central office prefer to operate accounts and other active business principally with large customers, notably with those firms which they finance and with their large and long-period depositors. They work to a greater extent with their own

capital, reserves and fixed-period deposits (these form a larger proportion of total deposits than in the case of the joint-stock banks). As very many of the undertakings financed, and many of the firms and public and foreign concerns for which loan issues have been made, maintain their principal accounts in France with the 'business' bank concerned, inflow and outflow periods in the case of a great variety of industrial and commercial undertakings would rarely synchronise, and fairly steady resources are therefore secured in this respect. A prolific source of revenue results from the successful issue of loans for home and foreign public authorities.

An interesting feature in the 'business' bank organisation, or at least in that of the greater among them, is the maintenance of a highly skilled 'general staff' for the observation of general and technical developments in the principal spheres in which they may have interests, or for the judgment of new proposals. They have in permanent employment, or at call, not only financial, statistical, and economic experts, but also experts for certain great branches of commerce and industry such as mining, metallurgy, engineering, electricity, chemicals, transport. Thanks to this skilled staff and to constant contacts in multifarious business at home and abroad they command rare facilities of direct information and of competent judgment in most fields where major business openings may occur.

Some Leading 'Business' Banks.—In the category of 'business' banks perhaps the greatest and most representative of the type is the *Banque de Paris et des Pays-Bas*. Founded in 1872 by the merging of the Amsterdam *Banque de Crédit et de Dépôts* with the *Banque de Paris*, its present capital is 300 million francs: already in the 'seventies that capital represented in sterling 5 millions (it was subsequently both reduced and raised). It has conducted the largest issues in the Paris market, and participated, often as leader, in countless industrial and commercial issues for considerable French and foreign undertakings. It has undertaken or participated in French State, municipal, and colonial issues: and in similar issues for Scandinavia, the U.S.S.R., Central and Southern Europe, Egypt, Japan, China, North and South America, and elsewhere. In France it holds substantial interests in important banking and insurance companies, and has founded, or participated in, banks in numerous countries (*e.g.*, Italy, Bulgaria, Spain, Mexico, Argentina, Brazil, Morocco, etc.). In French territory it has taken a prominent part in assisting the financing of public utility schemes (gas, water, electricity supply, electric power works, underground and other railways, ports, etc.) and the most various industrial and commercial undertakings. Since the close of the war it has continued the same kind of public works financing, has assisted the industrial reconstruction of the devastated areas, and has interested itself notably in such fields

as coal mining, metallurgy, engineering, electricity, chemicals, textiles, contributing not a little to measures tending towards the greater rationalisation of industry.

The *Banque de l'Union Parisienne* presents interest in several respects. Some seven or eight private banking firms of first class repute, belonging for the most part to those designated as the *Haute Banque Protestante*, took over in 1904 the former *Banque Parisienne* (founded in 1874). Like numerous other French firms of the same general banking character and also having usually the same legal forms of private company or of simple partnership, these firms individually appear to conduct a mixed banking business. In some respects they correspond to the English merchant bankers, acting as agents for foreign bankers or finance or business firms, discounting, accepting, making advances against floating cargoes or deliveries: they also utilise their resources in financing commercial and industrial undertakings, introduce and participate in home and foreign loans, not necessarily directly or as leaders of an issue, but employing their acquired competence in specific branches or their extensive influence in financial, investing, or business circles (many principals in this class of banks being directors of the Bank of France, of other semi-official or other great banks, insurance companies, mines, metallurgical, engineering, electrical, chemical, textile, etc.; concerns). Some appear to manage great family and other fortunes, and receive large long-term deposits of various capitalists. In some cases they have been connected with railways or public works, finance or industry in definite countries (Spain, Greece, Central and South-Eastern Europe, Egypt, Central and South America, etc.): others have long had connections with important home industries or with their prolongations abroad. The group in question is reported to have been stimulated to found the *Union Parisienne* because in the early years of the century the big banks and finance syndicates had manifested a marked tendency to omit lesser firms from the big finance operations, notably the very profitable issues on home and foreign account then in full swing (in 1903-6 the total issues in France amounted to 15,822 million francs, of which 6,670 were foreign). The original capital of the *Union Parisienne* (40 millions) was increased in 1905 to 60 millions, and gradually reached 200 millions: it was raised to 300 millions in 1932, when the *Crédit Mobilier Français* was absorbed. The latter, also of the business bank character (founded in 1902 with a capital of 7½ millions) had then a capital of 100 millions. The international ramifications of the *Union Parisienne* included extensive interests in banks and undertakings in Spain, Yugoslavia, Roumania, Poland, Greece, Russia, and South-Eastern Europe, Mexico, South America, and elsewhere. At home it collaborated in the financing of public utility works, metallurgy, engineering, oil, rubber and other industries. It has been associated closely with the great Schneider group of mines, metallurgy, engineering, and kindred activities.

Through the *Société Européenne Industrielle et Financière* it has been since the war especially identified with banking and industrial business in Poland, Yugoslavia, Hungary, Austria, Roumania, etc.: before the war it had participated considerably in Russian industry and finance. The business of the former *Crédit Mobilier* had been important in various public works financing (gas, electricity, railways, transport) and in other industrial financing (metallurgy, engineering, shipping, sugar, etc.). Like many other French banks, the *Crédit Mobilier* had no inconsiderable business in South America, the U.S.S.R., and the Mediterranean.

Numerous other banks of varying importance undertake general industrial financing, though not exclusively; many of them specialise in definite countries and in fact are often offshoots of the joint-stock or bigger business banks. Among them is the *Banque Transatlantique*: founded in 1881 with the large capital, for that period, of 80 millions or 3½ millions sterling, which, subsequently reduced and raised, stands since 1929 at 80 millions, it is reputed to have considerable banking interests in North Africa and South America and to have connections with shipping and with other various industrial interests. A goodly portion of its business appears to be short-term, discounts, advances on consignments, current commercial business. The series of banks, which have special attachments with individual countries, and apparently do various business of a financing character, include the *Banque Franco-Chinoise pour le Commerce et l'Industrie*, *Banque Franco-Asiatique*, *Banque Franco-Japonaise*, *Société Financière d'Orient*, *Banque Franco-Serbe*, *Société Financière d'Études et d'Entreprises en Yougoslavie*, *Banque Franco-Polonaise*, *Banque d'Athènes*, *Banque des Pays du Nord*, *Banque Française et Italienne pour l'Amérique du Sud*, and others. Another group of banks often with foreign fields of operation, and often connected with the joint-stock or the business banks, which may do ordinary banking as well as make medium and long term loans to industry, includes such companies as the *Crédit Algérien*, *Crédit Foncier d'Algérie et de Tunisie*, *Crédit Foncier de l'Indo-Chine*, *Crédit Foncier d'Orient*, *L'Industrielle Foncière*, *Foncier Africain Français*, *Crédit Foncier Franco-Canadien*, *Caisse Générale de Prêts Fonciers et Industriels*, *Banque Hypothécaire Franco-Argentine*.

There are some other company banks which transact general industrial or commercial financing to a greater or less extent, and not a few of the larger private banks undertake this business on somewhat similar lines. The Paris firm of Rothschild (capital 50 millions) wields great influence in several branches, e.g., in railways, mines, metallurgy, electricity, but appears in recent years to have figured less prominently in the limelight of industrial finance, although it may well operate in this field through other firms in which it may have interests. The Paris banks *Mirabaud*, *Hottinguer*, *Vernes*, *Piérard Mabille*, *Demachy*, *de Neufville*,

Mallet, are among those appearing fairly often in industrial business. In the last decade two Paris banking firms have been markedly prominent in this regard—*Lazard Frères* and *L. Dreyfus*. The former, which is largely interested in the bullion and foreign exchanges business, and has important connections in London and New York, undertakes industrial financing on a largish scale (*e.g.*, in engineering, electricity, etc.); and the latter, for a generation one of the greatest firms in the cereal trade with hundreds of offices and agents throughout the world, has in recent years undertaken industrial and other financing (*e.g.*, in the newspaper, etc. trades). In the provinces, especially in the North and East, are many banks, originally private bankers with a single office working locally or regionally, but now usually companies with many branches, which promote by medium and even partially long-term credits the chief industries in the same localities with which they have long been identified.

Business banks sometimes create or control or hold large interests in banks for special purposes: thus the *Union Parisienne* in the *Association Munière* (capital 27 millions) for mining and allied industries as well as in others; the *Banque de Paris* in the *Electro-Crédit* and in other banks; *Lazard Frères* in the *Crédit Electrique* (6 millions), the *Société Financière Electrique* (154 millions), the *Union pour l'Industrie et l'Electricité* (240 millions).

Action by Joint-Stock Banks.—Since the war several joint-stock banks have created special organisations for providing medium and long-term credit for industry. In 1919, the *Comptoir National d'Escompte* founded the *Union pour le Crédit à l'Industrie Nationale* (capital 50 millions), and in 1929 the *Omnium Financier pour l'Industrie Nationale*. In 1928, the *Société Générale* founded the *Société Anonyme de Crédit à l'Industrie Française* (100 millions). In 1929, the *Crédit Industriel et Commercial*, in conjunction with its affiliated banking companies, each with its own regional sphere, established the *Union de Banques Régionales* (40 millions), whose objects were "all medium and long-term credit operations and allied operations." The *Union Industrielle de Crédit pour la Reconstruction* founded in 1921 and having as objects "mobilisation of long-term credits for the reconstruction of the devastated regions and all operations relative to the resumption or extension of the economic activity of the country," has on its board representatives both of several joint-stock and business banks. Reference is made in this Chapter to the later-day policy of the *Crédit National* in according to industrialists loans up to 5 million francs for periods of from 3 to 10 years. On the other hand, the *Crédit Foncier*, the greatest mortgage and issuing bank, controls an important special bank for financing building firms with short and medium credits.

Action by Producing Groups or by Financiers.—Efforts by producers and by financiers to create long or medium credit institutions for industry generally or for special branches have also led to the creation of many organisations, some of which have attained great importance. Among them may be noted the *Association Financière pour le Commerce et l'Industrie* (24 millions) founded in 1919; *Société Financière des Exploitations industrielles* (35 millions) in 1927; the *Union Bancaire du Nord* (60 millions) in 1928; the *Groupement des Houillères du Nord et du Pas-de-Calais* (50 millions) in 1920; the *Union des Mines* (270 millions but reduced to 135 millions in 1932) in 1923; half-a-dozen electric banks (e.g. *Crédit Electrique*, 6 millions, *Union Electrique et Financière*, 60 millions, *Electro-Crédit*, 50 millions, *Société Financière Electrique*, 154 millions, *Union Financière pour l'Industrie Electrique*, 120 millions); *Financière Textile pour la France et l'Etranger* (60 millions), *Banque Cotonnière* (25 millions); the *Crédit Sucrier et Commercial* and the *Société Spéciale Financière*, for sugar. Special banks also handle certain railway works financing, and shipbuilding credits.

One of the most typical of these organisations is the *Union des Mines*: its objects are "to carry on in France or abroad all financial, commercial, industrial affairs— . . . in particular for the mining industry and its allied industries." It is closely identified with the mining, metallurgical and their allied industries, but its board of 28 members holds representatives also of the electrical, chemical and other industries. In its discount and credit operations it works mainly with the railway companies, great mining and metallurgical companies, but outside mining and metallurgy its participations include potash, phosphate and other chemical, electricity, etc. concerns. It has considerable holdings in other banks, notably in the North of France.

Banque Française d'Acceptation.—Financial circles have also in recent years taken definite steps to improve credit facilities for French producers by endeavouring to develop the international acceptance market in francs on Paris. This business had remained comparatively unimportant mainly as a consequence of the almost unchallenged supremacy of the London bill: in 1930, nearly two years after the legal stabilisation of the franc and over three years after its *de facto* stabilisation, a responsible French banker estimated the total volume of acceptances held by French banks at 3,500 million francs compared with 4,000 millions apiece by Dutch and Swiss bankers and 40,000 millions by London houses. In November, 1929, was created with a capital of 100 millions the *Banque Française d'Acceptation*: it had the strong moral support of the Ministry of Finance and of the Bank of France, whose head had reported to the Minister the desirability of directing the activity of the great French banks towards more pronounced specialisation so as to provide the Paris market with acceptance

banks and other appropriate organisations. The *Banque de Paris et des Pays-Bas* and the *Banque de l'Union Parisienne* took the lead in its foundation and are understood to have obtained the financial and moral co-operation of several leading banks. Conditions since 1930 have hardly favoured the great extension of the undertaking. At the end of 1932, the value of the acceptances accorded reached only 178 millions, and a year later only 101 millions.

Specialist Banks in Paris and in the Provinces.—Short-term credit needs are met for the most part by the larger banks, but there still exist in France a host of smaller banks, many of which, by virtue of their specialisation and consequent intimate knowledge of particular branches of economic activity, fulfil valuable functions. They are in a position to supply or to procure regular 'seasonal' or exceptional accommodation for firms in trades with which they are highly conversant, and, as a fairly natural prolongation of these services, they may readily become the channels of their medium and long-term financing. In Paris may be observed many banks specialising in one or more trades: precious metals, diamonds, pearls, furs, soft goods, cereals, sugar, food, wines, woods, hardware and foundry goods, building, electricity, automobiles, aviation, hotels, and so forth.

In the provinces, numerous local or regional banks, as a result of their location in places where distinctive industries are predominant, acquire specialised knowledge and are particularly qualified to serve producers in certain trades. Their number has declined no doubt in recent years, but examples abound (or did so till quite recently) in the North (Lille-Roubaix-Tourcoing, Boulogne, Calais, Havre, Rouen, Dunkirk, Valenciennes, Cambrai, St. Quentin, Rheims, etc.), in the North-West (Nantes, Angers, Le Mans, Rennes, Blois, Tours, etc.), in the East (Charleville, Bar-le-Duc, Nancy, Strasbourg, Mulhouse), in the Lyons region and in the Rhone Valley (Lyons, St. Etienne, Dijon, Tournus, Grenoble, Chambéry, Clermont-Ferrand, Valence, Nîmes, Montpellier, Béziers, Sète, Avignon, Marseilles, Nice), in the South-West (Angoulême, Bordeaux, Dax, Bayonne, Pau, Toulouse, Castres, Carcassonne). In this manner, more or less specialist banks are available for predominant local or regional industries, for cotton, woollen, linen, jute, coal, sugar, fisheries, champagne, and so forth in the North: for wines and pit-props in the South-West, for silks, ribbons, electrical and other engineering, paper, gloves, in the Lyons and Grenoble area, for wines in the Midi (South), for metallurgy, hardware, textiles, in Alsace. They are often local private or company banks of moderate dimensions (save in the North, where several local bankers now show large share capital and deposits and have numerous offices), but in certain cases, joint-stock banks have become proficient in handling the credit needs of predominant industries in specific areas. One important joint-stock bank, it has been already observed, has

created its affiliated but independent companies with extensive branch systems for definite regions.

In contrast with the generality of larger Paris banks, provincial banks maintain closer relations with commerce and industry, tending to have far more commercial and industrial representatives in their management. Thus, in one Lille bank (capital 150 millions) 12 out of 14 directors are industrialists: in another (100 millions), 4 out of 15 are heads of great industrial undertakings: in one Nancy bank 5 out of 9, in another 6 out of 12: in a Bordeaux bank, half; similarly in banks at Mulhouse, Strasbourg, Lyons and Marseilles, the business as distinct from the 'banker' element is well represented. The smaller local or regional banks have, in most cases, been intimately acquainted and connected for long periods with the conditions of the predominant trades in their areas.

Credit Facilities Originating Through Business Enchainments.—The enchainments and ramifications in modern industrial production and distribution have engendered also in France in recent times an immense sum total of credit facilities not fundamentally of a purely banking nature nor usually obtained primarily by the beneficiaries through the agency or responsibility of banking institutions. In the main, but not exclusively, these facilities are provided directly or indirectly by major for medium or for small undertakings; and they are largely the outcome of the constantly growing scale of organised industry and of commerce, of the unified or group administration, either on the vertical or on the horizontal plan, of numerous important branches of activity, and of consequential financial concentrations.

Great firms or groups having continuous need for substantial supplies of fuel or energy, of many and diverse raw or semi-finished materials, factory requisites, parts of their predominant final product, or various accessories, and having sound reasons for not producing them in their own establishments as their total consumption of such individual objects might not justify their embarking upon large-scale output for themselves only, may deem it advisable to finance or to control producers thereof. Thus the few leading motor vehicle manufacturers may prefer to purchase carburettors, crank shafts, clutch plates, spokes, axles, wheels, brakes, bumpers, lamps, coachwork parts and other accessories, from firms specialising in their manufacture, and may take financial interests in such firms. Great concerns may often desire to secure regular markets for their products or may require prolongations in sundry directions for the development of their staple industry or services. This procedure, which is frequently exemplified in the coal, ore, iron and steel, engineering, electricity, chemical, textile, transport and other industries as well as in large sections of 'distribution,' may have unilateral or reciprocal purposes. Great French steel groups may aim at securing on good terms both their own supplies and their markets for their output

by having interests in coal, iron ore, pig iron, steel, brickworks, as well as in shipbuilding, engineering, locomotives, machinery, electrical material, and other metal-transforming concerns. The two predominant French electrical groups, interested in all the stages both of the production and of the distribution of electricity, have many-sided financial connections arising out of their requirements in raw materials for electricity production, equipment for power stations, supplies of big and small electrical requisites for factory, transport, or domestic purposes.

A prominent illustration of the immensity of the credit facilities for industry in France that may originate in business enchainments came to public notice in 1932. A great company with over two score works throughout France and a share capital of about 300 millions had pursued since 1924 the policy of taking important participations in undertakings only rather indirectly related to its own main outputs, and in the succeeding seven years had participated to the extent of not far from 600 millions in about 120 undertakings. For a single works about 115 millions had been provided because, as it was officially explained, that works was likely to be a large consumer of its products. It was likewise then pleaded that all the other important concerns in the same trade had entered into businesses outside their own scope, "some into mines, others into dye-stuffs, others into various businesses, in order to be able to have an outlet for their own production."

Popular instances of business enchainment financing are those of the French railway and shipping companies, which are observed to finance or to help to finance pleasure resorts, hotels, golf courses, motor coach services. The greatest motor vehicle makers often sponsor or control extensive interurban or rural services, repair stations and garages, or shipping companies finance shipbuilding or ship repair yards, or vice versa. Coal and chemical interests mutually finance coal-tar or other large consumers of their output. The great French departmental stores own or have large interests in undertakings making fabrics of various kinds, under and outer clothing, gloves, footwear, furniture, hardware, etc. : and multiple firms in the food and drink trades proceed similarly as regards many staples in their trade.

An appreciable proportion of the credit facilities for small and medium undertakings may be said to be so derived. New undertakings, and especially those engaged in the newer types of industrial and commercial business (*e.g.*, rayon, gramophone, wireless, cinema, etc.) have naturally tended to be financed rather largely by allied or kindred producing interests that are acquainted with their possibilities.

Division of Labour not Rigid.—The great commercial banks constrained to possess a high degree of liquidity in view of their short-term deposit liabilities, are in the habit of refusing in principle applications for medium or long-term credits, or of

according them only in restricted measure, or perhaps only a mere quota in participation with others; or they refer applications to special organisations for such credit created either by others or by themselves. Rigid separation of the domains of short and medium credit agencies is, however, not possible in practice: neither the greater nor the lesser commercial banks would always be justified in confining themselves exclusively to the former, nor would the 'business' banks proper (*banques d'affaires*), nor the partly business, partly issuing, partly discounting, partly accepting, partly investing, partly fortune-managing, banks avoid the current short-term credit business, which they often have interest in courting. All manner of cross currents, particular development tendencies, connections in specific trades, circumstances in the life history of the particular bank, play their part. Curious contrasts are even noted in certain important cases. In some branches of its activity, or in one section of its territory, a deposit bank may conspicuously finance industry, whilst practically eschewing it elsewhere: a second deposit bank may do little financing business directly, but it may have founded and may strongly support, or be a special collaborator in, affiliated firms conducting mainly such business. Thus important banks of Marseilles, Lyons, Lille, Nancy, Strasbourg, may conduct in their own home area a markedly commercial banking policy, or perhaps a strongly marked financing policy: in Paris their establishments may individually throw the emphasis on the opposite of their provincial bias. Banks of the predominantly 'business' type, which regularly have only one public office, may develop so effectively its deposit, current account, short-term credit, and other banking transactions that they fulfil also fairly completely the preponderant deposit bank functions. The private and the regional banks, numerous, but less numerous than formerly, some of much importance and working with considerable (and often long-term) deposits, are rather apt to do financing of local or regional industry on a substantial scale: the majority, however, could hardly be classed specifically as 'deposit' or 'business' banks. Their industrial credit functions are often considerable, notably as regards localised trades and medium-scale undertakings.

Certain Contrasts with English Commercial and Industrial Banking.—Certain essential differences of a general character between the French and the English economic and banking complexes must be clearly apprehended if the real conditions and atmosphere of French banking and financing are to be grasped. In the first place, in the French scheme of things the agricultural industry predominates, and in that industry the small farming unit predominates, over four-fifths of the holdings being under 25 acres. Half the population lives in rural local units of not more than 2,000 inhabitants. Outside the coal, ore, potash, iron and steel,

heavy engineering, shipbuilding, motor vehicle, chemical, electricity, glass, rayon, rubber tyres and a few other industries, the scale of production is medium or small in comparison with that of Germany, the United States, the United Kingdom, and even Belgium. A large proportion of that production is located in rural areas or in small towns. Outside Paris, only five French towns showed in 1931 a population of *over* 200,000 inhabitants: and only 11 more showed between 100,000 and 200,000: in Great Britain and Ireland outside London, there are 22 of the former and 34 of the latter category. The marked thriftiness of the population, combined with the inevitably more limited effective demand for goods generally in a country predominantly of rural dwellers, gives a relatively low velocity to exchanges of goods and services. The foreign exchanges of goods and services (shipping, foreign bills and credits, insurance, and other foreign interests and activities), which form such a conspicuous element in the economic life of the United Kingdom, are conducted by France in much smaller volume.

English banking has developed a far greater and more rigid division of labour. The five great joint-stock banks with their myriad branches exercise a real and practically exclusive predominance for ordinary commercial and industrial business at home: with their immense sight or short-term funds they tend to adhere rather strictly to short-term operations. Particular lines of credit, credits in special areas of the world, medium or long-term credits, financing for separate trades, industries, services, liabilities, and so forth, they leave to other organisations, merchant bankers, accepting houses, financing firms, finance syndicates, insurance companies, investment or other trusts, groups, company promoters, brokers, jobbers, agents, sleeping partners, or other private capitalists, and divers sorts of firms or companies identified with selected or predominant specialities. The big banks, and other handlers of large funds for usufruct with varying maturities, work closely and intelligently with these numerous classes, which, however, may quite well operate either independently, or perhaps in motley collaboration. The French joint-stock banks, although in recent years they have immensely fortified their position, hold nothing like the same predominance in the economic or in the ordinary banking life of France as a whole. They have far more competitors of great, medium and small dimensions: they do not command the same resources in deposits (though these are advancing fairly rapidly); they work among a population which still uses to a far greater extent than that of England, or of several other Continental countries, the bank-note medium, instead of the order on the bank, for ordinary payments of even substantial amount, and which accordingly is habituated currently to keep in its possession, instead of lodging in banks, far larger sums. They tend also to utilise their savings less by way of deposit at the bank than of investment in securities by small sums at a time (100,

200, 500 francs). The keeping of bank accounts and the cheque operations so familiar in England are much less widespread: even many with deposit accounts may not operate current accounts by regular cheque drawings.

Certain permanent social characteristics also alter in France the general credit and banking problem. The universally keen practice of thrift, the persistently widespread family ownership and family direction of business enterprises, the pronounced strength of family financial solidarity that leads to investment and re-investment in the family factory or warehouse, the close social or group solidarity (witness the marriage customs that strive in the most varied strata of the population for the union of evenly balanced fortunes)—these phenomena influence the general banking conditions in the country. The even distribution of wealth rather than its concentration within a somewhat restricted number, the relative abundance of small capitalists ready to invest locally, to place their deposits at long date in a business, or to become sleeping partners, the notable number of small or great special firms for managing private fortunes—these factors also affect banking activities in a country mainly agricultural, mainly with small holders, and mainly with small and medium enterprises.

Discount System.—An important contrast in general technical banking practice is the universal use of the discount and the re-discounting system, which is now mainly conducted through the big banks, and comparatively little through the smaller banks, bill brokers or discount houses. Bills are drawn for the smallest amounts, even for 5 and 10 francs: in 1931 at the head office of the Bank of France (and the Bank of France handles fewer bills than three or four other joint-stock banks individually) out of 11,163,000 bills, 34,800 were for under 10 francs, 657,900 between 10 and 50 francs, and 1,167,900 between 50 and 100 francs. The effect of this constant automatic recourse to discounting as practised in France is said to relieve firms to a not unimportant degree from the necessity of having much working capital, and to permit the employment, on needs reproductive only after the lapse of a certain period, of available resources that would in the United Kingdom be regarded as indispensable to keep at call for working capital purposes.

Bond Issue System.—Another technical practice, for the purpose of securing medium or long-term credit, which enjoys far greater vogue in France than in the United Kingdom, is the public issue of bonds known as *obligations* by railways and by industrial and commercial undertakings generally. They correspond roughly to debentures, but their market in France is relatively far greater than that of debentures: they form one of the most regular commodities on sale in French banking offices. Their popularity, largely due to the fixity of the interest and to the priority of charge on assets, had waned seriously in the inflation years, but has again improved.

French Credit Institutions having no Counterpart in the United Kingdom.—In France as in other Continental countries (Germany, Holland, Scandinavia, Austria, Hungary, and elsewhere) the need of special organisations for medium and long-term as well as for short-term credit, was recognised and met either in the eighteenth or nineteenth century. Numerous special credit institutions have been founded in France: State or semi-State, provincial, county, municipal, mortgage credit companies of semi-State character, companies with special privileges for particular industrial activities, great industrial or 'business' banks: or existing institutions with other principal objects have adapted themselves to serve at least in part the same purposes. Compared with several other countries (e.g. Germany, Scandinavia), where numerous and prosperous local or county savings banks, more or less at liberty to direct the manner of investment of their funds, employ a certain portion of local savings to promote local industry, France is at a disadvantage: savings deposits must be invested in Government securities or lodged at the central distribution in Paris known as the *Caisse des Dépôts et des Consignations*. A brief account may here be given of certain French credit systems or institutions, having no definite counterpart in the United Kingdom, which fulfil special credit tasks for productive sections of the French community.

(1) *Comprehensive Credit System for Small and Medium Rural Producers.*—The State, at the end of last century, was mainly instrumental in bringing finally into being a system for providing, through co-operative credit societies, short, medium, and long-term credit in moderate amounts for producers, whether agricultural or industrial, in rural areas. At the apex was placed as national central bank the *Caisse Nationale du Crédit Agricole*: attached to it were county central banks, to which in turn were affiliated as shareholders local societies. Early in 1933 the 6,162 local societies, each affiliated to one of the 98 county banks, showed a membership of 540,400. Between 1899 and the end of 1932 no less than 1,354 millions (of which 1,261 were supplied by the Bank of France) were paid under legislative provisions to the *Caisse Nationale* for the financing of the system. No credits are granted directly to individuals or collectivities by the *Caisse*: it operates only through one of the 98 county banks, which allocates funds against due security to the affiliated local societies, which in turn distribute credit, out of their own resources and out of the funds advanced by the county bank, to their affiliated members against the usual security. Up to the war, the bulk of the credits granted were short-term against 90-day bills carrying three signatures, renewable usually two or three times, sometimes up to 18 months. In more recent years the State has encouraged the granting of medium and long-term loans: measures of 1920 and 1929 enjoined upon the *Caisse Nationale* the allocation of certain percentages of their funds to each class. In 1928,

1931 and 1932, three extra State advances of 500 millions each for medium, in 1929 and 1932, two of 250 millions each for long-term, were made to the *Caisse*. By medium-term in this system is understood credit of 3 to 4 years, occasionally up to ten years: long-term up to 15, occasionally up to 25 years. The former is made not only to local landholders, *e.g.*, for the purchase of cattle and machinery, but also to rural small masters of all kinds like saw millers, wood cutters, saddlers and harness makers, smiths, wheelwrights, for outlay on productive purposes and to other producers, *e.g.*, to associations engaged in the stocking, treating, and selling of wheat, wine, sugar, etc., societies for machinery purchase and hiring. Between 1921 and 1931 a total of 75,050 'medium' loans to the value of 1,290 millions had been given, and 510 millions had been repaid: 50,200 long-term loans for 824 million francs were granted, of which 234 millions had been repaid. In 1932 the *Caisse Nationale* approved advances to the affiliated county banks to the value of 608 millions (208, 323, and 77 millions respectively for short, medium and long term).

(2) *The Crédit Foncier*.—The semi-State mortgage bank, entitled *Crédit Foncier de France*, founded in 1852, and with present capital of 500 millions, which is regarded as taking rank after the Bank of France as the second French financial institution, enjoys special privileges as regards the issue of bonds and exemption from certain forms of taxation. The bulk of its business relates to urban mortgages and to its functions of chief agent of issue of municipal, county and other public authority loans. It lends on first mortgage up to half the valuation of the property. It maintains a network of representatives throughout France. As its regulations require that its mortgage loans should be granted only on real property with a durable and certain annual return, it is not probable that factory buildings made for the needs of a definite form of production are readily mortgageable in its eyes, but no doubt mines and other industrial assets of stable revenue would form suitable basis for loans. In recent years legislation has authorised the *Crédit Foncier* to finance shipbuilding (see below).

(3) *The Crédit National*.—In 1919 was created this special organisation (capital 100 millions) for the purpose of effecting the vast volume of financial settlements for which the State was liable for the compensation of French war sufferers. In recent years it has been authorised to grant to French manufacturers and merchants loans "destined to facilitate the creation, development, or starting of industrial and commercial undertakings belonging to French nationals and situated in France, Algeria, Colonies, Protectorates, or countries under French Mandate." These loans, which may be granted for periods of from 3 to 10 years, must not exceed 5 millions in the case of any one borrower, and must be guaranteed by first mortgage, or joint and several guarantees or securities, and as complementary security, the goodwill of the undertaking. In 1931-1933 the interest rates were from 6½ to 6¾

per cent. Its business in this respect has reached about 1,400 to 1,500 million francs. The loan committee of 45 members, highly representative of the chief industries and trades, gives monthly decisions which in recent times cover usually 25 millions. It is proposed to develop this branch of the activity of the *Crédit National* by authorising higher individual loans than 5 millions and to obtain the remaining resources by public issues under its aegis.

(4) *French National Bank for Foreign Trade*.—(Banque Nationale Française du Commerce Extérieur). In France, as in some other countries, there had developed both for some years before and during the war a rather widespread and persistent advocacy, somewhat vague, however, as to aims and possibilities of achievement, of the creation of great banking organisations, even of national organisations, that would specialise in some of the financial domains of foreign trade and would render services to the industries of the nations concerned that were working with colonial and foreign markets. This movement assumed considerable importance in France immediately after the war, as it was felt that certain other countries were better provided with their own overseas banking facilities and connections. Under the direct impulsion of the Ministry for Commerce the Bank was founded in 1920, a law of the previous October having approved the contracts regulating its relations with the State. Its capital is 75 millions, of which two-thirds is fully paid: for the first five financial years it received a subvention of 2 millions a year from the State, and it apparently still enjoys from the same source the use, free of interest, of 25 million francs. Its chairman and its managing director must be approved by the State, which also nominates two representatives on its board. About one-twelfth of its share capital was reserved for subscription by the large banks: on its board are representatives of the Bank of France, *Crédit Lyonnais*, *Comptoir d'Escompte*, *Société Générale*, *Banque de Paris et des Pays-Bas*, *Lehideux, de Neufville*, *Compagnie Parisienne de Réescompte* (apart from representatives of various industrial and commercial interests). The Bank is debarred from establishing branches in French towns without first seeking an arrangement with banks already existing therein, and without securing the approval of the two Government directors thereto. At the present time it has offices in Paris, Bordeaux, Havre, Lyons, Marseilles, Mazamet, and Roubaix: it has correspondents in the French colonies and in foreign countries.

It is prepared to do all normal banking business, especially in the Colonies and abroad, but it appears especially to lay stress on the discounting and collection of foreign bills, advances on colonial and foreign commercial bills with medium and long-term maturities, mobilisation of claims on foreign Governments or public authorities which have been insured under the French exports credits guarantee system, and on providing guarantees

to foreign public authorities in relation to French firms. Since 1932 it has co-operated with the Paris Chamber of Commerce in the eight clearing-house schemes for commercial credits and debts established between France and Austria, Bulgaria, Chile, Esthonia, Greece, Hungary, Latvia and Yugo-Slavia, in that it has assisted in securing the mobilisation of credits approved by the Paris Clearing House. It has also co-operated as regards the 'payment' agreements signed by France with Germany, Brazil, Colombia and Czechoslovakia. It anticipates further foreign business in connection with the extension of the export credits guarantee system, whereby the French State guarantee will not be confined to orders for French goods for foreign public authorities, but will cover work or services to be effected in the importing country.

The acceptance business of the Bank has not reached the anticipated volume: end of 1932, 110 millions against 184 millions a year earlier. The Bank is generally deemed to have rendered especially considerable services since its foundation by its advances on bills which it extended beyond normal maturity (*e.g.*, to 12 or 18 months).

At the request of the State, the French National Bank for Foreign Commerce established and developed a very important economic intelligence department, which at present possesses and keeps up to date 500,000 files. It publishes a monthly bulletin of special articles and of general information relating to general questions concerning home and foreign trade.

(5) *Crédit Maritime*.—Special credit facilities have been instituted for the benefit of the French shipping and shipbuilding industry by the Maritime Credit laws of 1928-31. The *Crédit Foncier* is authorised to grant French shipowners "short" and long loans for maximum periods of six and 20 years respectively, secured on ships built or being built, the total loans in any one year not to exceed 250 millions, and all outstanding loans at any period not to exceed 1,250 millions. The bank is authorised to issue debentures or maritime mortgage bonds up to the value of the loans granted. Loans are limited to 50 per cent. of the value of the ship pledged, unless collateral is furnished, when the maximum is 84 per cent.; and one-quarter of the building of a ship must be completed before any loan can be considered. Loans on foreign-built ships are authorised only when the ship, clear of all claims, has been registered as French. The interest which is .8 per cent. higher than that on the bonds issued by the *Crédit Foncier* to cover the loan, is shared between the borrower and the State, with a minimum of 3 per cent. and 2 per cent. for the borrower in the case respectively of passenger and cargo boats. The basis of this scheme is the utilisation both of the long-established prestige for bond issues of the *Crédit Foncier* in the French money market and of the institution by the State of low interest rates for shipping and shipbuilding.

(6) *Crédit Hôtelier*.—One of the most prominent French industries, by virtue of the capital and of the number of persons employed therein, is the hotel industry. In order to promote the tourist industry, which has been of the highest importance to the French economy, by the modernisation of old and the construction of new hotels, the *Crédit Hôtelier* was constituted by a law in 1923 as a co-operative society with a capital of 5 millions and an endowment of 13 millions for long-term credit purposes. Loans which are not to exceed 12 years, are to be fully guaranteed by mortgage charges and other liens. In the first seven years of its working its loans to hotels totalled 60 millions and enabled the construction or betterment of 18,000 rooms. Funds were obtained by the issue of debentures (*obligations*) by the *Crédit Hôtelier*: the capital and endowment are really destined to serve as guarantee for the interest of the debentures.

(7) *Banques Populaires*.—In 1917 the State created and endowed a system of co-operative short-term credit societies of merchants, manufacturers, artisans, trading and industrial companies, to be called *Banques populaires*, which were to have as exclusive object the acceptance and endorsement of bills and similar credit instruments, created, signed, or endorsed by members of a *banque populaire* and relating to business operations. The scheme, which aimed at supplying short-term facilities to small and medium merchants and manufacturers, was at first provided with an advance of 18 millions by the State. Each society was eligible to obtain from the State double its paid-up capital for a period of not over 5 years but renewable. The savings banks, normally obliged to invest their funds with the State *Caisse des Dépôts et des Consignations* in Paris, were authorised to lend money to the local *banque populaire*. A somewhat similar organisation to that in operation for the 6,000 rural credit societies was then instituted: all *banques populaires* are bound to belong to a central federation in Paris, created by law of July, 1929, which controls the operations of the individual banks and acts as distributor of State advances. In 1933 there were 95 banks of this type, usually established in the chief towns of each French county: to these are affiliated in all about 500 branches or an average of about five per *banque populaire*.

(8) *Crédit Artisanat* (or for Craft-workers).—Under the definition of the competent committee, those eligible to receive loans under the *Crédit Artisanat* Law of December, 1923, are workers of either sex exercising a trade in an independent manner, effecting themselves the manual work of their trade, and employing besides members of their family, at most two persons (or three, if one is an apprentice). Craftsmen as so defined are eligible to obtain loans for a maximum period of 5 years through a co-operative society of manual workers, or through a federation of such societies, or through a *banque populaire*, for the creation,

fitting-up or whole or partial refitment of a small undertaking, or for buying machinery or raw materials, within the limits just indicated. Repayment by annuities, and guarantees by a co-operative society of the *banque populaire* type, are required. The societies obtain their funds for lending at low rates from the central organisation which controls the State endowment (in 1923, 2 millions) and the other annual sums varying in amount already accruing to the State, under convention, from the operations of the Bank of France.

(9) *Colonial Banks*.—In Paris is also established for individual parts of the French colonial empire a series of special banks which have no counterpart in the British system, and which are in many cases in a position to provide considerable credit facilities to French industry and commerce in their colonial activities. Eight of these banks have the exclusive power to issue notes for their respective territories, namely, the three greater Banks of Algeria, of Indo-China, and of West Africa, as well as those more specifically known as "colonial banks," those of Madagascar, Guadeloupe, Guiana, Martinique and Reunion: all, save the Bank of Indo-China, issue their notes in francs. The international Bank of the State of Morocco has its headquarters in Paris, as has the Bank of Syria and of the Grand Lebanon, which is the successor to the Imperial Ottoman Bank in the territories in Asia Minor now under French mandate.

These eight French 'colonial' banks, which are limited liability companies, and which have in several cases been established by the large French banks, joint-stock, business, or private, are subject to considerable State supervision, whilst they usually have Government representatives on their individual boards. In some cases (e.g. Algeria, Indo-China) the president or managing director, assistant managing director, perhaps two or three directors, and auditors are appointed by presidential decree or otherwise by the State. The Banks of Indo-China, Algeria, West Africa and Madagascar, which have their head offices in Paris, have numerous branches in their respective areas. These colonial banks undertake ordinary banking business: discount bills, make short-term advances on native crops, on exports and on imports. They often support with medium-term credits both old and new undertakings, whether agricultural, mining, industrial or commercial, and even assist their foundation in this manner or by actual participations. Thus the development of the staple colonial productions has been much promoted by their agency: e.g., rubber, rice, tea, in Indo-China; wine and wheat in Algeria; groundnuts in West Africa; coffee, plumbago and other products in Madagascar; sugar and rum in the Antilles. They have likewise been the main instruments in the mobilisation of many credit facilities of various kinds for the development both of the public utilities services and of the

general industrial, commercial and maritime interests of their area. Often owing their establishment to the action of important banking or business interests in France, connected, for various reasons of control and of arrangement, in an especially intimate manner with the State, they have maintained their close relations with their powerful founders and supervisor; and they have thus served as admirable links for the development of credit facilities for production purposes for the advantage of the inter-related economic control and arrangement, in an especially intimate manner with groups in the home country and in the respective overseas territories.

INSET

ECONOMIC LEGISLATION

Changes in Company Law.—By a law of the 1st May, 1930, general meetings of the shareholders of joint-stock companies, which are held to alter the object or form of the company, must represent at least three-quarters of the share capital. The resolutions carried at such meetings, which may make any amendments in the statutes but may not alter the nationality of the company, must be supported by at least two-thirds of the shareholders present or represented.

Company Law.—(Shares with plural voting powers).—The practice of issuing shares carrying plural voting powers appears to have been introduced into France in 1911 and in recent years had spread to such an extent that in 1929 it was estimated that out of 775 companies, whose shares were quoted on the Paris Stock Exchange, 183 or 23.5 per cent. had issued shares of the kind. In spite of arguments in defence of the practice, such as that it prevented a group of speculative financiers from obtaining control of a company, it was generally considered that it had led to abuse and by a law of the 26th April, 1930, the issue of plural voting shares was forbidden henceforth. Further, the law of the 1st May, 1930, provided that at general meetings called to amend the articles of association of a company, each shareholder should have as many votes as he held shares and that without any limit, unless a limit was prescribed in the statutes provided that such limit was the same for all shares, if several kinds of shares had been issued. Since these two enactments did not completely settle the question, a third proposal was passed and became law on the 13th November, 1933, which provides that within two years of its promulgation all shares shall carry voting powers proportional to the capital which they represent. Voting powers double those given to bearer shares in consideration of the amount of capital repre-

sented by them may, however, be given either by the articles of association to registered shares fully paid-up from the origin or by the articles or a later extraordinary general meeting to all paid-up shares which are proved to have been registered in the name of the same shareholder for at least two years, subject to statutory provisions relating to shareholders of foreign nationality. This double voting power shall cease to have effect, all contrary stipulations notwithstanding, in the case of any share that has been converted to a bearer share or been transferred, except in the case of a share passing by intestate succession or will or the division of property between husband and wife.

Founders' Shares in Joint-Stock Companies.—Until the promulgation of a law of the 23rd January, 1929, founders' shares, which have been defined as "securities, usually negotiable, giving the right to a share in the profits without forming part of the capital of the company or entitling their holders to an interference in its management," were not recognised as legal by any legislative enactment, although they had been in use before the Joint-Stock Company Law of July, 1867, and their validity was no longer seriously challenged. The new law formally affirms the validity of founders' shares. They form no part of the capital of the company and do not confer on their holder the status of a partner, but they may be remunerated by a fixed or graduated share in the profits. Holders of founders' shares are entitled to combine for the defence of their interests either on their own initiative or on that of the company.

Supervision of Combines.—A Government Bill tabled in March, 1932, dealt with commercial and industrial agreements or understandings, which for the purposes of the proposal are defined as "any understanding, convention or collective decision, concluded or brought about, whatever be its form, between industrialists or traders with the object of subjecting to common regulation the whole or part of their industrial or trading activity." Under article 2 of the Bill any such understanding may be declared at the Ministry of Commerce, who will keep a register, showing the object and duration of the understanding, as well as the names, addresses, occupations and nationalities of the participants. Any subsequent changes must be notified under penalty of a fine. It is explained in the preamble that to make the declaration compulsory would be useless in most cases, and in any event would be materially impossible. It would be useless because a very large number of understandings are of so little importance and concluded for so short a time that they are of no importance to public order. Again, a law making the declaration compulsory in all cases could not be enforced and would, therefore, remain a dead letter. The essential feature of the Bill is the institution of an advisory committee, composed of 29 members, who are to include representatives of the Council of State, the "Cour

de Cassation," the Commercial Legislation Committee at the Ministry for Commerce, the Government departments concerned, as well as industrial and commercial associations, the last twelve in number. The committee is to give its opinion on any question submitted to it by the Ministry for Commerce or Justice. It may proceed to any investigations it thinks necessary and receive written or oral evidence. Any person refusing to reply to questions, put by the committee or to appear before it, when summoned, is to be liable to a fine of 16 to 500 francs and, if the offence is repeated, to a term of imprisonment of from six days to one month. At present article 419 of the Penal Code, though rarely applied, gives the authorities power to prosecute any traders or industrialists who, by fraudulent manoeuvres, abusive action and the like, have caused a rise or fall in the price of commodities or goods other than would have occurred through the free play of supply and demand. The Bill provides, in article 10, that if there has been a breach of article 419 of the Penal Code on the part of one or more participants in an understanding registered at the Ministry for Commerce under article 2, proceedings are only to be taken by the Public Prosecutor, who, before doing so, may ask for the opinion of the advisory committee.

Patents.—A Bill which completely recasts the Act of 1844 regarding patents was passed for the first time by the Chamber of Deputies in 1927, by the Senate, with amendments in 1928, and again by the Chamber of Deputies in June, 1931, but has not been debated a second time by the Senate. It raises the period for which a patent is valid from fifteen to twenty years. The rights of an inventor who is in the employ of another person are expressly safeguarded. The invention is his own property, unless it falls within the very object of his labour contract or is the direct result of the work allotted to him. In that case it is the joint property of the employer and the employee. In order to protect an inventor's moral interests, the Bill provides that a patent may only be applied for by the inventor himself or his heirs or assigns in case of death. It requires a declaration to this effect and prohibits the cession of an invention before the patent is taken out. The Bill changes the existing regulations regarding loss of rights. Under the law of 1844 the patentee lost his rights if he failed to pay the annual fee punctually, if he did not work the patent within the prescribed period or if he improved articles similar to those covered by the patent. The new Bill only retains the first and third of these reasons, although the third was rarely enforced on account of international conventions. The annual fee is suppressed and the total fee charged on an inventor who applies for a patent is a single payment of 1,000 francs.

Marks of Origin.—A law of the 11th January, 1892, prohibited the importation, warehousing, transit and circulation of foreign products bearing a trade-mark, name, sign or any indication of a nature to induce the belief that they had been made in France or were of French origin. This enactment was completed by a law of the 26th March, 1930, which imposes penalties on any person who places or knowingly uses on natural or manufactured products held or transported with a view to sale, offered for sale or sold, or on packing, cases, bales, wrappings, wrappers, labels, etc., a trade-mark, name, sign, or any indication of a nature, if the products are foreign, to give rise to the belief that they have been made in France or are of French origin, and, in any case, to give rise to the belief that they have an origin different from their true origin, whether French or foreign. Penalties are not, however, to be applied if the product bears an indication of the real origin in clear characters, unless the false indication is a regional appellation protected in France by the Law of May 6th, 1919. So far as French products are concerned, the firm name, name and address of the seller do not necessarily constitute an indication of origin. The law also lays down penalties for false indications of origin in advertisements, circulars, invoices, etc. The law applies to Algeria and French colonies as well as to France itself.

A later law of the 20th April, 1932, empowered the Government to make it compulsory by administrative orders for foreign products imported into France to bear marks of origin. Since March, 1933, a series of orders have been issued to apply the law to a large number of different classes of goods, including porcelain, footwear, hosiery, clothing, fabric gloves, cutlery, butter, eggs and fruit, stationery and office requisites, jute goods, fabrics and cloth, fancy jewellery, and others. The mark of origin requirements do not apply to transactions which are not of a commercial character and, in particular, to presents from abroad to private persons.

Commercial Arbitration.—The insertion of arbitration clauses in commercial contracts, which had been declared invalid by judgments of the Court of Appeal in 1843 and 1844, was legalised by a law of the 31st December, 1925, whereby the Commercial Code was amended to the effect that in the case of contracts coming within the cognizance of the French commercial courts, the parties at the time of making their contracts might agree to refer any disputes to arbitration. In order to complete the law of 1925 a private Bill has been passed by the Chamber of Deputies, which provides that a defaulting trader, who has signed the arbitration clause, shall be invited by registered letter to name his arbitrator within five days. If he fails to do so within this period, a judgment will be taken against him and the president of the Tribunal of Commerce is to name an arbitrator. The reason for the Bill is stated to be that the arbitration clause has given rise

to divergent interpretations in the courts. Agreements signed between private parties did not necessarily contain reference to organisations to settle any dispute that might arise. Many signed contracts contained a clause relating to arbitration but the clause did not specify how the arbitrators were to be chosen. In order to overcome this difficulty, the Paris Court of Arbitration inserts in its contracts a clause by which, if the defendant has not named his arbitrators within five days, the president shall appoint one *ex-officio*.

A steadily increasing number of commercial disputes interesting parties of different nationalities has been brought before the arbitration court in Paris of the International Chamber of Commerce. Up to the 27th February, 1934, when 32 cases were pending, 599 disputes had been submitted for settlement under the Chamber's rules of conciliation and arbitration, of which 269 were settled, viz., 62 by arbitration, 81 by conciliation and 116 by agreement, 3 by arbitration of another organisation as the result of the Chamber's action and 7 by the appointment of an umpire by the Chamber, while 298 cases had to be dropped, nearly all of which concerned contracts that did not contain the arbitration clause, the defendant declining to submit to conciliation or arbitration. The number of cases submitted by French plaintiffs is noteworthy, viz., 273, while in 150 cases the defendants were of French nationality. United Kingdom plaintiffs numbered 37 and defendants 69.

CHAPTER IX.—FINAL REVIEW

I. GENERAL

1. ECONOMIC SITUATION

France appears to have recovered internal stability and to have entered into a period of incipient economic convalescence as the result of the effective grappling, in March and April, 1934, with the all-dominating problem of the disordered public finances and of the ever more menacing budget deficits. The life of the country had been ravaged by financial disquietude during these very three or four years when the collapse of world prices and of general purchasing power, the disablement of several foreign exchanges, higher tariffs, quotas either for commodities or for foreign payments, and sundry other impediments, were playing havoc with her home and foreign markets. The restoration of the abounding prosperity of the years 1922-30 and notably of 1928-30, which is related in this Report, cannot, of course, be anticipated at an early date. Its intensity was probably due in large measure to the co-operation of certain particular and temporary causes, which may not readily co-exist at another period in the near future: to depreciation of the French currency in relation to those of principal customers such as the United Kingdom, the United States of America, Germany, and others; to the phenomenal inflation of credit facilities in North and South America and elsewhere; to consequential abnormal demand for the 'luxury' or semi-luxury goods, of which France is the chief purveyor, such as silk, laces, fine under and outer clothing, jewellery, perfumes, wines, spirits; to the efficiency both of the modern industrial equipment installed throughout French industry as a consequence of war devastation and of the modern French business spirit and organisation for foreign trade; and, not least, to the immense yields of the invisible export trade from the inflow of nearly two million foreign visitors a year.

The rampant economic nationalism, which has waxed in intensity throughout the world since the universal depression set in and has brought in its train greater industrial capacity in certain industries in the case of many nations, as well as the present phase of almost universal impoverishment, must tend to retard the expansion of exports of a goodly proportion of what are distinctively French products. In France, as in many other advanced industrial countries, there has developed since the war a complete disproportion between national production capacity and national consumption: it has probably been far more marked in France than elsewhere, owing to the immense reconstruction, sometimes of almost whole industries, after war destruction. It is manifest in several im-

portant industries. The metallurgical, engineering, woollen, silk, cotton, chemicals, and others, must export a large proportion of their output in order to live. About 40 per cent. of her iron and steel output, nearly half of her woollen and silks, must, for instance, be exported if the present scale of their industries is to be maintained: before the war, not 10 per cent. of French iron and steel output was exported. A parallel development having ensued in most countries, French producers tend to assume that, in the future, foreign markets for the ordinary commodities in general demand are likely to shrink substantially, for the present industrial nations of Europe, and that reliance must mainly be placed on the home and colonial markets.

Perhaps the most important economic problem to be faced is the practical adjustment of a policy of strong protection for agriculture, so that the present high cost of living is not prolonged indefinitely to the detriment of the industrial producers. The latter have found, apart from other impediments, that the sale of their products in foreign markets was rendered extremely difficult by the high cost of production in France; and in fact French exports have declined in some cases to mere fractions of their value in the years 1928-30. The Government, which is fully alive to the importance of the problem, has endeavoured to conciliate the opposing interests by measures, both direct and indirect, that should lead gradually to a reduction in prices. The substantial reduction of internal costs will probably necessitate the lapse of certain time, and will go hand in hand with the success of the deflation policy under the maintenance of the present statutory franc.

The general economic situation in France is ruled, to all intents and purposes, by the comprehensive quota system and by the reinforced import charges of various kinds. Practically all agricultural products of any consequence, as well as fish, have been subjected to the quota system, save wheat, on which, however, a duty of 80 francs per 110 lbs. (i.e., with sterling at 80 francs, over twopence a lb.) has been levied for several years: in many cases both quotas, higher duties, or import licence fees may be simultaneously operative. It has been estimated that approximately 3,000 out of about 7,000 tariff items are subject to quota, of which about two-thirds are manufactures. The quota policy has been adopted on the ground that mere tariffs would fail to protect the French market against goods from countries with highly depreciated currencies, or foreign goods sold irrespective of cost of production, and that the massive imports of goods competing with French products and sold at very low prices would completely ruin the French manufacturer by forcing upon him abruptly, if he wished to sell, prices lower than his cost of production. Full account is given elsewhere of the working of the system and of its effects on the cost of living and on the cost of production. It suffices in this place to refer both to its widespread

and penetrating influence on the general internal situation in France, and to the very serious restrictions it places on the maintenance of the normal export trade to France in the quota-ed products. The establishment of a quota implies the impossibility of expansion and the vanity of enterprise on the part of the exporter.

Economic revival has not yet made its appearance in the world, nor in France. In the latter, the year 1932 was probably the worst: in most industries, 1933 and the early months of 1934 have shown superior results. The general index figure (1913 = 100) for industrial activity for the first quarter of 1934 gives 106, compared with 127 for 1928. The following shows the index figures for a few important activities:

	1928	1932	1934 1st quarter
General Industrial activity ...	127	96	106
Metallurgy	125	72	79
Engineering	138	96	101
Textiles	99	60	75
Building	97	100	87

The railways show for the first 18 weeks of 1934 (to May 6th) a reduction in passenger receipts by 3.43 per cent., compared with the same period of 1933, despite an increase in fares since November, 1933; the number of trucks loaded in the same period was 292,000, against 322,000 (—9.13 per cent.)

Among the centres or regions reported to be still suffering severely from the crisis are: the Lyons and St. Etienne areas, silks and ribbons; Lille-Roubaix-Tourcoing, woollens, linens, cottons; Calais and Caudry, laces and embroideries; Bordeaux, wines, pit-props; Limoges, porcelain; Lorraine and the East, iron and steel; Brittany, agricultural products; the Jura, scientific instruments, pipes, etc. All the sea-ports are suffering profoundly from the crisis. The shipbuilding yards generally, and the engineering shops of various kinds throughout France have been much affected since 1931. The Paris region, the Riviera from Toulon to the Italian frontier, and the Biarritz region from Bayonne to the Spanish frontier, have been disastrously affected, the hotels and the very numerous trades that minister to the foreign visitor having been sorely tried for the last three years.

II. COST OF LIVING

The problem of the relatively high cost of living, which in its manifold repercussions has profoundly influenced the general internal situation and the export trade for the last three years, has become of quite supreme importance at the present juncture. The National Government, on the one hand, has embarked on a comprehensive and vigorous policy of deflation—one manifestation alone of this policy has directly and immediately affected the purchasing power of about 1,300,000 State and railway servants.

Producers, already burdened with very heavy taxation and interest rates, and practically debarred from adjusting wages, the principal element in their cost of production, do not perceive any way of salvation except through a lowering of the cost of living. In foreign trade, which for a series of French industries employing large masses of workers (e.g. agriculture, silk, rayon, woollen, cotton, outer and under clothing, iron and steel, engineering, articles de Paris, chemicals, perfumery, etc.) had become of increased and essential moment, as a consequence of their equipment capacity and output having largely exceeded home requirements, the high prices for French products, when expressed in the depreciated currencies of several countries normally constituting major markets, have added another severe handicap for exporters already harassed by the numerous and ever mounting or reinforced artificial barriers.

Retail prices for the chief necessities have remained high, notwithstanding the deep depression in industry and commerce since early in 1931, and the marked fall in wholesale prices. The general index number of the latter, since the panic period in 1926, when in July it reached the height of 854, moved downwards to 600 in October, 1927; and, although a subsequent upward movement culminated in March, 1929, at 653, the index had declined to 389 in December, 1933, and to 380 and 378 in March and April, 1934. Retail prices, on the other hand, had continued to rise after the stabilisation in June, 1928; for three years monthly returns were higher than in that month. The average index figures (1914=100) for the years 1928-33 were respectively 549, 611, 614, 611, 536, and 490. In December, 1933, March and April, 1934, the index figures were 514, 491 and 481. For a working-class family of father, mother and two young children the cost of living index figure, which covers expenditure on food (60 per cent. in the computation), heating and light (5 per cent.), rent (10 per cent.), clothing (15 per cent.), and miscellaneous (10 per cent.), also failed absolutely to manifest any concordance with the drop in wholesale prices, and in 1929-34 was higher than in 1926-28, the respective averages (1914=100) having been in 1926-33, 505, 514, 519, 556, 581, 569, 526, 520, and 526 (first quarter of 1934). For the last quarter of 1933, food was 548, heating and lighting 613, rent 375, clothing 504, and miscellaneous (transport, newspapers, etc.) 580; and, for the first quarter of 1934, food still showed 548.

Retail prices for many principal necessities are certainly far higher than in Great Britain, as may be observed from the following short list of predominant prices for the ordinary qualities in the French capital in January, 1934:—

	£	s.	d.
Beef (steak) per lb.	2	11	
Mutton (neck chops)	3	0	
Pork (chops)	2	2	
Lard	1	4	
Veal (chops)	2s. 9d.	to	3s. 0d.
Ham (cooked)	4s. 3d.	to	4s. 6d.
Bacon (narrow streaky)	3	0	
Eggs (fresh) each			3.2
Milk (not delivered) per quart			5.4
Butter (medium table quality) per lb.	2	6	
" (for cooking)	2	2.8	
Potatoes			1.4
Sugar			5.4
Rice			5.4
Coffee	2s. 6d.	to	3s. 0d.
Tea, Ceylon (proprietary brand packets)			10 0
" " (locally blended)	5s. 0d.	to	6s. 0d.
Coal, kitchen (by the ton) per ton	4	12	0
" " (by the cwt.)	4	18	0
Gas per cu. ft.			0.11
Electricity per k.w.h.			5.86

(Sterling taken at Fcs. 81.28.)

It may be noted that in France the margin of difference between the cost of inferior and superior parts of meat is not strongly marked. The above meat quotations, which do not include delivery, relate to home-grown meat, high customs duties and quotas permitting the entry of only quite negligible quantities of frozen, chilled or prepared meats. Prices are much affected by these measures in favour of cattle breeders, but the latter complain bitterly that prices both at the fairs and at the wholesale cattle markets are only between 30 and 40 per cent. of the retail prices for whose exorbitant levels they are apt to incur the odium. Bread prices are mainly due both to the customs duty on wheat, which is Fcs. 80 per 110 lb. (or 2.14 pence per lb.) and therefore far more than the world quotation during the last couple of years, and to the fixation of the wheat price by law in 1933 (at first at Fcs. 115 per 110 lb. but apparently at nearly Fcs. 130 since the early months of 1934). Not only is butter liable to the heavy import duty of Fcs. 750 for 220 lb. (or over 10d. per lb.), but it is also subject to quota. Sugar, which is produced at home in excess of French consumption, bears heavy internal duties. Coffee is subject to various import charges, as is tea: on both, the charges have recently been considerably increased. Tea now pays Fcs. 775 per 220lb. as customs duty, Fcs.240 as internal duty, and 7 per cent. *ad valorem* as import tax calculated on c.i.f. plus customs and internal duty; and raw coffee pays, on the same quantity, Fcs. 231.20 as customs duty, Fcs. 180 internal duty, Fcs. 10 special duty and 8 per cent. as "single tax" in replacement of the cumulative business turnover tax.

The vast bulk of wage-earners and other salaried workers in

Paris have been for some time paying at the rate of nearly 100/- a ton for ordinary fuel, for, the flats in which they mostly reside not providing much storage space, they perforce purchase only a few hundredweight at a time. The margin between coal prices at ports, including insurance and freight, and the retail prices, has always appeared to consumers to be unduly high: thus, foreign domestic free-burning coals at ports appear to range from 80 to 110 francs a ton, yet are sold retail tonwise, at about 250 to 280 francs in the chief ports of entry and at about 350 to 380 francs in the Paris area. Summer (May-September) prices are lower by 20 francs a ton.

The high levels of internal prices for the above and for other commodities are of course due to multifarious causes both general and particular. The maintenance of the gold standard is liable at once to render prices relatively higher in comparison with those of the now numerous countries with depreciated and non-stabilised currencies. High taxation, direct and indirect, is apt to produce most penetrating effects on prices of commodities at various stages of their production and distribution: thus, the turnover tax, which levies 2 per cent. *ad valorem* on each sale transaction, may have a cumulative incidence of 6, 8, 10, 12 or more per cent. on commodities in their final form, the levy being operated on each transfer by sale (e.g. on a textile fabric it may have successfully fallen on the raw material, yarn, the bleached, dyed, finished fabric, in its sale to wholesaler, to retailer, to consumer). The action and reaction on prices of the normal forces of supply and demand cannot fail to be greatly affected if not arrested, by the workings of a managed economy. Customs, excise, and analogous imposts, quotas, price fixing either by public authority or by formal or tacit arrangements covering substantial branches of industry or commerce (e.g. coal, gas, petrol, alcohol, electricity, iron and steel, aluminium, tinplate, chemicals, building materials, wheat, bread, milk, butter, sugar, railway fares and freight rates, credit and banking conditions, etc.) are among the factors that play their full part in creating and maintaining more or less artificial price levels. Under normal conditions, and under the assumption of certain usual restraints on the operation of free exchanges, retail commodity prices should have fallen heavily as a consequence of the severe and prolonged economic depression since 1931, and because of the abundance of home harvests and manufactures, and of the cheapness of foreign commodities resulting from the almost universal collapse of prices. The tendencies towards lower prices in the French market were effectively counteracted by the reinforced customs duties and other new charges with analogous incidence, by an import quota system covering most important foods and manufactures and by prices fixation for many very important commodities, either by the public authority or by organised trade. Dealers were inevitably prompt to take into their reckoning in regulating sale prices the full margin of protection afforded not

only by the positive customs or other duties, but also by the stinting of the supplies on the market.

In the prevailing conditions, this vital problem of the reduction of prices is beset with difficulty. The depressed state of agriculture, successive abundant harvests and the serious diminution in agricultural exports having brought most prices to very low levels, the powerful influence of the calling in Parliament, its importance for national defence considerations, are among the reasons that may well retard at least any large-scale removal or alleviation of the reinforced duties or import quotas as regards agricultural products. The even more marked depression of most important industries is likely to prolong the maintenance of the similar special protection accorded to manufacturers: since the advent of the National Government in February, 1934, several additions to the previous protective measures have been actually put into force. That Government, however, which has proclaimed its determination to safeguard at all costs the present gold franc, has definitely embarked on a positive policy of deflation as regards both its own liabilities and prices generally. It has charged a strong Cabinet Committee with the special task of promoting that policy in respect especially of foods (wheat, flour, bread, meat, dairy products, vegetables, potatoes, fruit), and has in view very early legislation, if not for the recasting, at least for the considerable reform, of the taxation system.

Under governmental inspiration and impulse, indirect action and influence towards the lowering of prices of necessities and of the cost of production are to be exercised as vigorously as possible in many directions. The prosecution of the already ordained curtailment of the cost of the State machinery itself and of the retrenchment in State expenditure and public assistance of various kinds are calculated gradually to affect the cost of living and to yield effective relief to the producing classes. Economic activity should profit by the proposed widening of the bases of direct taxation, whose burden is now shouldered mainly by industry and commerce. Thus, three-quarters of the *general* income tax yield is alleged to be now provided by three per cent. of those subjected thereto; and in 1932, although the active or "occupied" population exceeded 20 millions, only two million persons in all were registered as general income tax payers. To the special income tax (*impôt cédulaire*), which is separate and is levied at different rates on income as derived either (1) from agriculture, (2) from employment as wage or salary earner, (3) from the liberal professions, (4) from commercial or industrial profits, or (5) from interest on investments, were subjected in 1932 only 2½ per cent., or 130,000, of the 5.3 million land holders and independent land workers, as having an earned income of over 2,500 francs. Only 14% of the 1,971,000 wages and salary earners as being assessed at over 10,000 francs a year, paid this tax; only 35% of the 210,000 persons in the liberal professions as being assessed at over 10,000

francs, and only 29% of the 2.4 million heads of industrial and commercial undertakings on the score of profits. As to the fifth category, the tax on interest from securities, being levied by the paying bank, is fully discharged. The Government apparently contemplate the practicability of bringing larger percentages within the scope both of the general and of the special income taxes, and of reducing the number and degree of exemption on medium incomes, so as to distribute more equitably the burden, and somewhat relieve the heavy incidence upon the more considerable industrial and commercial undertakings.

As regards the cheapening of interest rates as an aid to reduced cost of living, the increasing return of confidence has enabled the Government to give an important lead by reducing by $\frac{1}{2}$ per cent. on May 18th the interest on National Defence Bonds and Treasury Bonds. In 1933, it relieved the railways of certain heavy taxation: their financial administrative and technical re-organisation, now being undertaken, has the ultimate aim of reducing fares and freight rates and of providing more effective co-operation of rail and motor transport. The improvement of inland navigation facilities is being considered with the same object of reducing transport costs for heavy commodities. A definite investigation has been instituted into the question of the alleged excessive margin between the cost of certain necessaries, such as foods and fuel, at the farm or mine and at the retailers'. The Minister of Public Works secured, in May, 1934, a reduction of about 5% over and above the usual "summer price" reduction about the same percentage, on the prices of various domestic coals (e.g., best quality semi-fat from 450 to 400 francs the metric ton, Belgian anthracite from 475 to 425 francs, German anthracite from 490 to 435 francs). Arrangements have also been made by the Government with the producers for the reduction in the price of certain fertilisers (8% for potassic, 6% for superphosphates and nitrogenous). The charges for electricity, based on an index figure which applies to over 30,000 localities, are expected to be lowered shortly, and gas works will no doubt be urged to follow suit.

The cumulative effect of these and other efforts to reduce costs are bound to be considerable. Downward tendencies will be strengthened by the recent contraction of the purchasing power of the 1,300,000 State and railway servants, which had not hitherto been affected by the crisis, and by the reduction in the wages and purchasing power of other workers. Much will depend on the harvest of 1934: if abundant, the stocks, especially of wheat, will be so overflowing, when added to the remains of other harvests, that not only lack of the necessary storage resources, but also the price levels, may precipitate a prices collapse, and render unavailing or inoperative the legislative fixing of the wheat price (which now stands at 130 francs).

III. WAGES.

Although a certain tendency towards lower wages rates since 1931 is to be observed, it had not yet attained marked proportions in the spring of 1934. In October, 1933, the average index figure of daily wages for 23 masculine occupations in the Paris region remained the same as in the previous year (625), while that for 43 masculine occupations in the provinces showed a fall of 2.5 per cent. (688 as compared with 706). Compared with 1930 and 1931, these 1933 index figures corresponded to declines ranging from 5.6 to 6.4 per cent. Daily wages in Paris are mostly in the vicinity of 50 francs (or 12/6 at 80 francs to the pound sterling), while those in the provinces, for 30 out of the 43 occupations covered by the returns, are between 30 and 35 francs (7/6—8/9). In the case of feminine occupations, the decline is more marked: for 7 occupations covered by the same official returns, 18 francs daily in 1933, compared with 19 in 1932 and 20 in 1931. The trades in which the greatest reductions have occurred are, in the provinces, tailoring, weaving, ornamental sculpturing, and unskilled labourers' work. In Paris there have been slight decreases in the wages rates of printers, cabinet-makers, sculptors, offset by slight increases in those of some metal-workers, masons, navvies, house-painters.

It should be observed that these index figures take no account of the wide prevalence of short-time working so that actual earnings have suffered considerably greater reductions than would appear from the foregoing figures. As the year 1911 is taken as the basis for the establishment of the index figures, the relation in francs between present and pre-war wages may be determined by dividing the index figures by five.

In the case of State employees, and of workers in some of the leading industries not covered by the above-mentioned enquiry, reductions have been effected on a large scale. Civil servants' salaries, under the retrenchment decrees of April, 1934, are this year to undergo reductions ranging from 5 per cent. for the lower to 10 per cent. for the higher grades: these reductions took the place of cuts or from 3 to 8 per cent. in April, 1933. In the coal-mining industry, the average daily wages in 1933 were 1.1 per cent. lower than in 1932 or 12.1 per cent. lower than in 1930 (32.52, 32.87 and 36.99 francs respectively). In the metallurgical industry reductions of 10 per cent. are understood to have been effected in Lorraine and in the East generally, since the beginning of 1932. The wages in the engineering industries have likewise fallen by about 5 per cent. Workers in the cotton industry, whose wages were reduced in December, 1931, by 5 per cent. (men) and 7 per cent. (women and apprentices), were in February, 1934, subjected to further cuts attaining, in the case of men, a maximum of 6 per cent. of the rates in force since the end of 1931 and, in that of women and apprentices, generally 8 per cent. In the woollen industry cuts of 9½ or 10 per cent. became general in

1932, and there appears a tendency at present to effect further reductions corresponding to those in the cotton industry. In the engineering, textile and clothing industries, employing about 2 million people, the bulk of the workers being on piece work and their activity having been greatly reduced, their actual earnings were far lower than in the prosperous years 1927-1930. In the mercantile marine, the wages of seamen engaged on cargo vessels have recently been reduced by from 10 to 20 (and in some exceptional cases 30) per cent., but no reductions appear yet to have occurred in the case of passenger vessels.

iv. UNEMPLOYMENT.

Save for a few months early in 1927, unemployment properly so described was practically unknown during the full nine years 1922 to 1930. Throughout that period, France presented the unique spectacle of being under the obligation of inviting an immigration of a million and a half aliens to satisfy the national demand for labour. One indication of the intense prosperity is afforded by the returns of persons receiving unemployment relief: for four of the five years 1926-30, the monthly average of beneficiaries did not reach 2,500, and even for long periods was under 1,000. The change came at the close of 1930, and the same monthly averages for the years 1931-33 were 51,000, 264,000, and 275,000. The highest figure (351,000) was reached at the end of February, 1934: it has since displayed a downward tendency, and on April 21, April 28, and May 12, was respectively 340,400, 334,500 and 330,200. It is of interest, however, to persons familiar with the highly developed United Kingdom system of unemployment relief, to note that the French figures are far from conveying as complete a picture of the situation as do the English figures. No national or local compulsory and contributory system has been established in France. Apart from unofficial "funds" of private and voluntary organisations, vocational or intervocational, which under certain circumstances are entitled to State subsidies, there are indeed official "funds" set up by local or communal, county or inter-local authorities, but they are not co-extensive with the whole territory, and do not provide relief facilities for the whole population. Thus in February, 1934, out of the 38,004 communes, in which are domiciled the 42 million inhabitants of France, only 2,100 communes, with a combined population of 16.6 millions, had established these funds. Their absence in the remaining areas occupied by two-thirds of the population debars the unemployed of such areas from public unemployment benefit, and, therefore, from enumeration or record among the receivers of public relief. The State contributions to the vocational organisations are quite insignificant (e.g. a total of 2 millions in 1931 and of 600,000 in 1932).

The number of totally unemployed in the spring of 1934 may perhaps be estimated at between 700,000 and 800,000: some would

put it at over a million. The March, 1921, census, taken when trade depression was extremely serious, and the March, 1926, census, taken in a period of very remarkable prosperity, returned 523,000 and 243,000 persons respectively as totally unemployed. In February, 1931, when 30,000 were receiving public relief (i.e. roughly one-tenth or one-eleventh of the beneficiaries recorded in April, 1934), the number was officially estimated at 350,000. The general employment situation is undoubtedly far less satisfactory than in February, 1931, but in the interval the volume of totally unemployed persons on French soil has been substantially reduced by the departure to their native lands of over 400,000 alien workers. The "occupied" alien population dropped in fact from nearly 1,400,000 at the 1926 census, to an officially estimated figure of 1,258,000 in March, 1931, and to one of 838,000 in March, 1934. The totally unemployed have been reduced in number also by other measures. Employers voluntarily, or under insistent government pressure, have deliberately organised short-time in their undertakings, so as to spread available work and so retain as many workers as possible, instead of employing fewer on full time. The recollection of the extreme difficulty in obtaining suitable and adequate labour between 1922 and 1929, as well as the care expended in training the recruits, stimulated, especially till 1932, the application of this system. In November, 1931, the Ministry of Labour estimated the number of industrial workers on short time at slightly over 2 millions. Official returns confirm this fact: in December, 1933, the establishments with at least 100 workers showing a total of 2,414,460 employed, 36 per cent. were on short time, but there was a drop of only 8 per cent. in the number employed, compared with two years earlier. The location of such a relatively large proportion of French industry, whether mining, metallurgical, engineering, textile, chemical, and so forth, in small towns and villages has likewise facilitated the short-time system, as agricultural pursuits can readily absorb numerous workers already domiciled in rural surroundings and perhaps already attached to the land as peasant proprietors or their prospective heirs. The emergence of the totally unemployed is also more restricted in a country retaining such a large proportion of small masters and of industrial outworkers—a phenomenon particularly notable in many French textile working and making-up trades that employ several hundreds of thousands—such outworkers normally are very often not full-time workers, combining perhaps household, kitchen-gardening, agricultural or other occupations with the job work for the small or large masters.

v. FOREIGN LABOUR.

Apart from American precedent in pre-war days, when over a million aliens were wont to migrate to the United States yearly, no European example in modern times can match the phenomenal recorded inflow of nearly a million and three-quarters of foreign workers into France in the short space of the decade 1922-31.

To that total must be added probably several hundred thousand who immigrated without having come within the cognizance of recording authorities, especially in the years 1924-27, when the shortage of labour was extremely acute and when stalwart workers from all sources were eagerly sought and welcomed. Foreign immigrant workers were mainly of Italian, Belgian, Polish and Spanish origin, but they also comprised natives of other European countries (*e.g.*, Switzerland, Germany, Soviet Union, Czechoslovakia), and even a proportion of North Africans. In 1930 an average of over 4,000 arrivals weekly was maintained. Strict limitations have since been applied with increasing severity upon their entry. In 1932 recorded worker immigrants often fell below 200 per week, and in 1934, up to May 12th, they averaged only 129 a week. Indeed, the doors have been closed to foreign workers practically since the second half of 1931, only exceptional cases, such as persons possessing special technical qualifications or alien workers returning from sojourning in the land of their birth, being admitted. It is noteworthy that even the seasonal influx of agricultural labourers who, till 1932, were admitted without any limitation, has practically disappeared, no arrivals at all events of agricultural workers having been recorded since the beginning of April.

It has been noted in the previous section that "occupied" aliens alone numbered nearly 1,400,000 at the 1926 census, but were estimated to have shrunk to 888,000 in March, 1934. The recorded arrivals and departures since that date betoken a further marked diminution of immigrants. The efflux, and the stemming of the tide of new arrivals, have undoubtedly eased the internal labour market in a striking manner. No doubt the 60,000 to 70,000 fewer workers now employed in the coal mines, where nearly two-fifths of the underground and surface workers were foreign, have simply left the country, instead of remaining as unemployed. In the ore-mining and metallurgical industries in the East, where the writer was informed in some cases that 60 to 75 per cent. of the labour force were foreigners, a reduction by 40 per cent. in industrial activity has likewise ensued without visible unemployed emerging as a phenomenon on French soil as a consequence, the safety-valve of withdrawal having disposed of the problem. A few years ago 50,000 to 60,000 textile workers in the Lille-Roubaix-Tourcoing and surrounding textile centres were alleged to be Belgian immigrants, either settled in France or spending the working week therein. Since the depression in the cotton, linen and woollen trades in this predominantly textile region, the large weekly immigration has subsided to very small dimensions. In those occupations, agriculture, building, railway maintenance, casual dock labour, to which Italians and Spaniards were most prone, the slackening in activity owing to the severe depression has led to the retirement from the country of a large proportion of former immigrants.

Before the advent of economic depression in France, considerable numbers of immigrants had year by year left the country. In the years 1922 to 1926 and 1930 to 1931 recorded departures represented in different years from one-fourth to one-sixth of the recorded arrivals; but in 1932 and 1933 the tables were completely turned, 109,000 and 49,000, for instance, having been recorded as departing in 1932 and 1933 as against 69,000 and 60,000 arriving. Throughout the first five months of 1934, recorded departures were nearly six times as numerous as recorded arrivals. Just as the real total of immigrants was certainly far in excess of the recorded totals, the real total of emigrants has certainly far exceeded the recorded totals of departures. It may perhaps be suggested that the estimated figure of 838,000 foreign workers remaining in France in March, 1934, has further shrunk and may now be under 800,000. The ever more vigorous and searching application of the regulations respecting immigration and foreign labour, and the exclusion of foreign labourers whose time limit has expired, have doubtless been exercising their full effect.

vi. THE PUBLIC FINANCES PROBLEM

From early in 1931 till early in 1934, and notably since the General Elections of May, 1932, the internal situation as a whole was dominated by the ever worsening plight of the State finances, and public opinion was profoundly stirred by the repeated, but apparently ineffectual efforts of half a dozen successive governments to find a solution. The previous financial difficulties of the years 1922-26, which owed their origin mainly to the intense strain on the resources of the Treasury to satisfy compensation claims for war damages, both material and personal, involving over 100 milliards, and which had culminated in the legislative sanction of the depreciation of the currency by 80 per cent., were too recent to be forgotten by the large proportion of the population, and in particular the middle classes, who had been the chief sufferers. The former difficulties had run their course, however, in the midst of supreme economic prosperity throughout the country; but the crisis of 1931-34 developed in a period of internal and external economic collapse. Successive governments accordingly, confronted with resolute opposition to measures of retrenchment as regards both the remuneration of about 842,000 State servants and the pensions payable to two or three million former soldiers, had vainly to seek more revenue by higher levies on commerce and industry, which were getting progressively poorer. The distress of the public finances was deepened by the circumstances of the high proportion of the total revenue drawn from indirect taxation: receipts therefrom dropped with the genuine impoverishment as well as with the voluntary abstinence from spending or hoarding consequent upon distrust in the general outlook. Further havoc was wrought in the fields both of direct and of indirect taxation through the melting away, or at least the heavy diminu-

tion, of former high yields from the foreign tourist traffic and from foreign investments.

Certain principal causes of the complete transformation of the brilliant financial situation that had resulted from the Poincaré régime (1926-28) in budget surpluses of 1,724 and 2,715 millions in 1928 and 1929 (and of 1,100 millions in the first half of 1930) are not far to seek. Between December, 1928, and April, 1930, were passed nine taxation relief measures covering 60 different tax reductions and representing collectively a loss of nearly 6,000 millions of revenue: expenditure, which had been 42,445 millions in 1928, rose to over 50,400 millions in each of the financial years 1930-31 and 1931-32. The cost of the civil services nearly doubled between 1926 and 1930 as a consequence of raising scales of remuneration to compensate or over compensate the depreciation of the franc, the cost of the army and navy was greatly increased, mainly from the same cause: war pensions were likewise augmented, new social services were created, agriculture further dowered. The number of persons in civil employment, receiving wages or salaries from the State rose from 465,640 in 1914 to 547,150 in 1927 and to 651,300 in 1932: those in the defence services from 152,300 to 154,000 and 190,500. Remarkable are certain numbers and expenditure in 1930 compared with the same figures in 1914: superannuated civil servants rose from 315,000 to 535,000 and their average pensions from 950 to 5,700 francs: disabled soldiers and soldiers' widows from 70,000 to 2,450,000 and their total annual cost from 65 to 5,028 millions (77 fold): total expenditure on civil and military pensions was 10,258 against 370 millions (30 fold).

The first budget deficit (2,439 millions) made its reappearance in 1930-31, and was the offspring of fresh expenditure voted in the second half of 1930. Ever higher deficits emerged in the succeeding years: 5,611 millions in 1931-32, 8,400 millions in the nine months April-December, 1932, and 14,170 millions in 1933. Concurrently, the vast resources of the Treasury in cash and bill reserves, which were nearly 15,000 millions in December, 1928, and 19,250 millions on December 1, 1929, had fallen in December, 1930 and 1931 to 9,400 and 2,000 millions respectively, and by June, 1932, to under 1,000 millions. The continuous efforts to restore the budgetary balance are set forth in the body of this report. In July, 1932, military expenditure was reduced by 1,500 millions and taxation increased: in October a great conversion issue relieved the budget of 1,400 millions of annual interest payments, in December the Treasury was relieved of 636 millions in charges, taken over by the Autonomous Fund. In February, 1933, a new law provided relief for the budget by 4,812 millions, of which 1,953 by retrenchment, 1,834 by taxation, and 1,025 by non-recurring resources. Parliamentary sanction was also obtained for Treasury bond issues.

The extraordinary session of Parliament summoned in October,

mated at 7,718 millions, failed to achieve its purpose through the fall of the Government on October 24. On December 23, the Government succeeded in passing rapidly through Parliament a law 'for re-establishing budgetary equilibrium,' which contained provision both for retrenchment and for new taxation, for national lotteries, and for more rigorous collection methods. The actual 1934 budget was not voted until after the advent of the Doumergue national Government, which proclaimed as its primary task the restoration of the public finances. The 1934 Budget law, as passed on February 28, estimated the receipts at 48,281 millions and expenditure at 50,163, leaving a deficit of 1,882 millions. But the Government, which was empowered to effect economies by decree, issued, in March and April, many decrees whose cumulative effect should yield nearly 3,000 millions. The Minister of Finance estimated the probable deficit in April at about 4,000 millions: the difference is expected to be partially covered by a further series of economy decrees. Active measures are also being taken to reduce, by about 2,000 millions, the serious deficit of the railways which falls as a charge on the State by virtue of its guarantee.

The unceasing financial difficulties of the years 1931-34 did not fail to leave their traces on the National Debt. The special measures taken by the Government in 1926 to foster its systematic management and reduction, notably the creation of the independent National Autonomous Fund for Debt Redemption, and the revival of public confidence, had brought about a reduction of 33 milliards in the Debt by the end of 1930, and had enabled various important consolidations, adjustments of the various liabilities, conversions and redemptions. Thus, the short-term (1 month to 1 year) bonds, totalling 48½ milliards, were converted to the extent of three-quarters into two-year bonds, and the remaining quarter into long-term (40 years or more) redeemable securities: 96 per cent. of the six per cent. 1926 bonds were converted into 4½ per cents.: in 1929 and 1930, the Fund purchased on the Stock Exchange, for cancellation, 5,619 and 3,945 millions of State bonds and annuities. But within the next two years, 1931 and 1932, either fresh commitments and renunciations, whether heavy fresh borrowings by the State, or new commitments and renunciation by the Fund (e.g. it took over from the Budget in 1931 an annual liability for 1,962 millions, it renounced, in 1932, in favour of the Budget, 375 millions of minting profits, and so forth) had destroyed this work and had brought the Debt to a higher total: from 264.4 milliards, at the end of 1930, it advanced to 286.7 a year later, and to 302.4 milliards on September 30, 1933. Subsequent loans in 1933 and up to April, 1934, appear, from available public records, to add approximately another ten milliards to that total.

The adroit yet firm and swift handling of the public finances problem by the Doumergue National Government in February and later in April, has so transformed the general outlook that,

save for some unexpected political developments or accidents before Parliament separates for the summer recess, their restoration appears to require only the lapse of the time necessary for the realisation of the retrenchment and of the other reforms already in operation or foreshadowed. The growth and maintenance of public confidence, fostered by resolute government, will no doubt constitute the decisive factor in the recovery. The prospects of the task immediately to hand, the effective balancing of the 1934 budget, have been greatly strengthened by the decrees issued since the voting of the budget law in February. The 842,000 State servants and the 450,000 railway servants with assimilated conditions of employment have been led to acquiesce in the reductions imposed, and the 2½ million former combatants have voluntarily accepted cuts in their benefits. The reforms in administration, to give effect to the reduction in State employees by about 10 per cent., to remove abuses as regards pluralities, duplication of benefits of various kinds, and other wasteful expenditure, are being actively pursued. The recasting and the simplification of the complicated taxation system, with its very large number of separate taxes and with its liberal exemptions of many special classes from their incidence, is being examined and is to form the subject of immediate legislation.

Certain signs since Easter have indicated a growing revival of public confidence. Its manifestation would probably have been more prominent had the general economic situation and outlook been more brilliant. Government stocks have risen considerably in value. The Bank of France has received considerable additions to its gold reserve from internal sources. Well-guaranteed loans issued in February under excellent auspices were disposed of with difficulty, but more recent issues (e.g. of the *Crédit National*, of the railways) were rapidly absorbed. Rates of interest for short loans, which, mainly as a consequence of persistent and heavy State borrowing, had risen very seriously (discounts and best acceptances which were 1 or 1½ per cent. in 1932, or Treasury bills, which were ¾ per cent. or less, had risen to 3 per cent. in February and March), have since shown a downward tendency. On May 18th the interest on National Defence Bonds was lowered from 4 to 3½ per cent., and on Treasury Bonds of over 3 months from 3½ to 3 per cent., of 2 to 3 months from 3 to 2½, of 1 to 2 months from 2½ to 2, and of one month from 2 to 1½ per cent. Substantial Government borrowing will probably be necessary in 1934, either to meet maturities, or to bridge over the transitional period during which the deflation policy is being pursued in the midst of prices readjustments with their resulting repercussion on taxation revenue; but little difficulty should emerge if public confidence is sustained by strong government. The owners of the forty milliards commonly reported to be lying idle at the banks and savings institutions or to be simply hoarded, only require the encouragement of confidence and security to respond to all possible calls.

Working in favour of that renewed confidence and security is the steadily growing strength of the conviction of the public that the safety of the franc is bound up with the satisfactory restoration of the public finances, any further failure appearing destined to involve inflation as inevitable consequence. Recent currency manipulations or exchanges management in other countries have rather tempted a small but by no means important or authoritative fraction of opinion to envisage the utility or expediency of currency inflation as a means both of budget salvation and of foreign and home trade stimulation. As to ways and means, some persons urged that the reported deficit should be met simply by the issue of notes to the required amount, others that alleviation might well be sought in the specific reduction of the gold content of the present franc, say by 10 to 20 per cent., and in the utilisation by the State of the margin between the old and new franc which would emerge from the process of revaluation by the Bank of France of various items in its accounts with the State. It had happened in 1928, when the legal stabilisation of the franc was effected, that the revaluation yielded to the State a profit of 16.7 milliards, which enable it to repay 14 milliards of advances to the Bank, besides covering other liabilities and having an excess of one milliard. Apologists for this solution opined that this lowering of the gold content would have no effect at all events on internal prices! The Government has, of course, resolutely rejected the policy of inflation under any guise and, as we have seen, has vigorously inaugurated a policy of general deflation, whilst with practical unanimity, despite the momentary severe penance involved, the French people approved that policy in February and March.

II. PRODUCTION.

I. GENERAL BASIC EQUIPMENT.

Numerous State Schemes, 1929-1933—Considerable progress has been achieved in the sphere of that State, public, or quasi-public, provision of certain indispensable preliminaries or aids to productive activity, anciently deemed to comprise essentially (apart, of course, from the maintenance of public order and of the validity of contracts) the recognised public utilities of a material kind, such as water supply, sanitation, gas, electricity, postal and kindred means of communication, roads, bridges, railways, inland navigation facilities, ports. New or renewed, national equipment (*outillage national*), to be organised and mainly financed by the State, has loomed large on the political horizon since 1926, when the Poincaré Government announced its purpose of initiating a series of measures for the development of the national resources and equipment by the execution of public works of a productive nature both in France and in French overseas territories. A far more comprehensive conception of national equipment was propounded in 1929 by the Tardieu Government

in its scheme involving the expenditure of 17 milliards over 5 years: not upon this were produced in Parliament by prominent deputies several rival projects, e.g. the Bedouce plan, 50 millions over 7 years, the Palmade, 35 millions over 10 years, the Chabrun, 65 milliards over 10 years. All which had taken shape and form in a period when a Finance Minister was able to reveal that the Treasury had at its disposal 19 milliards of accumulated funds, and when unemployment was practically non-existent, included large provision for schools of divers categories, universities, sports grounds, physical education, historical monuments, museums, theatres, housing, hospitals, sanatoria, preventoria, nurses' homes, installation of water supply and of electricity in country districts, building and improvement of roads, seaports, hydraulic power stations, aeronautical developments and so forth. These schemes failed to be voted, or were only fractionally adopted in finance measures.

In 1931, however, when the world depression had finally afflicted France and when the Treasury coffers had ceased to be overflowing, two schemes, aiming mainly at the relief of unemployment, were adopted: the first (March) provided 670 millions, and the second (December) 3,476 millions, for national equipment. Only about 40 per cent. of these 4,146 millions was actually destined for *new* work of this character, the balance being utilised either to cover expenditures rather within the scope of provision for current needs (roads, health, education, air force, mercantile marine and other services), or to meet previous commitments. Governments subsequent to the general elections of the spring of 1932 supported the national equipment scheme of the National Economic Council involving 35 milliards over 10 years. In November, 1932, a Government Bill proposed the expenditure in 1933 and 1934 of 7,163 millions (of which 2,545 for roads, railways, ports, etc., 1,445 for agricultural areas, 1,311 for education).

A year later (October, 1933) another Government measure for the "Economic and Social Equipment of the Country," whose backing by practically every Minister of the Cabinet indicated the wide scope of the equipment measures, provided for the outlay over the 4 years 1933-37 of 24,500 millions, of which 19,000 were to be raised by the State and 5,500 by various collectivities. Of the total, 13,500 millions related to *new* work, the balance being assigned to the financing of projects previously voted (e.g. 4,500 to the completion of the housing schemes under the 1928 Loucheur law, 400 millions to the supply of drinking water in rural districts, 4,000 millions to the Post-Office, 1,400 millions to settle State subventions in arrears). A goodly fraction of the State provision for new work related only indirectly to economic equipment: e.g. 805 millions were for frontier defences, 520 for a vast fuel oil plant for the Navy, 900 for the air services. Other massive allocations included 1,930 millions for the rural areas (of which 900 for water supply, 500 for electrification) 1,280 for various educational

buildings, plus 150 for technical schools, 735 for roads, 280 for historical monuments and palaces, 253 for building hospitals and other health institutions. Like all the schemes since 1931, its primary aim was the relief of unemployment, but the unsettled political and financial conditions again militated against the passing of the Bill.

Important 1934 scheme.—An important new scheme for the undertaking at the earliest possible moment of great public works of a productive character, with the double purpose of relieving unemployment and of reducing outlay on benefits, was proposed in March, 1934, by the Minister of Labour and was approved in April-May by the National Government. Known after its author as the Marquet plan, it presents the advantage of a promising and liberal financial basis. The special committee reported at the end of April that, by an alteration in the law, the Social Insurance system might allocate 75 per cent. of the available resources of the Old Age Insurance and of the General Guarantee Funds to the proposed Work Fund (*Fonds de Travail*), and so provide for the scheme ten milliards between June 1, 1934, and December 31, 1940. In the first year from next June, 1.7 milliards might be found without difficulty from this source. This proportion of the insurance funds would be so employed instead of being capitalised as hitherto by investment in various securities. The necessary legislative sanction is to be obtained by a decree—with the force of law, which the Government is empowered to issue. The *Fonds du Travail* is to be managed by the official *Caisse de Dépôts et de Consignations* (which already manages the public savings bank funds), and a new national committee, provided by the Minister of Labour, is to decide the public works to be undertaken and the allotment of credits. In principle, only works yielding a financial return, important in scope, useful, and visible, are to be undertaken, and it is proposed to start such works first in the areas at present most afflicted by unemployment (*e.g.* Paris Nord and Pas-de-Calais counties, Limoges, Lyons, Brittany), preference being given to State projects respecting which the State, or the county and local authorities guarantee the redemption annuities and interest. Money is to be advanced for such works at lower rates than those of the *Crédit Foncier* or other standard organisations: for example 5½ instead of 6 or 6½ per cent. To avoid delay in drawing up plans, it is proposed to adopt plans already matured: thus, in the Paris area a beginning would be made with the extension of the underground railways in the suburbs, water supply, sewerage extensions, and town planning projects.

Extension of Business Activity by State.—National equipment plans of former days (of Richelieu, Louis XIV., Napoleon of the Second Empire, of the Third Republic) were usually limited to permanent works such as ports, waterways, highways and railways, but these recent proposals clearly go far

beyond permanent public works and beyond undertakings of a merely productive character, and aim at general social, moral and intellectual welfare. They likewise exhibit the feature of the extension of State activity in the field of production, which had already become more marked since 1919. Individual creations envisaged or undertaken under national equipment schemes or budgetary funds include the provision of ships, tugs, lifeboats, of a single nitrate works (over 500 millions spent by State), of many nitric acid works, of a single sulphuric acid works, of air ports, wireless stations, hydraulic power stations (*e.g.*, Kembs, Verdon, Chavanon), oil refineries, and so forth. And in the new and widespread post-war system constituted by the 78 *Offices* existing in March, 1934—they are autonomous institutions of State character, but with separate legal personality and finances—are found a whole series of organisations engaged directly or indirectly in economic activity. Those concerned in business include: the National Industrial Nitrates Office: the Saar Coal Mines: the Alsatian Potash Mines: the State Railway: the Alsace-Lorraine Railway: the National Liquid Fuel Office: the National Agricultural Credit Bank (with 90 affiliated county banks and 6,000 affiliated local societies); the *Caisse des Dépôts et Consignations* (*inter alia*, the depository and the investor of the funds of the local savings bank); the *Caisse Autonome* (which not only manages the National Defence Bonds and the redemption of the National Debt, but also directs the whole tobacco industry); the General Guarantee Fund of Social Insurances; the National Office of Social Hygiene, the National Tourist office; the National Factories of Sèvres, of the Gobelins, and of Beauvais; the autonomous ports of Havre, of Bordeaux, and of Strasbourg; the National Inland Navigation Office, and others. The State itself is, of course, already a direct producer of commodities on a considerable scale as a manufacturer of metal currency, ordnance, firearms, powder, and various military and naval requirements (being thus, in places like Brest, Toulon, Lorient, Bourges, the predominant employer), is a printer and with its match and tobacco monopoly has a score of match and tobacco factories throughout France.

Noteworthy Achievements 1928-1933. — Despite the governmental failure to secure financial resources for the realisation of these comprehensive new equipment plans, save to the effective value of about 2½ milliards under the 1931 measures, yet very substantial achievements have been recorded in the domain of general public utilities, notably as regards electricity production and distribution, and the improvement of roads, ports, railways, rural transport facilities, inland waterways, air, wireless and postal services.

As to *electricity*, the installed generating capacity increased from 2.3 million kilowatts in 1927 to 3.5 millions in 1933, and the number of localities or communes served with electricity rose

in the same period from 17,000 to 33,400, out of the total of 38,004 communes in France.

Throughout the country, *roads* have been vastly improved at great cost: the total State expenditure, 52 millions in 1913, averaged 1,185 for 1930-1933, and that of the county and local authorities rose from 200 millions in 1913 to about 2,000 in 1933. The State credit voted for 1934 is 1,238 millions. The length of the "national roads" system, that is, of the roads maintained by the State, was doubled in 1930-1932 by the gradual incorporation of others having a total length of 25,000 miles. France having been endowed since Napoleonic times with a network of fine national roads having many long straight stretches, improvements in the main roads system have principally consisted in widening operations especially near larger towns, in laying down modern asphalt or tarmac surfaces, and in reducing the number of dangerous turnings and level crossings. Similar improvements have been executed on the additional 25,000 miles; and on the remaining 350,000 miles of roadage in the country owing to the intense activity expended during the last fourteen years on road improvements.

With accumulated annual deficits for the years 1928-33 calculated to exceed 13½ milliards, and with a perspective deficit of 4 or 5 milliards for 1934, the main *railways* have been debarred from embarking upon new improvement schemes involving large-scale fresh expenditure over long periods. Yet certain far-reaching developments in general organisation have further matured, and many noteworthy technical innovations have been brought to pass. Retrenchment necessities and the growing severity of motor vehicle competition both in passenger and goods traffic have provided the compelling incentives in both spheres.

Under the comprehensive railways reform law of 1921, and as a consequence of the action of bodies constituted thereafter, such as of the statutory Superior Railways Council, of the permanent Directing Head Committee of the Great Railways, of the Conference of Head Engineers, of the Railways Central Supplies Office, and of other general influences, French railways have been persistently achieving an ever greater measure of combination and co-operation for general purposes. Passenger and freight rates have been made uniform, main elements of equipment (rails, sleepers, locomotives, carriages, trucks, etc.), have been standardised, orders for rolling stock requirements and permanent way materials have been centralised, uniform signalling methods, uniform brake rules, common norms for electric power installation purposes, have been adopted. In bigger towns common commercial representation for goods reception, tickets and general information has become very frequent. The growth of common action may be illustrated by the fact that for the 1930-34 railways' equipment programme all systems had to draw up their orders on a uniform plan, and, to facilitate economy by specialisation, orders

for material of same design had to be placed as far as possible with the same manufacturers. The voluntary unification of the actual control of the seven main systems within the framework of existing legislation, proposed to the railways by the Government for their consideration twice in 1932, failed to materialise; but in 1933, under a codicil to the basic reform measure of 1921, two State representatives were assigned as directors to each railway board, a central committee was instituted for the scrutiny of all contracts of over 500,000 francs, and other measures having centralising and rationalising tendencies were introduced. In June, 1933 was initiated the eventual fusion of the *Paris-Orléans* and Southern Railways under a five-years' agreement (renewable), which aims at compassing a community of their financial, commercial and technical interests, and the progressive blending of their railway operations. The two systems are henceforth to be jointly controlled by a committee composed of six directors of the *Paris-Orléans*, four of the Southern, and of two State representatives.

The stress of competition from motor vehicles, whether omnibus, private or commercial, and the relative unprofitableness of their secondary lines, have compelled the railways recently to attempt various specific remedies. The great lines seem nearly all to have created separate companies working motor coach or carrier services in numerous sections, to serve as auxiliaries or feeders, but their former lucrative traffic within the zones of large urban centres is still being sapped by the cheaper, more frequent, often more convenient and more adaptable local motor 'bus services and by the growing range of the motor lorry. The rather costly secondary or cross-country railway lines, never dowered with more than a restricted traffic in passengers or goods, have in many cases been suppressed, and been replaced by local motor enterprises or by the motor vehicles of the special companies founded by the separate railways. On many local lines a striking development of the road versus rail competition in the last few years is the suppression of the old trains and their replacement by rail motor coaches fitted with petrol or Diesel electric engines burning cheap crude oil, capable of carrying 50 to 80 passengers (two classes) with 1½-2 tons of luggage at speeds of from 50 to 70 miles an hour. Such railcars, whose running costs are low, and which, moreover, dispense with much of the cumbersome material and unnecessary dead weight of the local trains usually running with half empty carriages, have been adopted on sections of six railway systems, and in a few cases are also being employed on main lines. Pneumatic tyres are often fitted to the cars, as they have been fitted to the motor coaches with flanged wheels for use on rails (*e.g.*, the Michelines), which came earlier into the field.

In this period, electrification has been developed more rapidly, notably on the Southern and on the *Paris-Orléans* systems. The total electrified mileage of the main lines was increased from 700.

to 1,300 miles, and another 200 miles should be so equipped in 1935, when also the electrified mileage of the secondary or local railways, now 500, should approach 700 miles. Electric equipment has kept pace, and French railways are now (1934) operating about 630 electric locomotives and 400 electric railcars (as compared with 19,350 steam locomotives and 27 steam railcars): fifteen years ago they possessed 25 electric locomotives and less than one hundred electric railcars.

New stations now form a feature of French railways. The countless war-damaged stations of the Northern and Eastern Railways were built anew within a few years of 1918: between 1922 and 1928 splendid stations were erected in Nice, La Rochelle, Rouen, Limoges. In Paris, since 1928, the Eastern Railway terminus has been doubled in size, entirely re-equipped, and has now a total of 30 tracks: that of the P.L.M. has been increased by 8 tracks, whilst those of the *Paris-Orléans, Nord*, and State railways have undergone enlargements and extensive improvements. In the provinces, Havre, Cherbourg, Mulhouse, Marseilles, are among the towns that have been equipped with new city, maritime, or goods stations.

In 1928 were opened three railway extensions towards foreign frontiers: (1) in the Pyrenees, the Bédous-Canfranc line, improving the connections between south-west France and north-west Spain, and shortening by 3 hours the Paris-Madrid rail service: (2) near the Italian frontier and the Mediterranean, the new Nice-Sospel-Coni line of 76 miles bringing north-west Italy and Central and Northern Europe into far more direct and shorter rail connection with the French Riviera: and (3) towards Alsace and the Rhine, the new St. Dié-Salles line in the Vosges, shortening by 50 miles the rail journey St. Dié-Strasbourg and by 20 miles that from Epinal to Strasbourg. In 1929 a second Transpyrenean connection was created by the Av-les-Thermes-Puigcerda line (25 miles), which shortens the Paris-Barcelona rail route by 67 miles. East of Paris the new and rather important connection with Metz as from Lérrouville (180 miles from Paris on the main Paris-Nancy-Strasbourg line), which was opened in 1931, not only provides another line to Metz from that point and reduces the Paris-Metz journey by 23 miles, but also relieves the Paris-Nancy main line, as from Lérrouville, of the entire Paris-Metz direct traffic, which ran formerly *via* the Nancy section.

The remarkable extension since 1928 of *rural motor transport* facilities of a public character has brought great benefits to a predominantly agricultural country, which with its relatively considerable area and rather scattered population could never, for the conveyance of persons and produce, obtain from railways, however dense the network of main and light railways, the same frequent, widely radiating, almost door-to-door and cheap services as the motor vehicles provide. Remote country towns and districts in France now enjoy regular motor transport often in several

directions; and the agricultural regions round Paris, Lyons, Marseilles, Bordeaux, Nantes, Rouen, Grenoble, and other towns, have numerous regular passenger and goods services radiating in many directions within distances sometimes of up to 70 or 80 miles. In 1933 one motor manufacturer had over 40 separate coach services with frequent daily departures running from Paris as far as Rouen (75 miles) and Orléans (70); from Marseilles several firms ran in all a score of separate services. The sparsely populated and almost exclusively agricultural North-West, West, South-West and Centre are now honeycombed with rural motor services. Transport merely of freight over long distances within particular regions and between great centres has much developed. Rapid commercial vehicles ply daily between Paris and Lyons, Marseilles, Nantes, and elsewhere; and between such towns and places in their immediate region similar services operate. Greater net speed, cheapness, convenience of despatch and delivery, have favoured this development, of which, for divers reasons, the State and county authorities by considerable subventions, the great and minor railways, local carriers and motor-car manufacturers, have been the principal artisans.

Apart from the extension of public motor transport services throughout country districts, the great development of the motor tractor and the capacity of the lorry has brought much commercial benefit to the French agricultural community by allowing direct rapid transport over considerable distances of many tons of perishable produce from villages or from single scattered points in the country to the greater markets.

In the chief *ports* a vast sum total of improvements has been effected since 1919 as the result of the capital expenditure of over 5,000 millions by the State and the authorities concerned: already during the war years several ports had received a considerable increase of modern equipment in various forms. The Tardieu ports programme approved in 1927 by the National Economic Council provided for expenditure over a period of years of 1,580 millions (750 to be found by the State and 830 by the local collectivities) in 16 maritime ports and at Strasbourg: in fact, the State alone voted in the years 1927-1933 more than double, to wit, 1,870 millions, for the ports.

The most striking single achievement in the matter of ports equipment since 1928 has been the immense new provision for the receiving, storing, and other handling of oil: this has gone hand in hand with the development of the national oil refining policy under State impulsion but almost entirely executed by private capital. Rouen, the predominant oil port, now has two large petrol docks, besides that at Port-Jérôme (its out port lower down the Seine): Havre has recently completed very extensive petrol docks and depots: Dunkirk is building a new petrol dock: Bordeaux Port has created a new petrol wharf at Bec d'Ambès and has another at Pauillac: La Rochelle—La Pallice now has its petrol

basin : Sète has made considerable provision and is making more. In 1928 was started at Marseilles the building of the great Mirabeau dock with a petrol basin, and since that date nearby, on or adjacent to the spacious land locked Etang de Berre, have been erected two great new refineries with their petrol wharves. At Strasbourg the State built in 1924-1927 a fine petrol basin.

Other notable achievements since 1927 are numerous. At Cherbourg a new mole, a new dry dock, a splendid and admirably equipped maritime station, have been created : at Nantes a tidal basin is being constructed and over 2,000 metres of new quay have been built : at St. Nazaire, a new entrance enabling vessels of over 75,000 tons to enter into the Penhoët dock was opened in 1932 : at Le Verdon, an outport of Bordeaux at the mouth of the Gironde, a large mole nearly 350 yards long and 40 yards broad, with double-decked pier and railway station, along both sides of which the largest vessels may moor, was opened in 1933. Havre has been provided with new quays, graving dock, floating dock, new warehouses, and Rouen with four floating docks, 600-700 metres of new quays and a new mole. At Marseilles was started in 1928 the Mirabeau dock with its three graving docks and the just mentioned petrol basin, and in 1933 the Joliette Basin : in 1927 had been opened the great Rove Tunnel, nearly 5 miles long and 24 yards wide, linking under the cliffs the Mediterranean to the roomy protected roadstead of the Etang de Berre, near whose entry are the ports of Bouc and of Marigues. In other ports important improvements were also executed in this period. In many cases great progress was made in deepening channels and improving approaches (*e.g.* Havre, Rouen, Nantes, Bordeaux). In practically all cases the ports have been abundantly equipped in recent years with electric cranes, floating docks, pontoons, dredgers and other mechanical requirements.

As to the *inland waterways*, canals have been better banked, many have been widened and deepened in parts, new canals have been built. The locks and the 500 inland ports (of which about 300 on canals) have been equipped on a large scale with up-to-date hoisting and conveying machinery; electric haulage has been greatly extended in the chief canal areas (North and East); diesel or semi-diesel engines are being introduced at a rapid rate (power driven barges increased from 1,000 in 1926 to 2,800 in 1931, and now probably number 4,000), the average tonnage of the barges has grown much greater. In freight the traffic of the canals has developed from 21 and 9 million tons in 1913 and 1921 to an average of 52 millions for 1930-32.

Two new canals of very great importance were opened to traffic in 1932. The Metz-Thionville Canal (or the Iron-Mines Canal), 19 miles long, for which the early plans date back to 1867, establishes a badly needed waterway for the transport of ore, coal, coke, basic slag, pig iron, raw steel and other heavy products within the greatest metallurgical area, and above all it provides

the connecting link with a whole network of existing regional waterways and with the Rhine. Started in 1929, it was completed in 1932 at a cost of 200 millions, raised in great part by the local iron and steel trade. Between 1928 and 1932 was also completed at a cost of 750 millions the first or Kembs section of the formidable enterprise known as the Grand Canal of Alsace, which, a ship canal with a breadth of 120 yards, is planned to run parallel to the Rhine for the 76 miles between Bâle and Strasbourg, and to produce, thanks to eight stages of level and to eight power stations, a total normal power of 650,000 kilowatts. Only the Kembs station has been built: it has six groups of turbo-alternators, each with a 33,000 h.p. development, and is stated to be the most powerful electricity station in Europe. It will supply Alsace with power and transmit current to Paris at 220,000 volts. The part of the scheme already executed also serves navigation, as the canal enables shipping to avoid the Isterin bar or rocks in the Rhine bed, dangerous at certain seasons.

Considerable results have been achieved from the strenuous endeavours made to improve *air transport* facilities and to increase air traffic. The State, which, as in most countries, has guided and financed the general movement in an especial manner since the war, has enacted (1932) important fresh legislation, provided funds for engine and other experiments, for supporting manufacturers by orders and the navigation companies by subsidies, encouraged commercial and touring aviation by various means and stimulated the establishment of a large number of air ports in French territory. It urged and brought about (1933) the fusion into one transport company of the five remaining navigation concerns; and for years has been promoting the geographical decentralisation of the manufacturing industry, which was almost exclusively located in the Paris area, to places like St. Nazaire, Bordeaux, Marseilles, whilst strongly favouring the rationalisation of the industry. Air passenger traffic within France has not greatly developed, the relatively short distance not allowing substantial time saving in journeys between the capital and any great centre, save perhaps Marseilles, but the services to the United Kingdom and to North, Central and Southern Europe are being increasingly utilised. Air communications with the French colonies, both in Africa and the Far East, and with South America, have been actively developed. The State has employed to the utmost extent the available air services for postal transport.

As regards the *postal services*, the postal cheque system, established in 1918, has manifestly corresponded to a public need: the number of accounts advanced from 366,800 at the end of 1926 to 604,600 with 4,583 millions at the end of 1933. Rapid progress has been made with the installation of the automatic *telephone*: by 1935 the Paris system will be completed to serve 373,000 subscribers (with capacity of extension to 433,000), and by 1927 the change will be effected in the Paris suburbs. ~~The automatic tele-~~

phone is already working in most provincial centres. Eight or nine additional underground long-distance cables (Bordeaux-Toulouse, Lyons-Geneva, Tours-Limoges, etc.) were put into service in 1930-31. The *wireless* system has been brought under more definite regulation by the 1933 Budget law: the principle of State monopoly had been affirmed in 1928, when the excessive number of private emitting stations, alleged to be 300, was reduced by decree to thirteen. There are now (1934) ten private and fourteen State broadcasting stations. When the two new stations being built by the State are complete—that at Toulouse in 1934 and that near Lyons in 1935—French listeners will have two more powerful State stations in addition to the Radio-Paris and the Eiffel Tower.

II. AGRICULTURE.

The still predominantly agricultural and rural character of the national economy, testified by the habitation in 1931 of 49 per cent. of the population in local administrative units or communes having under 2,000 inhabitants and by the employment (in 1926) in agriculture and forestry of 38 per cent. of the total "occupied" population, explains the constant parliamentary solicitude and support for the French agricultural industry, which in recent years has been vigorously and massively protected by increased duties, stringent import quotas, fixation of prices (wheat), and other measures. The industry itself has made great progress in its general and technical efficiency. France is able in fact to draw from her own soil practically her entire requirements in food whether for man or beast. She has long enjoyed a great export trade in a large number of agricultural products (wines, brandies, flowers, plants, seeds, vegetables, potatoes, fruits, poultry, eggs, cheese, sugar, skins, leathers, woods, etc.).

Progress is marked in the case of certain essential foods. Despite a decline since 1913 of 1.1 million hectares in the area under wheat—the greatest of French crops—the average yield per hectare rose from 13.57 quintals for 1901-10 to 14.69 from 1924-33. The potato area has likewise somewhat declined since 1913, but the yield per hectare has mounted by 9 per cent. The average output of refined beet sugar, 677,000 tons for 1910-14, was 697,000 tons for 1929-32. The secondary cereals (oats, barley, rye, maize), other root crops (fodder, beet, etc.), fruits, flowers, vegetables, are produced in quantities that leave large surpluses for export. French flocks and herds, which meet almost fully the home demand, have also been improved. The sheep population, however, has entirely failed to recover the previous figure of 16 millions, the average for 1923-32 having been 10.2 millions; on the other hand, in spite of the phenomenal growth in motor traction, French horses have diminished since 1913 only by 9 per cent. In poultry, milk, butter and cheese the country is practically self-sufficient.

Improved general organisation and technical efficiency have been promoted in sundry ways. Much has been achieved by the continuous activity of the ninety separate county agricultural offices, created by law in 1919 for the stimulation of food production. Directed by five elected representatives of agricultural interests in each county and managed by an agricultural expert, these offices foster in a permanent manner the agricultural industry in their particular area and are able to supply well-informed practical guidance. They work in close touch with the network of agricultural co-operative societies. The State, through the National Agricultural Co-operative Bank, the 90 county banks and the 6,000 rural credit societies affiliated thereto, has provided, notably since 1928, large sums for short, medium and long term credit to farmers. The endowment of 17,000 additional localities with electricity since 1927, immensely facilitated by State subventions, has signally aided agricultural output by supplying an industry, ever short of human labour, with power for operating the various small and large machinery in use on farms. Much further assistance has likewise been forthcoming from the great propagation of the motor vehicle and of diesel and other internal combustion or oil engines. The numberless educational institutions of specialised types, laboratories and research stations have also contributed to technical improvements. The far greater employment of fertilisers and other chemicals, sedulously promoted by the propaganda of the producers and of the educational institutions, was favoured by the recovery of Alsatian potash supplies, by the creation of State and other works for the manufacture of synthetic nitrates and by the greatly increased output of super-phosphates and of other materials, many of them the by-products of the processes of a much enlarged French metallurgical output.

III. INDUSTRY.

French industry in general may be regarded as having undergone complete reconstruction or complete renovation on modern lines, as well as very substantial expansion in several important branches, in the last twenty years. From 1914-1919, the industrial areas outside the theatre of war, notably those of Paris, Lyons-St. Etienne-Grenoble, Marseilles, Toulouse, Bordeaux, Limoges, Nantes, not to omit isolated towns like Tours, Chatellerault, Bourges, Le Creusot, Roanne, Montluçon, and others, were constrained to develop to the utmost their production for imperious military and civilian needs, and had to make good as well the missing products of the great industrial, but then war-ridden, North and East. The productive capacity of these areas was accordingly expanded in remarkable manner, and the active prosecution of the movement was furthered during two after-war stages—both before the capacity of the North and East had been restored and in 1923-1930 when home and foreign trade was so brilliant that

French output was limited solely by its dearth of man-power. In the war zone were accomplished mainly in the years 1919-25 the thorough and wholesale reconstruction and modern re-equipment of the damaged coal and ore mines, metallurgical and engineering works, of what constituted the major proportion of the productive capacity of the French woollen, linen, cotton, jute, lace, glass, chemical, sugar, brewing and some other miscellaneous industries. To the former French economic complex the recovered provinces of Alsace-Lorraine brought, besides their wealth in iron ore, coal, potash, oil, and agriculture, highly developed and modern equipped metallurgical engineering and textile industries, which had not on the whole suffered substantial war damage. Since the reunion in 1918, notable extensions and developments have furthermore been therein effected in several domains—potash, iron ore, coal, oil, metallurgy, engineering, rayon, electricity thermic and hydraulic, inland navigation, port equipment.

Although the thorough transformation and expansion of the industrial fabric had been accomplished in its essentials by 1925, yet continuous improvements and expansion were the order of the day in the succeeding years till 1931 as a consequence of the abounding trade prosperity. In those years and particularly in 1928-30, French industry was enabled to display in most branches the measure of its advance and of its potential achievement.

In the principal French **extractive** industries, coal, iron ore, potash, bauxite, record output totals were then reached. In 1929 and 1930, *coal* extraction amounted to 55 million tons, compared with 46 millions in 1913 (present frontiers, but 40.8 million in pre-war frontiers) and 47 in 1925. *Coke* production, thanks to vigorous efforts of the mines and metallurgical works to reduce French dependence on foreign imports of four to five million tons a year was raised from 6 million tons in 1925 to 9.1 million in 1929 and 1930. The nation had contributed vast sums to the reconstruction, in 1919-25, of the war damaged mines, some of which received 400 to 600 million francs as war compensation; and their immense task was assisted by their own resources and by public issues. They have achieved great technical developments and extensions which have enabled great progress despite rather difficult coalfields: increased mechanisation for getting, washing and handling coal; increased output of patent fuel, semi-coke by low temperature carbonisation; increased coke output by the installation of many modern coke batteries with full recovery plant, more provision for output of other by-products, coal-tar, synthetic ammonia, etc., in conjunction with great chemical firms. They have further developed the distribution to the public in districts far and near of the electricity, coal—coke—and other gases not consumed in their own works. *Iron ore* output advanced from 35.7 million tons in 1925 to 51 millions in 1929 (in 1913 it was 42 in present, and 21 in pre-war, French frontiers): bauxite from 406 to 443 000 tons (310 in 1913), and

potash to 3.13 millions in 1929 and 1930 (2.3 in 1926 and nil pre-war France).

Another basic industry, **Iron and Steel**, which reached its maximum output in 1929 with 10.36 and 9.69 million tons of iron and steel respectively, or double the figures of pre-war France, affords perhaps the most definite and striking illustration of practically complete reconstruction and renovation, and of very substantial enlargement, since 1914. Two-thirds of the pre-war industry, situated within the range of enemy fire, was all but totally annihilated. The remainder had to be strongly reinforced, often with State collaboration, to meet war requirements, its equipment, for example, in several branches being then doubled; and many important improvements were subsequently effected in the after-war years of prosperity. The nation perforce financed, on a scale commensurate with the damage sustained, the resurrection and equipment of the devastated two-thirds: many individual concerns expended, on their general reconstruction, sums varying from 300 to 700 or 800 millions, of which the State paid as war indemnification in different cases 200, 300, 400 and up to 600 and 650 million francs. Apart from the national cash contribution and the resources of the firms concerned, the reconstruction was assisted by the public issues against the collective guarantees of the works, resting on their assets and on their approved claim on the State, and by German deliveries in kind in respect of equipment and other supplies. In this metallurgical section of the East and North, the most approved modern practices as regards lay-out, plant, equipment, mechanisation, were everywhere applied, whether to ore mines, coke-oven batteries, blast furnaces, steel mills, rolling, rail and other mills, power-stations—in fact whole complexes often participated, as total building anew was generally involved. The renaissance was accomplished in its essentials by about 1925, but subsequently and especially till 1931, improvements and extensions were being continuously executed.

The numerous powerful works in recovered Lorraine, whose combined output in 1929 represented 84 and 30 per cent. of the total French output of iron and of steel, were modern or fairly modern, several dating after 1900, and having already produced apiece in 1913 600,000 tons of pig and 500 to 600,000 tons of steel. Since 1919, substantial improvements and extensions have been effected, numerous new blast furnaces, coke oven batteries, rolling, rail and other mills, in one or two cases, e.g. of war damages, whole works or whole sections, having been built. The nation also made a further notable contribution to the metallurgical industry by ceding to various French groups at modest prices and on long credit (10—12 years) the sequestered ex-enemy works, which were usually also owners of great ore mines and perhaps also of coal mines and other contingent rights in France or elsewhere. One Lorraine concern, which, in 1913, yielded 2.6 million tons of ore, 650,000 tons of pig and over 500,000 tons of steel was sold in

1919-20 for 94 million francs : and for 18 millions another owning ore mines, blast furnaces, steel works with 300,000 tons annual output, and a large participation in two coal mines. The formal sale prices under the instalment system of payment proved later far less onerous, as the franc annuities gradually depreciated to one-third of the 1919-20 value in gold. The metallurgical industry as a whole bears consequently a comparatively light burden in the way of charges for its almost total transformation and enlargement, as the nation provided, directly or indirectly, the predominant part of the cost, and as the gold value of the franc heavily depreciated after the cost of the main reconstruction had been incurred, the obligations grew lighter.

In **aluminium** production, for which France enjoys special advantages by reason of her present unequalled resources in bauxite and her ample supplies of electricity through water power, her maximum output occurred in 1929 (29,000 tons, world total, 264,000). She had been second world producer in 1913, after the U.S.A., but she ranked in 1929 after the U.S.A. (85,000), Canada (35,000), and Germany (32,700). World output dropped in 1931-33 from 230 to 134,000, as did that of France from 24,400 to 14,000 tons. In these years French consumption has been somewhat affected, apart from the influence of the slump, by the greater attention paid by motor and aircraft makers to the employment of the lighter metal magnesium, whilst the fall in copper prices was duly noted by the electrical industries.

Striking advance has occurred in the French output of **tinplate**, which rose from 38,000 tons in 1925 to 113,000 tons in 1933. Its production, controlled by a few large concerns, now suffices for the home consumption of the ordinary kinds and leaves a small surplus for export, but certain grades not yet manufactured in France come still mainly from the United Kingdom. The Saar, in which also French firms have interests in tinplate works, is estimated to produce about 80 to 90,000 tons a year.

The **engineering** trades manifested remarkable growth in production up to 1930: exports alone of the main groups of engineering products had risen from 314,000 tons in 1913 to 1,469,000 tons in 1927, but had sunk in 1930 to 1,087,000 tons (and in 1932 to 583,000). At the 1926 census, the metal transforming trades occupied nearly 1,200,000 persons, apart from the 155,000 occupied in metallurgy. The developments since 1914 in numbers employed, methods and scale of organisation, and output, have been due principally to the automobile and electricity industries. France has now possessed for about ten years in these two branches undertakings which are organised and equipped on the largest European scale. American influence and methods had been strong from the beginning in the French electrical industry, and in recent years the same inspiration has had great effect, especially on the great French motor manufacturers, who have tended to adopt the large scale output of few types, the chain system, and

much American organisation, machinery, and machine-tools. The scale of production reached by the three or four principal motor manufacturers, who produce about four-fifths of the vehicles, was utterly unknown to pre-war France, up to 30,000 persons being employed in recent prosperous years by two of them. The highest outputs of motor vehicles were reached in 1928-30 with 223,600, 243,600 and 230,700 : the United Kingdom, which first surpassed France in 1930 with 238,240, maintained the lead in 1931-33 with 226,300, 232,700 and 286,300 against 201,600, 164,000 and 191,500 vehicles. Germany and Italy averaged for 1928-33 respectively 102,000 and 44,000. The electrical industries appear to be combined in two principal controlling groups, whose allied or subsidiary companies practise large-scale production and factory specialisation ; and they tend to control, not only electrical manufactures but also a goodly proportion of the production of electrical energy and of its distribution throughout the country. In the matter of engineering, high degrees of division of labour and of mechanisation are not confined to the vast motor and electrical trades : they are found also in many important branches, notably for instance in building and repair of railway rolling stock and locomotives, aircraft, ships, scientific instruments, mining, printing, textile, sugar, agricultural machinery and implements.

The **textile** industries as a whole occupy the predominant position in French production and in French foreign trade. The textiles working trades properly so called with 933,000 persons employed in 1926, and those engaged in transforming textile materials (dressmaking, tailoring, ready-made clothing, millinery, and others) with 1,066,000 persons, account together for nearly 10 per cent. of the total " occupied " population of 20.9 millions. The exports of textile manufactures already in 1913 represented 39 per cent. of the value of all exports of manufactured goods, reached 50 per cent. in 1924, and averaged 43.1 per cent. for 1924-31 : in 1932 and 1933, when exports of certain textiles declined catastrophically, the percentages were still 30.8 and 30.6.

The **cotton** industry, with 203,000 employed, which ranks as regards machinery equipment after the United Kingdom (54 million spindles, 700,000 looms, 1,100 printing machines), and United States, and on a level with Germany, has been greatly strengthened since 1914. Spindles have increased from 8.8 to 11.7 millions ; looms from 141,000 to 200,000 ; printing machines from 120 to 250 : one quarter of the increase in spindles and looms, and more than half that in printing machines, are due to the recovery of Alsace. A large proportion of the general equipment is quite modern, nearly 2 million new spindles having been provided alone to replace war destruction, and large numbers having been installed in other districts also by 1923, and about 800,000 were subsequently added ; and the Alsace industry was already modern. Actual consumption of raw cotton (1913, 329,000 tons, average 1928-30, 343,000, and 1931-33, 248,000, 260,000, 366,000 tons) has not kept

pace with increased equipment, as a result partly no doubt of changes in fashion reducing the dimensions or causing abandonment of much former female vesture, of the substitution wholly or partially of silk or rayon, especially for hosiery, of the decline in foreign exports through the expansion of the cotton industry in so many countries. Production is organised on a relatively small scale: out of 385 spinning mills with 70,450 employed, only 27 occupied between 500 and 1,000, and only 8 over 1,000 persons, and of 839 weaving establishments only 71 had between 500 and 1,000 and 12 over 1,000 workers. Simple averages of spindles and looms per works give 33,000 and 240 respectively: spinning mills in the United Kingdom, America or Germany would show averages of 70,000 to 100,000 spindles. The units are larger in the bleaching, dyeing and finishing branches.

The French cotton spinners and weavers normally sell nine-tenths and two-thirds of their output of yarn and piece-goods respectively in the home market, but that market has reduced its purchases substantially since 1930, and foreign markets fell even more seriously. In 1932, Germany reduced its 1930 purchases of yarn and fabrics by 30 per cent., and the United Kingdom took only one-sixth of its 1930 purchases of cotton fabrics. Total exports of yarns in that year were only 7,430 tons against 23,650 in 1928, and of piece-goods 38,950 against 73,200 tons. The following year was still lower for yarn exports (6,531 tons) but somewhat higher for piece goods (42,800); in both cases the figures were far lower than in 1913 (namely 8,450 and 55,350 tons). Colonial markets, however, proved the salvation of the export trade in tissues: in the good years 1926-30 they took an average of 37,000 out of total average exports of 66,760 tons (55 per cent.), but in the bad years 1931-33, when total exports averaged 41,640 tons, those to the Colonies averaged 29,820 tons (or 71.6 per cent.).

The French *woollen* industry ranks third in Europe in machinery equipment with 2,800 combing machines, 3.3 million spindles and 65,000 looms, coming after the United Kingdom (3,000 : 6.7 million : and 121,000) and Germany (4,300 : 5.5 million and 95,000); and probably no country possesses an equipment more modern, as a result of the wholesale replacement, in 1919-23, of the war-damaged machinery which represented two-thirds of the worsted spindles, four-sevenths of the carding, and three-fifths of the looms. Much more new material was also installed during the war as well as after 1923, when wool textile manufacturers entered a boom period of seven years. The industry is organised on a comparatively small scale, save in wool combing: spindles average about 4,000 per unit and looms fifty. Only thirteen worsted spinning mills (in 1926) occupied from 500 to 1,000, and only five over 1,000: out of 1,300 weaving establishments only 20 were with 500 to 1,000, and only 22 with over 1,000 employed persons. Wool textiles production enjoyed such remarkable prosperity in 1923-30 that its exports of yarn in 1927 and 1928 were not greatly

inferior to those of the United Kingdom (28.5 against 30.4 of the international yarns trade), and where in 1913 the United Kingdom, German and French shares of the fabrics trade were respectively 65.4, 19.1, and 12.4 per cent., in 1928 these percentages had become 37.6, 15.4, and 20.6. In 1927 and 1928 the weight of French exports of yarn and fabrics, which averaged 42,300 tons in 1922-26, reached 60,400 and 55,400 tons respectively. Prior to the slump, exports were calculated to represent 60 per cent. of the output: in 1931 even 72 per cent. was said to have gone abroad. Yarn exports in general have declined far less than the piece goods, which fell in 1932-33 to about 30 per cent. of the years 1927-30, but yarns to about 60 per cent. To the United Kingdom in these two years, however, yarn exports fell to one-twenty-fifth of 1913 and to one-nineteenth of the 1927-30 average; and piece goods to one-fifteenth and one-ninth respectively.

Ranking first in Europe and second (after the United States of America) in the world from the point of view of mere volume of output, the French *silk* industry has probably suffered more severely than any other considerable industry from falling prices, competition from a product possessing allied attributes or attractions, and untoward world events of many kinds. French silk manufacturers, who had traversed a generation of unbroken prosperity and who could proclaim respecting 1925 and 1926 that "never was so much silk produced and never was so much silk consumed," were confronted, from 1927 onwards, with the ever keener competition of rayon, and in 1929 with the accentuated fall both in silk and in rayon prices, and with the incipient shattering of many foreign markets for all manner of "luxury" goods. For them the year 1930 proved the worst since 1876: and the following three years were even more disastrous. Average raw silk prices, 435 francs in 1926 and 255 in 1929, dropped to 175, 125, and 90 francs in 1930-32. The silks production index figure, 110 in 1928 (100=1913), dropped to only 35 and 42 in 1932 and 1933. As two-thirds of the output regularly went abroad, exports have always been the test of the well-being of the French trade: they fell in 1932 and 1933 to a mere fraction of earlier years. Fabrics exports, over 9,000 tons both in 1925 and 1926, and about 7,300 in 1927 and 1928, fell to 2,600 and 2,100 tons in 1932-33; and yarns exports, which had actually developed from 470 in 1926 to an average of nearly 1,700 tons for 1928-30, receded to an average of 1,200 for 1931-33. Rayon competition had developed simultaneously, and was very visible in the export trade: from 920 tons in 1925 and in 1926, rayon fabrics exports in 1930-33 averaged 5,100 tons, and yarns exports, from 711 and 1,127 tons in 1925 and 1926, averaged no less than 9,000 tons in 1930-33. In fact, rayon yarns exports in 1930-33 had become sevenfold those of silk, and rayon fabric exports had become more than double those of silk: yet in 1925-26, silk fabrics exports had been tenfold those of rayon

shrinkage of the markets for silks: the general restriction in expenditure, the exceptional weakness of former important markets in North and South America and elsewhere, the institution of higher duties on silks as "luxury" imports, the rationing of foreign exchange facilities, the higher cost of French production in face of numerous depreciated currencies. The fall in United Kingdom purchases is most striking: 42 and 41 per cent. of the total fabrics exported in 1909-1913, and 1920-24, went to the United Kingdom, as did 45 per cent. (4,086 out of 9,079 tons) in 1925, and 35 per cent. (3,256 out of 9,200) in 1926. In 1932 and 1933, the percentages were 40 and 22, but the quantities had sunk to 1,174 and 472 tons—the latter figure represents one-ninth and one-seventh of the 1925 and 1926 exports to the United Kingdom.

Raw silk production in France is rapidly declining—in 1932 and 1933 to under 1,000 tons of fresh cocoons and to 80 tons of silk—or about 2 per cent. of requirements. China and Italy are main suppliers. The manufacturing units are comparatively small. Only 21 of the 1,060 spinning units having employed workers, had over 200 employees in 1926: of these 21 mills, 17 were flock silk. In the weaving section, with 2,200 having employed workers, only about 2 per cent. show over 200 workers apiece. Large scale output is therefore rare, save in the flock silk and in the dyeing and finishing (in the latter, one firm predominates). Although Lyons is the commercial centre, the vast bulk of the silk industry has deserted the city for small towns and villages in half a dozen neighbouring counties. The St. Etienne ribbon industry is likewise mainly a rural industry, manufacture taking place in workers' or small masters' homes in a wide area, the looms being electrically driven. (Great distress has also prevailed in this branch.) Manufacturers have continued to employ their looms to a marked extent on rayon fabrics: the chairman of the Lyons Silk Manufacture stated in April, 1934, that "as in 1933, the artificial textile employs the bulk of the looms still being operated."

As to the rayon industry, which may perhaps be most conveniently mentioned here, France occupies sixth place with an output given at 15,000, 19,000, 23,000 and 25,000 for 1927, 1929, 1930 and 1933. Production, which advanced rapidly from 4,000 in 1932, to 15,000 tons in 1927, has not since advanced as in Great Britain and Japan. The home market, which has not been as receptive as the foreign, has been affected by the recent diversion thereto of the large percentage of silk products which failed to find their traditional destiny abroad, and by the simultaneous fall in silk, woollen, and cotton prices. It has found, however, greatly increased employment in union with silk, cotton and wool admixtures. The remarkable activity in the building of rayon factories ceased in 1929: in 1930-32 many of the score of works were closed. Only one now produces acetate rayon, all the others producing viscose. The units are organised on a relatively large scale: in 1926, fourteen showed over 500 workers apiece. Unlike the other

textile trades, there is much combination and concentration among the manufacturing units; and the central selling agency co-ordinates technical and financial efforts, and acts abroad for the affiliated concerns as regards interests, manufacturing or other. In 1932, firms representing 90 per cent. of the output agreed to the fixing of production quotas and to the bringing into operation of common conditions of sale and of propaganda. France likewise adhered (January, 1933) to the European Rayon Cartel, which established quotas for sales of adherents in various countries. Rayon exports far exceeded rayon imports. In 1932 and 1933, yarn exports were 8,656 and 10,360 tons, imports, 2,088 and 1,964 tons: and fabric exports, 5,540 and 4,770 against 344 and 280 tons.

The manufacturing equipment of the *linen* industry (about 550,000 spindles, 22,000 power looms, 18,000 hand looms), which ranks after that of Ireland (about 900,000 spindles, 38,000 looms) is almost wholly modern as a consequence principally of the replacement in 1919-1924, after its thorough destruction in the war, of a very high percentage especially of spindles and of much replacement in the prosperous succeeding years till 1930. The units, notably the spinning and the thread mills, tend to be rather larger than in the other textile trades save the rayon. The fall in prices of cotton, silk and rayon has affected the linen consumption since 1930. Production first fell seriously in 1931, when the output for the year was only two-thirds of that of 1913; and in 1932 and 1933, the yarn and thread sections, which had greatly developed their home and foreign trade, keenly felt the crisis. Since the crisis, 8 or 9 linen spinning mills have closed down, and up to April, 1934, no improvement occurred. In foreign trade, yarns have regularly predominated, being three, four, or more times those of fabrics: they averaged in 1922-26, 6,100 against 2,100 tons: in 1927-30, 13,900 against 3,140: and in the bad years 1931-33, 6,500 against 1,800. The linen shows this particularity among the textile fabrics that its exports have been much inferior to its imports: in 1922-1933 they averaged 2,200 against 3,835 tons. United Kingdom imports of French yarns in 1927-32 averaged 1,575 tons against an average of 160 tons exported to France, but French purchases of fabrics averaged 1,420 tons against United Kingdom purchases of 220.

The French *jute* industry, which possesses about 200,000 spindles in 17 mills and 10,000 looms, compared with five-fold this equipment in the Scottish industry, has been vastly modernised since the war, and enjoyed marked prosperity up to 1929. The main production takes place to the North of Paris. In 1926, only 6,700 were employed in the spinning mills. The fall in prices in 1929 and 1930 seriously injured the weaving section, and production in the latter year fell to fifty per cent. of capacity. In 1931, profits disappeared and one leading firm had to seek liquidation: in 1932 and 1933, nearly a dozen works were closed, and others worked short time. France imports far more jute fabrics than she

exports, 17,800 tons, but four-fifths of the imports are sacks holding imported merchandise, whilst four-fifths of the exports are new. They went mainly to North Africa.

Since 1931, the *lace and embroidery* industries have had to curtail drastically their activity as a consequence of the greatly reduced purchases by foreign countries on which they mainly depend. Far the most important customer, the United States of America, which still in 1931 bought nearly 100 million francs' worth, bought only for 53 millions' in 1933. Apart from the vagaries of fashion, reduced purchasing power, and the higher French cost of production, duties have played a great part in the decline. Germany raised its duties on cotton laces from 3½ to 16 marks per 2.2 lbs., on silk laces from 6 to 26 marks: the United States, its duty on nets and laces, from 60 to 90 per cent. *ad valorem*: the United Kingdom at first levied 10 per cent. and subsequently (1933) 20 per cent. *ad valorem*. The situation in the chief centres (Calais, Caudry, St. Quentin, Lyons region) became far worse in 1933, and the first four months of 1934 showed no improvement. In the Northern centres the reduction in business was stated to be then 30 per cent. on the year 1932, when the trade federation declared to Parliament that 61 out of 151 affiliated members had stopped or closed their works and that 80 per cent. of the remainder would be obliged to close in default of assistance. Eighty per cent. of the 114,000 persons employed in 1926 were women. The units of production are small: thus, in the Nottingham class of manufacture, machine nets and laces, the 20,500 workers are employed in 950 units, of which only 35 returned staffs of over 100 persons. In the hand embroidery, 30,700 out of 51,000 are isolated workers, and 4,279 establishments having from 1 to 5 workers, returned only a total of 6,067. In the two greatest single centres, Calais and Caudry, the machinery is modern; Caudry, having been very heavily damaged, contains almost solely modern machinery. The lace and net sections are essentially in the hands of small masters with from one to 8 or 10 machines: in Calais, in 1933, about 400 manufacturers had their machinery installed in a total of 110 factories.

France, who by 1928 had raised in a fundamental manner her international position as a producer of **chemicals** by her immense technical and financial exertions both during and after the war, has not ceased to consolidate and expand the bases of her new chemical powers. After the conclusion of peace, the modern framework of the French chemical industry was laid by the reconstruction and enlargement of the chief works in the war zone, by the improvement of various units elsewhere that for war necessities had already been stimulated into maximum output, by new construction and equipment on a large scale in numerous branches, such as the development of the recovered Alsatian potash mines, the production of bauxite, aluminium, and other electro-chemical and electro-metallurgical products, nitrates, synthetic ammonia, sulphate of ammonia, phosphates and various fertilisers, dyestuffs

and other coal tar and coke oven by-products, rayon, photographic, pharmaceutical and other light chemicals.

The years 1928-33 have shown noteworthy national advance in many directions. Perhaps the most signal has been the realisation on a large scale by 1933 of the national mineral oils refining policy legislatively adopted in 1928. Possessor then of two modern refineries (near Douai and at Pechelbronn in Alsace), France had added, before 1934, four new refineries along the Seine between Rouen and Havre, capable of treating a total of 2½ million tons of crude oil a year, two near Marseilles, two near Bordeaux, one at Dunkirk; and had three or four more under construction. The co-operation of great chemical concerns with the coal industry has resulted in marked progress in the output or equipment for output of various coal, coke-oven and gas by-products; and in certain important branches, such as nitrogen, sulphate of ammonia, nitric acids, sulphuric acids, cyanamide, fertilisers, industrial alcohols, dyestuffs, synthetic perfumes, rosins, paints, varnishes, photographic, pharmaceutical, and other heavy and light chemicals much advance has been made. Thus, the production of the State works at Toulouse, which cost over 500 millions, rose from 2,500 tons in 1928 to 24,000 in 1931, when 16 or 17 other works produced 45,000 tons of synthetic ammonia in the Claude and Casale processes, and that of cyanamide reached 64,000 tons. Superphosphates from the blending of phosphates with sulphuric acid increased from 1.6 millions in 1929 to 2.4 millions in 1931, and crude potash salts from 2.6 millions in 1928 to 3.13 in 1929 and 1930. Benzol output rose from 2,300 tons in 1923 to an average of 76,000 for 1928-30. In the electro-chemical group the production of carbide of calcium, which averaged 72,000 tons for 1924-27, reached 88,000 and 105,000 tons in 1929 and 1930.

Dyestuffs is a familiar example of French chemical progress. In 1913, French output was 7,000 tons (and French consumption 9,000 tons), but its manufacture in France was practically a German monopoly, six of the then existing works being German owned and three others were dependent on Germany or Switzerland for intermediates, only one French firm being a producer of certain intermediates. The production, entirely in French hands, has in recent years amounted to 15,000 or 16,830 tons (1929) and has allowed exports of 3,000 to 5,000 tons; imports, which in 1920 represented 53 per cent. of French consumption, amount to about 10 per cent. The production of casein (a substitute for ivory, horn, ebonite, vulcanite, etc.) reaches 40,000 to 45,000 tons a year compared with 1,200 tons in 1924. Home output of industrial paints, said to have been in 1913 only 7 per cent. of the consumption, is now 85 per cent. Another very striking accomplishment has been oil refining: in 1928, French oil refineries supplied perhaps 6 or 7 per cent. of home consumption, in 1935 they are expected to supply well over four-fifths. Notwithstanding the marked developments of chemical capacity in the United King-

dom, the United States, Germany, Japan and elsewhere, foreign trade also increased somewhat up to 1931: exports of manufactured chemicals in 1928-30 averaged 3.05 million tons against 2.84 million tons for 1925-27.

The individual works in the industry tend to be on a small scale. Persons "occupied" were returned in 1926 at 218,000 (190,500 in 1921): with the addition of the State match, tobacco, etc., workers, the total was about 250,000. Out of 6,010 establishments, fifty-three with over 500 workers apiece occupied 55,000 persons, but only 17 had over 1,000, of which 6 were gasworks, 4 perfumeries, 2 heavy chemicals: of the remaining thirty-six having from 501 to 1,000 workers, 13 were in the coal-tar and petrol group, 12 in acids, salts, etc., 6 in dyestuffs, paints and varnishes. Yet notwithstanding the multitude of undertakings and the immense variety of separate chemical products, a high degree of concentration has been evolved and many main branches are organised on a large scale under perhaps a decentralised system of output, especially in the heavy chemicals production.

iv. INDUSTRIAL CONCENTRATION & COMBINATION

Industry.—Concentration and combination tendencies within single industries, or between industrial branches connected in the chain of the productive processes for supplying raw materials or semi-finished products or for the continuation of manufacturing stages or for the assurance of regular unilateral or perhaps reciprocal outlets, became first marked in France under the pressure of war conditions. They grew exceptionally vigorous in the great national reconstruction period of 1919-24, and in the subsequent years of industrial prosperity and expansion. Although by 1928 the scope for action had become more restricted by the sum total of achievement, yet the movement has since been persistent and prolific both in industry and commerce. France has, however, exercised much prudence in this respect. Concentration and rationalisation, involving the centralisation of initiative and control for whole industries of great magnitude or for vast fractions thereof, is alien to the special character of a large proportion of the most characteristic French productions, has not been deemed universally desirable, nor, indeed, completely or advantageously realisable in numerous cases (*e.g.*, coal, metallurgy, silk, woollen, cotton, dressmaking, machine-tools, and so forth). Even in industries where the processes are comparatively simple and the products not of infinite variety, many resultant pitfalls and disasters observed elsewhere have been pondered. The relatively small scale of French industry, its marked individuality in many important branches, and the prevalence of small masters, were preliminary obstacles to give pause, whilst a home market of only 41 millions with a comparatively low velocity of consumption and

a wide dispersal of consuming centres owing to the high proportion of rural dwellers, weakened incentives, as did the uncertainties of foreign outlets since 1919 through the devastating adverse factors in the form of collapsing foreign exchanges and prices, of heavy duties, prohibition, or other restrictions.

France does supply instances of almost complete concentration of precise branches of activity, but in general she has avoided mass production on a great scale and the formation of immense strictly ordered schemes of concentration and rationalisation. Consciously and unconsciously she has normally sought in preference the constitution in the appropriate industries of complexes of manageable dimensions which retain effective legal and economic independence. An indication of the French attitude may be noted in the affirmation of the central coal organisation that "an excessively large undertaking eludes the direction of a chief . . . Beyond a scale of 4 million tons—a maximum reached by 3 or 4 French mines—a colliery undertaking rapidly becomes too extensive to be guided by a single man." The metallurgical industry likewise testified to the same faith, and has achieved a high degree of concentration without proceeding to an unwieldy and inflexible measure of vertical concentration.

The tendency has therefore been towards various forms of combination for limited objects, either corporatively organised or arranged through mingling of participations and persons or by agreements, the full vitality of the allied parties being safeguarded. In the preceding pages, full justice has been done to the development of this voluntary corporative or co-operative action in industry. The mining, iron and steel, chemical and several other industries are observed to be firmly compacted in their individual and vocational framework, to be dominated by a few important groups having extensive ramifications and possessing modern units of production appropriately rationalised. The coal and metallurgical industries are among those affording instances of organised control of output and marketing by the producers themselves without recourse to a rigid form of centralisation or unification. In some branches, where even central control is undisputed, an effective decentralisation is practised by various arrangements that leave intact the separate initiative and the financial responsibility of the leaders of the individual component undertakings.

A notable feature in recent years has been the emergence of a lively "industry consciousness," both in the national and the international spheres. In France and other continental countries, remarkable efforts have been made, first to adjust output to probable consumption within national frontiers and to establish standard price levels, and then to co-operate internationally for the limitation of global output, the fixation of prices and the partition of markets. Adequate references will be found to this class or industry consciousness, and to the combination or co-operation of industrial groups for other common objects of a particular in-

dustry, such as fixation of wages, fulfilment of legal or voluntarily assumed social services, financing of special or common utilities.

The extent to which concentration or combination has developed in French industry and commerce may be briefly illustrated by reference to certain important activities. In 1932, seventeen mines produced 87 per cent. of the total output of coal: some of these important mines have identical chairmen or vice-chairmen, many having one or more directors in common, may be presumed to have common interests in certain respects, many have made agreements for the common distribution of coal and other gases and of all electricity produced but not fully utilisable in their own mines, many have co-operated for the purchase of other mining interests. The industry has adopted corporative action for fixing output, sales, and selling prices, for dealing with wages and for numerous social questions. The iron mines belong mainly to one of the four or five metallurgical groups that collectively produce from 80 to 90 per cent. of the iron and steel output and that likewise possess many important coal mines and have large interests in many others. In fact, the coal, ore, and iron and steel industries, each strongly organised vocationally, are almost inextricably interwoven by capital participations, reciprocal ownerships, and personal administrative connections. The predominant metallurgical groups proper have, moreover, joint participations in certain important works. The concentration of the output is indicated by the fact that in the county of Moselle (Lorraine) five works produce four-fifths of all the Lorraine iron and all the Lorraine steel and that in the adjoining Meurthe-et-Moselle county three-quarters of each is produced by seven works, several of which are connected with the Lorraine groups just mentioned: twelve works are thus responsible for about two-thirds of the national metallurgical output. The industry has voluntarily organised a control of its production and of its sales at home and abroad through 9 separate offices (*comptoirs*) for separate classes of crude and semi-finished products. The four or five principal steel groups prolong their activity into many transforming trades in which they own, control, or hold important interests, *e.g.*, war material, railway rolling stock, electrical material, pipes, marine boilers, engines, Diesel, gas engines, shipbuilding, mining, sugar, agricultural machinery, optical and scientific instruments, and others. The tinplate industry is controlled by two of these groups. The high degree of concentration in several branches of engineering is indicated by the predominance therein of a few concerns or groups: heavy armaments and munitions, two (under the State); motor vehicles, three; aircraft, two or three; ball-bearings, two; electrical material, two or three; wireless, two; small arms, three or four; steam locomotives, three or four; electric locomotives, three; textile machinery, three; printing machinery, three.

In the chemical trades, the output of potash is monopolised to the extent of two-thirds by the State and of one-third by one company; bauxite is controlled by two groups, and aluminium pro-

duction practically by one, whilst sales of potash and aluminium are entrusted to a single organisation. One of the two outstanding groups for heavy and other chemicals operates about 20 works, has participations in 35 more, and has 118 sales offices and 121 depôts throughout the country: it controls directly or through its affiliated companies about nine-tenths both of the dyestuffs and of the aluminium production (in the latter case its auxiliary is the greatest electro-chemical and electro-metallurgical firm, owning 18 works and 24 hydraulic power stations and possessing widespread participations), is the second producer of industrial and agricultural chemicals and probably the first of organic products. The other leader owns 25 works throughout France, in 1931 held participations in 158 other undertakings including one great oil refinery, and one producing synthetic ammonia, which has 24 works of its own. A third heavy chemical firm operates 14 works. Pharmaceutical and fine chemicals are dominated by one concern with 9 works: disinfectants, by one with 50 to 60 works, perfumes by half-a-dozen, soaps by three or four, collection and treatment of animal waste, by one, rayon, by two groups with a single selling agency, dyeing and bleaching for cottons and woollens, by one, and for silk, by one. For mineral oils, the refining and distribution is mainly in the hands of five concerns. Other miscellaneous industries likewise exhibit marked concentration through the predominance of a few single firms or groups: flour-milling, four; sugar refining, three or four; plate and other glass manufacture, one; paper-making, two; tile-making, two; slates, two; cement, two; rubber tyres, two; films, two; cinemas, two; standard book production, two; leather footwear, two or three.

Public Utilities.—As regards public utilities the production of electricity from coal is controlled by about eight or nine regional or central groups, with a large scheme of interconnection of systems, and that of electricity from water power, by two railway companies, which formed a union in 1933, and by a few groups more or less connected.

Commerce.—Commerce, including commerce of general information and of matters of the mind, manifests the same concentration and large-scale tendencies. In the all-important domain of the supply of public intelligence and of the formation of opinion and beliefs, concentration has reached an advanced stage. The collection and distribution of telegraphic, telephonic and other news are practically monopolised by a single organisation with its offices and agents throughout France and representatives in the considerable foreign centres: it also conducts an extensive business in general publicity. Apart from the journals with limited circulation among readers professionally and technically interested in politics as a form of activity, the daily Press of Paris, which circulates heavily within two or three hundred miles of the capital and is also extensively read throughout France by reason of their daily country addition, is really confined to half-a-dozen morning

and to four afternoon papers. One morning paper is considered to have a circulation of $1\frac{1}{2}$ million, two or three others of 800,000 to 1,000,000 apiece: of the evening papers, two published in half-a-dozen editions for town and country, one has about 400,000 and another over a million. In the provinces, both Bordeaux and Toulouse possess leading individual papers, each with as many as 18 editions a day, which enjoy a widespread circulation in 20 to 25 counties, whilst Marseilles, Lyons, and Rennes, in Brittany, have each single leading journals with very wide range. These prominent journals are not, of course, the sole journals in their respective towns. Certain schools of political or religious thought, e.g., some of the Left or Right groups, have also centralised in a manner the general direction of their provincial organs. Not only is the supply of ephemeral news almost monopolised by a single Paris organisation, but the supply of articles on political or general topics for the provincial Press tends to be largely provided from special organisations in Paris. The distribution of home and foreign newspapers and periodicals is a practical monopoly of a single firm for the whole of France.

In the transport trades, two of the main railway systems, themselves the resultant of successive accretion by absorptions, unified their direction in 1933, and all since 1921, under the constant influence of their permanent directing committee, have been intensifying the extent of their common action in numerous fields. In Paris, trams (now fast disappearing), underground railways, and buses, have worked for a decade under common direction: and probably 90 per cent. of the 17,000 taxis now plying in Paris are owned by three or four firms. From Paris and from many provincial towns the same motor vehicle manufacturer operates countless regional itineraries. The concentration of motor transport facilities on the side of distribution and repair has become nationwide by the appointment by three leading manufacturers both of hundreds of agents, usually with garages, and by the maintenance of their own garages, some of vast dimensions, in all towns of importance. French shipping is controlled by three legally separate companies, which have further shipping participations: in 1928, the largest (with over 800,000 tons) made with a second (327,000 tons) an agreement of mutual support from the commercial and industrial point of view, and the second had already made a limited agreement with the third (487,000 tons). Centralised control of the ocean-going traffic is thus virtually assured; and the three companies hold also interests and directorates in many minor companies. Since August, 1933, aviation transport has been concentrated by the fusion of the five companies in one—*Air-France*.

The French banking system has become further concentrated on joint-stock bank lines. The very numerous body of private bankers in Paris and in the provinces that still existed and thrived in 1914 has been radically reduced in number: the process of elimination has been expedited by the depression since 1929. At the

present time four or five joint-stock banks, with their branches, dominate the general banking system: in some cases they also control either several regional banks with branches, or one or two other regional banks with branches. The multiple-shop system has made rapid headway, especially in the food and drink trades. It has not attained, however, the importance of the same system in the United Kingdom, and in France the multiple store dealing in fresh meat is comparatively rare. The French federation of food chain stores, which, in 1920, had 73 members with 8,875 branches, in 1931 had 107 with 20,503 branches. Outside the Federation are several important concerns (*e.g.*, one now common in Paris area with 300, another old established one, with large scale branches, 48, besides 12 in the provinces). In the Paris area are two concerns supplying milk, butter, cheese, eggs, that have 1,200 to 1,300 shops apiece: separate wine dealers, with 299, 275, 164 shops. One coffee firm claims 2,400 distributing offices in the provinces, another, 457: another has 15,000 depositories in Paris area alone. Two coal firms have 160 and 53 offices in Paris. The system of *dépositaires* (agents holding stocks) is also considerably practised: one multiple store has 3,000 in France. The multiple bootshop is familiar throughout France—one firm has nearly 400, another one 100 shops. The multiple teashop, café or restaurant has failed to find much favour in France. The distribution of the small multiple retail shops is usually confined to a region (Rheims, Lyons, St. Etienne, Bordeaux, etc.). The Rheims company shows the largest total, operating 1,250 of its own and being associated with others having 950 more: in other places one finds totals of 300, 400, 600, 900. Localised multiple shops for special products are also found: one for dairy products in Strasbourg has 280 stores, one for wine nearly 200.

The great Paris and provincial departmental stores represent a high measure of distributive concentration. About one quarter of the Paris retail trade in the range of their goods is calculated to be transacted by the dozen or more great stores, whose range of goods and volume and intensity of transactions are very great. The general extension of their premises indicates that their business has much increased in recent years. Many have large branches in the provinces: one has nine, another four. Similar concentration is furthermore represented by Paris concerns specially operating large stores in the provinces: one group controls about 80 provincial departmental stores, some of which sell very wide ranges of commodities, and others a more restricted range. A fresh development, with concentration tendencies, is the so-called "single price" shop, which has sprung up in great numbers in the last few years. One Paris firm has already erected ten subsidiary companies running one or more stores in various provincial towns. In Paris there are at least 15 companies operating stores of this kind: some are subsidiaries of great departmental stores, which occasionally give them shelter under their roof.

III. CUSTOMS POLICY : TARIFFS : QUOTAS.

France remains resolutely and indissolubly wedded to a strong and comprehensive protective policy for her agriculture and her industries. Although greater moderation may find its advocates, yet all visible traces of effective support for free-trade or for mere revenue duties have ceased to emerge in the written or spoken word, in press, platform or parliament. The national policy is sustained with equal vigour by masters and workers in industry, and with even more pronounced and unanimous determination by the millions of peasant proprietors. In principle and in form, French measures relative to foreign imports have undergone marked changes since the close of the war, and not least in the years 1927-34. Her tariff rates as a whole have moved persistently upwards since 1919. From its introduction in the summer of 1931, the new system of import quotas for agricultural, mineral and industrial products had so progressed by the early part of 1934 that no fewer than 3,000 out of 7,000 articles or classes of goods in the customs tariff were asserted to be importable only in limited fixed quantities over short fixed periods under due licence.

In 1918, France formally denounced all treaties containing the most-favoured-nation clause, and instituted by law in July, 1919, the principle of reciprocity for future commercial treaties. Intermediate tariff rates, which were to be percentage reductions of the margin between the maximum and minimum rates, were to be accorded in return for equivalent concessions. Up to the end of 1924 the new principle had been applied, but not absolutely rigorously, in sixteen cases (Canada, United States, Spain, Portugal, Austria, Czecho-Slovakia, etc.). In the long commercial treaty negotiations (1924-1927) with Germany, the latter claimed from the outset most-favoured-nation treatment for all products of interest or her trade with France, which, in fact, covered the vast bulk of French industrial imports, and obtained it effectively in the treaty of August, 1927, and formally in the following April. Subsequent agreements in 1928 accorded it to Switzerland, Belgium-Luxemburg, Italy, Czecho-Slovakia. French policy therefore reverted to that principle and to the double column tariff—maximum and minimum—instituted in 1892, practically every country in commercial treaty relations with France receiving the minimum rates and intermediary rates still subsisting only for a few countries (United States, Canada, Finland and two others). In principle, the French general or maximum tariff is that normally applicable to all countries in the absence of agreements to the contrary effect.

Most significant results of the 1927-29 treaties arose from the wholesale adoption therein of consolidated duties: in other words, of duties which the contracting parties had undertaken not to raise without mutual consent during the validity of the treaty. In 1931, the Minister of Commerce asserted that between August, 1927,

and July, 1928, duties on 5,064 out of 7,028 tariff headings (72 per cent.) had been so consolidated. Under the most-favoured-nation principle these consolidations were also applicable to other countries. When the world depression set in and exchange and other "dumping" became rife, France found herself deprived of her liberty of action in tariff matters and unable to vary duties on most industrial products except at the cost either of lengthy negotiations or of the denunciation of her major treaties. She did, in fact, negotiate the deconsolidation of a few duties, in exchange for concessions, with Czecho-Slovakia (1930), Italy (1931) Germany (1931), Belgium-Luxemburg (1931).

As regards most agricultural duties, she was finally able to give reinforced protection by decrees under extensions of the law of 1897, known as the padlock act (*loi de cadenas*), which empowered the Government on the introduction of measures for increased duties on cereals and their derivatives, wines, cattle and fresh meat, to put the proposed modifications into immediate effect by decrees pending parliamentary decision. From 1897 to December, 1929, this law had been applied only to the four classes of commodities just mentioned: by a law of December, 1929, dairy produce, potatoes and biscuits were brought within its scope, 35 additional tariff items being affected. In March, 1931, 44 more animal products were added, and in the following month a further addition of 37 articles brought in sugar and many food-stuffs with sugar content. By the middle of 1933, duties on articles under more than 200 headings could be raised by simple decree under the Padlock Act. The Act has the curious feature of only permitting the increase but not the reduction of duties, even of those raised under its sanction.

The agitation of the industrial and agricultural classes eventually became so powerful that the Government finally decided to introduce the quantitative limitation of imports. It was concluded that the mere raising of duties, even to very high levels, could provide no effective hindrance to excessive importation in face of the heavy fall in prices, of the general disarray or even collapse of many foreign exchanges, of the severe restrictions in the provision of exchange for foreign goods by many others, of the especial attractiveness of the French market, as one of the few remaining solvent markets not having limited external payments, for the sale not only of agricultural products but also of raw materials, minerals, manufactures. It was contended that many imports were offered at prices bearing no genuine relation to their cost of production, and far less to the French level of costs, and that in consequence the French producers were menaced with a general and unduly rapid break in home prices that might fatally upset their businesses. The first quotas were applied in 1931—to nitrates in May, coal and flax in July, timber and wines in August. As regards manufactures, the primary aim was to reduce German, and to a less extent Belgian and Czechoslovakian products, whose

imports had been unduly increasing in 1930 and 1931; but later, after the pound sterling and the dollar had depreciated, no doubt the competition of the United Kingdom and U.S.A., was also taken into the reckoning.

In September, 1931, the methodical extension of the system was inaugurated by the proposal of the French Government to Berlin that French and German national associations in certain important industries should mutually agree upon reductions of imports into France by a given approximate percentage of the amounts imported in a previous basic period (year or series of years), and that such quota agreements, if acceptable to the French Government, should be officially promulgated. In cases of non-agreement, quotas would be *ex officio* determined. Similar negotiations for industrial quotas also took place with representatives of trade groups from the United Kingdom, Belgium, Czechoslovakia, U.S.A., and other countries, when these countries were substantial exporters to France of specific categories of goods. On the other hand, agricultural quotas were established by the Government, after consultation of intervocational committees, without previous negotiations of this kind with foreign bodies. By July, 1932, the Ministry for Commerce controlled 64 quotas embracing commodities under 1,225 items in the tariff, and the Ministries of Agriculture and of Mercantile Marine controlled the quotas respecting many more hundreds.

In the summer of 1932, the Government indicated that it regarded the system as purely transitional, that existing quotas would, when possible be enlarged or replaced gradually by higher customs duties, and that, save in extreme cases, no new quotas would be instituted: in the following March it claimed that in the interval it had rejected requests for 33 new quotas. The industrial organisations, in response to the official enquiry respecting the replacement of quotas by higher duties, subsequently insisted in most cases that mere duties could not suffice for their protection. The Government announced a change of policy, at the beginning of September, 1933, and even a marked tightening up of the existing quotas in relation to all importing countries, unless concessions were accorded to French exports to their respective territories: as from October 1, all existing quotas were to be reduced to 25 per cent., but the balance of 75 per cent. could be partially or wholly redeemed by countries concerned by the grant of corresponding advantages.

The new policy did not eventually take effect until January 1, 1934, when this reduction was not only applied to the then existing quotas but also about 600 new items were brought under quota and were allocated one-quarter of their total imports in 1932 (which was taken as common basic period for all these new quotas). Allotments of quotas being fixed only for quarterly periods, textile, chemical, agricultural machinery, fish, agricultural products (whose imports being seasonal tend to fall largely in one or two

quarters), were among imports likely to be seriously affected by restriction to quarterly quantities. The management of the old quotas was left in the same hands, but the French Government entrusted the working of the 600 new quotas to vocational committees in France representative of the manufacturers of and the dealers in the particular commodities. Applications for import licences, to be sent in in five copies, after examination by the particular committee were, if passed, forwarded to the Customs Department for approval, and then returned to the applicant for presentation at the point of importation.

Additional commodities were subsequently brought under the system. It has been estimated that about 3,000 items have thus been quota-ed, of which two-thirds are manufactures. The Government informed the Chamber of Deputies at the end of February, 1934, that there was no question of renouncing the quota policy, which had rendered the most signal services to France in the economic crisis.

The United States of America and Belgium were accorded, in January, 1934, the full quotas of 100 per cent., and Italy was reported to have received the full quota as regards practically all her industrial products. Several other countries negotiated and received full quotas in return for concessions. The United Kingdom invoked the most-favoured-nation provisions of the Anglo-French Convention of 1882, and claimed the same quotas as the United States of America and Belgium. The French Government, without admitting this claim, accorded to the United Kingdom full quotas for the first quarter on the majority, but not upon all, of the quota-ed imports. On February 12, the French Government denounced the 1882 Convention, as well as the 1826 Navigation Convention, when His Majesty's Government, having declined to admit any discrimination of treatment for United Kingdom imports in relation to those of the United States of America and of Belgium, had brought into operation an extra duty of 20 per cent. on specified French imports into the United Kingdom. Negotiations between the two Governments relative to the replacement of the Conventions and to the adjustment of quota difficulties, took place in London from the 14th to the 20th March, when they were temporarily suspended. No conclusion had been reached up to the beginning of May.*

In 1931 and concurrently with the pursuit of the old and the new quota policy, the French Government took measures to secure the deconsolidation of those tariff rates fixed in commercial agreements and so to regain its liberty of movement. In December, 1932, long negotiations with Germany resulted in an agreement whereby either Government was enabled, on giving a fortnight's notice, to alter consolidated duties, and, if the other party considered that the alternative proposed tended to upset the relative balance of their respective positions, it might require immediate negotiations to restore the situation. Germany, in fact, was the

first to make use of the agreement in January, 1933, when it raised duties on a number of commodities of interest to France. In any event, this agreement permitted the deconsolidation of an immense number of French tariffs on industrial products. Arrangements on similar lines were made with Hungary in February, 1933, and subsequently with other countries.

Tariff rates have been frequently increased in the years 1919-1934. In 1919, partly to meet the incipient depreciation of the franc, partly to check undue imports at a period when French industry was under general reconstruction after the war devastation, was introduced the system of coefficients or multiples (say 3, 4, 5) of former tariff rates; and, until the end of 1922, the Government also used its powers, given in 1916, of raising basic rates by decree (in 1919-1922 duties were raised under 65 decrees on 3,294 tariff items). The general or maximum tariff rate was made fourfold the minimum in 1921, the multiplication being applied to the new basic rates plus their coefficients, so that the maximum tariff attained a very high figure. In 1926, two separate increases of 30 per cent. were applied to all rates plus coefficients. In August, 1927, duties were raised on 1,700 industrial items and in 1928 on many others by decree. In less than 2½ years (May, 1929 to October, 1931) substantial increases were made on 435 classes, mainly primary foods, such as live animals, dairy produce, many vegetables and fruits, sugar, chocolates and other articles containing sugar. Comparing the middle of 1928 (many duties had already been raised in March, 1928) with current rates, one finds that duty on potatoes in natural state has risen ten to fourteen times according to season: on fish, haddocks, 371 per cent.; cod fillets, 268 per cent., other kinds from 77 to 684 per cent.; on butter, 600 per cent. (prior to a recent reduction it was 750 per cent.); on sundry other kinds of dairy products and of meat, at least 100 per cent. In the case of wheat, barley, rye, and other cereals, increases have raised the rates to about fourfold the 1928 levels, and after allowance for the devalorised franc, betoken advances of from 300 to 650 per cent. over 1914 rates.

On many manufactured commodities duties were raised in 1932, and, notably in 1933 when a law of July and a decree of August raised duties respectively on 127 and 83 classes of goods. The increases have amounted in some cases to 50 to 60 per cent. (e.g. linoleum, tracing papers, vulcanised fibre, certain types of boilers, electrical apparatus for therapeutic purposes, electric batteries), in rare cases even to 600 or 1,200 per cent. (e.g. various compounds of iodine, tartaric acid, fusel oil). Among the increases in March, 1934, have been the doubling of duties on most machine tools, on certain toys and chemicals, an increase by 50 per cent. on clocks, and so forth. In many other cases since 1928 substantial advances have occurred, e.g. motor cars, motor-cycles, or their parts, certain cotton goods, but their substitution of specific for *ad valorem* duties makes difficult the computation of the precise extent of the increased duty.

Briefly stated, the existing customs system is essentially based on the 1892 customs reform, modified by the 1910 measure. In tariffs, it maintains in principle and as a general rule the unconditional most-favoured nation principle. Prior to January, 1934, it applied the same principle of non-discrimination in the allocation of quotas, every country exporting to France being accorded quantities in strict accordance with their imports in the basic period, minus the relevant deduction. The new quota policy indicated the abandonment of most-favoured-nation treatment, as far as quotas were concerned, and the adoption of a reciprocity policy in regard to each individual country. As to the two tariffs, general or maximum and minimum, the former is applicable only to a few countries, but entire British Dominions (*e.g.* the Australian Commonwealth), not having made agreements with France, are subject to it. The recasting of the whole body of the customs tariff has long been recognised as desirable: the Government some years ago was only awaiting the official acceptance of the new nomenclature, being prepared under the aegis of Geneva, to undertake the task. The comprehensive Government Bill of 1927, which aimed at the revision of the French nomenclature and of practically all the rates, proposed to raise the number of main tariff articles from 650 to 1,900, and of subdivisions to 6,500 or 7,000; but the measure failed even to be thoroughly discussed, much less adopted by Parliament. The new classifications and new rates eventually set up in 1927-29 were to the extent of nearly three-quarters the outcome of treaty negotiations with Germany (which caused the raising of duties on 1,700 items), and with other countries (*e.g.* the Franco-Swiss agreement brought increases on 320 items): only the balance of the tariff modifications sanctioned by law in March, 1928, had been initiated by parliamentary action. A host of laws and decrees followed—thirty in the four years ended July, 1932, and many others in 1932 and 1933. In March, 1934, Parliament once more, as in 1927 prior to the Franco-German treaty, empowered the executive to alter customs duties by decrees subject to later ratification by Parliament. It seems probable that, when the present period of acute crisis has passed, the codification and classification of the very imposing mass of customs laws, decrees, regulations, to which it has contributed not a little, will be considered advisable and helpful both to the administration and the trader.

The additional margin of protection afforded to various French producers by the sum of the increases in customs duties alone is hardly susceptible of close calculation. It is worth noting, however, that the annual total value of the customs receipts in proportion of the total value of imports has advanced very substantially compared both with pre-war and with 1927 or 1928 percentages. The average percentage for 1900-1910 was 9.11, and in 1910 and 1913 it was 7.78 and 8.81 respectively: from 1927 to 1933 the percentages progressed as follows: 4.80, 6.94, 7.86, 8.68,

by the fact that, as a result of the bringing under the quota or under higher duties of numerous articles of relatively great value, the importation of these articles was reduced, and the total duties paid fell proportionately in greater measure than the total imports. These customs receipts do not comprise the business turnover tax on imports, which is levied on c.i.f., plus customs duty, plus any exchange surtax since November, 1931, nor the surtax itself, nor import quota licence charges (first levied in 1933). With the inclusion of the two former, which generally represented, till quite recently, an addition of 18 to 22 per cent., the general protection was markedly reinforced, especially as the bulk of the French customs duties were still specific, not *ad valorem*. It may be mentioned, as an indication of the general objective of French customs protection apparently aimed at, that a prominent official of the Ministry of Commerce stated publicly in March, 1933, that the desirable rates of protection might well be taken at 5 to 6 per cent. for raw materials, 15 to 20 per cent. for semi-finished goods, and 25 to 30 per cent. for manufactured goods.

Mention should also be made in this connection of a further charge additional to customs duty proper, which was instituted in 1920, namely the business turnover tax payable on goods at their point of entry into France. The usual rate was 2 per cent. up to April, 1932, when the levy was graduated, and became 2 per cent. on raw materials, 4 per cent. on semi-manufactured, and 6 per cent. on manufactured goods. The actual levy is necessarily more than formal percentage *ad valorem*, because it is assessed on the value including not only cost, insurance, freight, but also the customs duty, and the import licence tax (in any), payable. Since April, 1934, on United Kingdom goods, the 4 and 6 per cent. rates ceased to be leviable.

The institution, in May, 1933, of the new tax on import licences for quota-ed goods, which as yet has been applied only to coal, fish and agricultural products, has increased the charge on imports. Its rates, for instance, are: coal per ton, at first 2 francs, but since January 1st, 1934, 4 francs on ordinary coal, and 5 francs on anthracite: meat, salted, 100 francs per 220 lbs., prepared meats, 150 francs: butter, 50 francs: coffee, 130 francs. In some cases they are in fact higher than the minimum (ordinary) customs rates: fresh vegetables, $3\frac{1}{2}$ times, dried vegetables, 10 times: apples and pears, at first over 16 and over 17 times respectively, subsequently reduced to 7 and 6 times: coal, double for ordinary coal and $2\frac{1}{2}$ times for anthracite.

IV. FOREIGN TRADE 1882-1934.

The progress of French visible foreign trade, which had been constant in the years preceding the war, became quite remarkable from 1923 onwards: in the years 1926-1930, both imports and exports reached unprecedented heights. French production and

French exports were then, in fact, limited by a shortage of man power. Apart from the general expansion, both of credit in the principal countries of consumption, and of the resultant spending propensities on so many articles of which France is the leading purveyor, the main factors of this foreign trade prosperity were the greatly increased efficiency of the French industrial fabric, as a consequence of the completion of its thorough overhauling and modernisation, and the bounty provided by the progressive and heavy depreciation of the franc in relation to the dollar, sterling, and other currencies of chief purchasing countries, which were simultaneously competitors of France in many important branches in their own and in other undepreciated currency markets. French export trade enjoyed the advantages of the depreciated franc for a considerable period after its stabilisation in June, 1928, and was later than other countries by a year and a half in feeling profoundly the world crisis inaugurated in the autumn of 1929.

In the period from 1882 to 1930, French imports grew in weight by 140 per cent.—from an average of 21.99 million tons for the ten years 1882-91, to one of 52.90 million tons for the five years 1926-30: and exports expanded nearly sevenfold, from 5.42 to 37.65 million tons. Exports therefore from being one-fourth of the imports, reached 71 per cent. The comparison of values in francs over this long period is somewhat vitiated both by the marked depreciation in its value which proceeded notably in the period 1921-1927 and which resulted in the legal diminution of its gold value to one-fifth in 1928, and by the subsequent heavy falls in prices for imports and exports in relation to the new gold franc. Comparisons of the movements in value retain, however, almost their entire validity for the period 1882-1913. With due allowances, useful deductions may be drawn from the figures from 1921 onwards set out in the attached table, which shows the course of imports and exports, and the proportions constituted by the three main groups, foodstuffs, raw materials and manufactures, during the period from 1882 to 1933.

ANALYSIS OF FRENCH FOREIGN TRADE, 1882 TO 1933.

	Weight	Value	of which			Percentages		
			Foodstuffs	Raw materials	Manufactures	Foods	Raw materials	Manufactures
<i>IMPORTS.</i>								
Average, 1882-1891	Million tons	Million francs						
.. 1892-1901	21.99	4,392	1,521	2,225	646	34.6	50.7	14.7
.. 1902-1913	24.34	4,142	1,079	2,413	650	26.0	58.3	15.7
.. 1921-1925	33.36	6,175	1,195	3,816	1,164	19.4	61.8	18.8
.. 1926-1930	50.07	32,830	7,594	20,365	4,871	23.1	62.0	14.9
Year 1931	52.90	55,363	12,604	34,247	8,512	22.8	61.8	15.4
.. 1932	58.10	42,206	14,001	19,036	9,169	33.2	45.1	21.7
.. 1933	47.55	29,808	10,979	13,222	5,607	36.8	44.4	18.8
.. 1933	48.52	28,425	9,601	13,847	4,977	33.8	48.7	17.5
<i>EXPORTS.</i>								
Average 1882-1891	5.42	3,409	789	809	1,811	23.2	23.7	53.1
.. 1892-1901	7.48	3,593	695	926	1,972	19.3	25.8	54.9
.. 1902-1913	13.86	5,446	763	1,540	3,143	14.0	28.3	57.7
.. 1921-1925	24.67	32,025	3,009	8,303	20,713	9.4	25.9	64.7
.. 1926-1930	37.65	51,790	5,737	13,853	32,200	11.1	26.7	62.2
Year 1931	30.34	30,436	4,301	7,179	18,956	14.1	23.6	62.3
.. 1932	23.50	19,705	2,920	4,553	12,232	14.8	23.1	62.1
.. 1933	25.06	18,433	2,521	4,737	11,175	13.7	25.7	60.6

Among **imports** the outstanding characteristic up to 1913 was the marked progress made towards self-sufficiency in foodstuffs, the imports of which declined from an average of 34.6 per cent. of total imports in the decade 1882-91 to one of 19.4 per cent. in 1902-13. The proportions of total imports formed by raw materials and by manufactures both advanced in about the same ratio: the former from 50.7 to 61.8 per cent. and the latter from 14.7 to 18.8 per cent. The policy of imports control adopted in the last three years is reflected in the figures for the individual groups in 1931-33.

The foreign trade movements in the years 1928-1933 are fully treated in the body of this Report. Only brief comment on the remarkable upward movements of imports and exports in the period 1926-30 of maximum prosperity in foreign trade is possible in this place, and must be restricted to raw materials for industry and manufactures. In weight, imports reached their highest point in 1930, when they were 38 per cent. greater than in 1913. The salient increases in imports of raw materials were: pig iron, iron and steel, nearly $2\frac{1}{2}$ times the previous level, mineral oils and rubber, each five-fold; copper, over $1\frac{1}{2}$ times; coal and coke, 33 per cent. greater; timber, over 40 per cent. Among manufactures, imports of clothing were threefold (and nearly sixfold in 1931), products of engineering advanced by 62 per cent., chemical products by 47 per cent., jute yarns by 42 per cent., ceramic wares by 18 per cent., while paper imports were more than eightfold.

Up to 1930, exports of manufactured goods continually progressed, both in value and in the proportion that they constituted of total exports. From an average of 1,811 millions in 1882-91, they rose to 3,143 millions in the twelve years preceding the war and to 32,200 millions in 1926-30: in percentages from 53.1 to 57.7 and 62.2 respectively. During the same period, exports of foodstuffs fell from 23.2 per cent. of total exports, to 14.0 and 10.5 per cent., while raw materials showed comparatively little change. The serious shrinkage in exports during the last three years (from an average of 51.79 milliards in 1926-30 to 18.43 milliards in 1933) has been proportionally greatest in the case of raw materials, which have declined to 25.7 per cent. of total exports. The values have, of course, been profoundly influenced in this period by the general and heavy fall in the prices of all commodities.

Exports, both of raw materials and of manufactures, were nearly doubled in weight between 1913 and 1928. In some cases, iron and steel, potash, chemical products, were practically new exports from France, their development being attributable to the recovery of Alsace-Lorraine, or to the growth of new industries during and after the war. While in some cases (iron and steel, engineering products, cottons) the highest level was reached in 1927, or even 1926 (woollens), in others it did not appear until 1928 or 1929. Among raw materials, iron and steel attained $5\frac{1}{2}$ times the pre-war figures, coal and coke $3\frac{1}{2}$ times, ores $1\frac{1}{2}$ times. Among

manufactures, exports of chloride of potash, almost non-existent before the war (2,300 tons), advanced to nearly 800,000 tons; chemical products in general attained $2\frac{1}{2}$ times the pre-war figures; engineering products $4\frac{1}{2}$ times; yarns about double; silk fabrics $1\frac{1}{2}$ times; woollen fabrics $1\frac{1}{2}$ times.

In the first quarter of 1934, imports were 15 per cent. less than in the corresponding period of 1933 (6,657 against 7,812 million francs), and exports 1 per cent. less (4,514 against 4,558 millions), resulting in a deficitary balance of 2,143 millions, as compared with 3,254 millions a year ago. Imports of foods declined by 24 per cent., raw materials by 8 per cent., and manufactures by 14 per cent. Among the exports, manufactures fell by 10 per cent., while raw materials increased by 19 per cent. and foods by 7 per cent.

Trend of Anglo-French Trade, 1882-1934.—Until 1932 Great Britain was the principal customer of France, and in pre-war years also far the most important supplier, but a notable decline in her proportionate share of French foreign trade has been witnessed in the last few years. Whereas in pre-war days the United Kingdom took regularly over one-fifth of all French exports, the percentage fell to 18.9 in 1922-26, to 16.1 in 1927-31, and to 10.0 and 9.1 in 1932 and 1933 respectively; while as regards United Kingdom exports to France, the percentage has fallen from over 13 before the war to 12.3, 10.1, 8.2 and 7.6.

In the *visible* trade exchanges between France and the United Kingdom, so firmly established was the balance in favour of the former, that in the half-century preceding the conclusion of the Anglo-French Treaty of 1882 the value of imports from the United Kingdom (exceeded that of French exports to the United Kingdom) only once (in 1871, the year of the Franco-Prussian War). In the next half-century, the sequence of balances favourable to France was interrupted only during the six years 1915-20 when the European War and its after-effects disturbed normal trading relations. As the following table shows, the value of French exports to the United Kingdom in the ten years 1882-91 averaged $1\frac{1}{2}$ times that of imports, and in the next decade advanced to twice. In each subsequent period the proportionate French advantage in *visible* exports dwindled up to 1925, when in the boom years of 1926-30 it rose to over 48 per cent. In 1932 and 1933 the balance at last swung in favour of Great Britain.

ANGLO-FRENCH VISIBLE TRADE, 1882 to 1933.
(Millions of francs.)

Period	Imports from Great Britain	Exports to Great Britain	Balance
Average 1882-1891	586	913	+ 327 = 55.8%
" 1892-1901	537	1,078	+ 541 = 100.8%
" 1902-1913	804	1,283	+ 479 = 59.6%
" 1914-1925	4,328	6,110	+ 1,782 = 41.2%
" 1926-1930	5,768	8,536	+ 2,768 = 48.2%
Year 1931	3,724	5,043	+ 1,319 = 35.4%
" 1932	2,457	1,962	- 495 = 20.1%
" 1933	2,167	1,676	- 491 = 22.7%

In the first quarter of 1934 imports from Great Britain declined by 40 millions (470 against 510 million francs), while French exports to Great Britain increased by 1.58 millions (425.4 against 423.8 millions).

The relatively high cost of French manufactured products when expressed in sterling, the restriction in expenditure on luxury goods, and the imposition of a wider range of customs duties in the United Kingdom since 1931, have been mainly instrumental in reducing the markets for many principal French exports. Compared with 1930 the percentage drop in value of certain French exports in 1933 has been, indeed, remarkable: woollen yarns, 96; woollen fabrics, 93; underwear and ready-made garments, 96; silk fabrics, 79; furs, 88; dressed hides, 83; perfumery, 83; iron and steel, 74; potatoes, 100; eggs, 100; fruits, 59. The United Kingdom was still, however, in 1933 the largest buyer of several of the leading commodities, taking over one-third of total French exports of silk fabrics and ribbons, brandies, table fruit, one-fifth of the wines, and her purchases of underwear and ready-made garments were surpassed only by those of Algeria. On the other hand, there was in that year a proportionately smaller decline in imports from the United Kingdom, notwithstanding the formidable handicaps of the quota system, increased customs duties, the exchange surtax and the import turnover duty. Coal, machinery, crude rubber, woollen yarns and fabrics, iron and steel, tools and metal wares, cotton fabrics, are among the United Kingdom commodities most seriously affected.

The foregoing figures take no account of the immense value of invisible exports resulting from the expenditure in France of visitors from the United Kingdom. For generations before the war United Kingdom visitors were absolutely preponderant in the sum of foreign visitors. Official French returns record totals ranging in 1927-31 from 1,542,000 to 1,911,000 foreign visitors, of whom 833,000 to 860,000 were from the United Kingdom: in 1932 and 1933 the totals

were from the United Kingdom. As the total expenditure was officially estimated at from 10,000 millions in 1927 to 15,000 millions in 1930, the proportional share of United Kingdom expenditure in these years would have been roughly from 4,500 to 8,000 millions, or, at the sterling exchange rate of 124 then prevailing, 36 to 64 million pounds. The movement in the inverse direction is quite insignificant by comparison—only 33,500 and 38,500 French persons in 1932 and 1933, when the fall in sterling attracted larger numbers than in previous years—so that expenditure by French visitors in the United Kingdom must clearly be deemed to have been correspondingly low. It can be reasonably deduced that the total balance in favour of France for the years prior to 1931 was in fact a multiple of the figures in the above table. Thus in 1927 and 1929, where the visible favourable balances were 3,537 and 1,745 millions, the invisible exports were calculated at 4,500 and 8,000 millions on the basis of numbers of visitors. The subtraction of the expenditure of French visitors in the United Kingdom in those years would only slightly reduce this balance in favour of French exports both visible and invisible.

NOTE.

A Trade Agreement between the United Kingdom and France was signed on 27th June, 1934, and brought into force provisionally on 1st July. The text of the Agreement was issued in Cmd. 4632 (obtainable from H.M. Stationery Office, Price 6d.). The agreement gives minimum tariff treatment to United Kingdom products and manufactures (with few exceptions) and guarantees to the United Kingdom a full share of all quotas in accordance with United Kingdom imports during the basic periods, with special reference to coal.

APPENDIX 1.

POPULATION OF PRINCIPAL TOWNS AT THE CENSUS OF 1921, 1926 AND 1931

	1921		1926	1931		Increase (+) or Decrease (-) com- pared with 1926
	Popula- tion	Order	Popula- tion	Popula- tion	Order	
Paris ...	2,906,472	1	2,871,429	2,891,020	1	+ 19,591
Marseilles ...	586,341	2	652,196	800,881	2	+ 148,685
Lyons ...	561,592	3	579,840	579,763	3	+ 8,923
Bordeaux ...	267,409	4	256,026	262,990	4	+ 6,964
Nice ...	155,839	11	184,441	219,549	5	+ 35,108
Lille ...	200,952	5	201,921	201,568	6	- 353
Toulouse ...	175,434	7	180,771	194,564	7	+ 13,793
Saint-Etienne ...	167,967	8	193,737	191,088	8	- 2,649
Nantes ...	183,704	6	184,509	187,343	9	+ 2,834
Strasbourg ...	166,767	9	174,492	181,465	10	+ 6,973
Le Havre ...	163,374	10	158,022	165,076	11	+ 7,054
Toulon ...	106,331	15	115,120	133,263	12	+ 18,143
Rouen ...	123,712	12	122,898	122,957	13	+ 59
Nancy ...	113,226	14	114,491	120,578	14	+ 6,087
Roubaix ...	113,265	13	117,209	117,190	15	- 19
Rheims ...	76,645	27	100,998	112,820	16	+ 11,822
Clermont- Ferrand	82,577	21	111,711	103,143	17	- 8,568
Mulhouse ...	99,226	16	99,892	99,534	18	- 358
Limoges ...	90,187	18	98,209	92,577	19	- 5,632
Dijon ...	78,578	25	83,815	90,869	20	+ 7,054
Grenoble ...	77,409	26	85,621	90,748	21	+ 5,127
Amiens ...	92,780	17	91,576	90,211	22	- 1,365
Nimes... ..	82,724	20	84,667	89,213	23	+ 4,546
Rennes ...	82,241	22	83,418	88,659	24	+ 5,241
Montpellier ...	81,548	23	82,819	86,924	25	+ 4,105
Angers ...	86,158	19	86,260	85,602	27	- 658
Villeurbanne ...	56,110	38	63,775	82,038	29	+ 18,263
Tourcoing ...	78,600	24	81,379	81,972	30	+ 593
Metz ...	62,311	37	69,624	78,767	31	+ 9,143
Orleans ...	69,048	34	70,611	71,606	35	+ 995
Calais ...	73,001	32	71,629	70,213	40	- 1,416
Brest ...	73,960	30	67,861	69,841	41	+ 1,980
Boulogne-sur- Mer	55,336	41	52,839	51,854	55	- 985
Dunkirk ...	34,748	73	32,945	31,763	96	- 1,182
Bayonne ...	28,215	93	31,436	31,727	97	+ 291
Dieppe ...	24,402	108	24,945	25,117	133	+ 172
Biarritz ...	18,353	155	20,776	22,955	146	+ 2,179

APPENDIX 2.

NUMBER OF PERSONS IN RECEIPT OF UNEMPLOYMENT RELIEF, 1926* TO 1933.

Month	1926	1927	1928	1929	1930	1931	1932	1933
January	565	41,956	16,583	1,463	1,213	22,221	215,399	301,003
February	677	74,674	16,333	2,841	1,508	36,380	276,777	326,950
March	661	77,161	12,599	1,865	1,627	48,481	302,886	326,371
April	477	63,212	8,464	806	1,332	50,950	293,961	311,545
May	431	43,954	5,034	616	969	45,187	270,755	295,018
June	401	25,662	2,410	474	1,012	38,025	243,757	264,209
July	367	18,381	1,234	397	894	35,691	261,555	244,344
August	351	15,035	1,006	425	897	36,489	266,685	237,072
September	350	12,775	681	405	924	39,300	261,882	229,004
October	380	9,490	500	379	1,192	46,427	252,396	230,917
November	683	9,593	518	480	3,095	76,800	254,350	245,482
December	10,125	11,934	800	718	9,556	132,062	266,078	285,866
Averages	1,289	33,652	5,514	906	2,018	50,688	263,873	274,890

* See last report for previous years.

In January, February and March, 1934, the respective figures were 327,731, 343,792 and 350,000.

APPENDIX 8.

NORMAL EARNINGS IN CERTAIN OCCUPATIONS IN FRANCE FOR THE YEARS 1911 AND 1928-1933.
A. PARIS REGION. (As furnished by competent local authorities).

	Average hourly wage										Average daily wage							
	October					Index Numbers					October					Index Numbers		
						(Base 100 for 1911)										(Base 100 for 1911)		
	1911	1928	1930	1931	1933	1928	1930	1931	1933	1911	1928	1930	1931	1933	1928	1930	1931	1933
.. ...	Fr. c.	Fr. c.	Fr. c.	Fr. c.	Fr. c.	725	900	869	813	Fr. c.	Fr. c.	Fr. c.	Fr. c.	Fr. c.	644	800	772	722
.. ...	0.80	5.80	7.20	6.95	6.50	766	892	892	892	7.20	46.40	57.60	55.60	53.60	613	713	713	713
.. ...	0.60	4.60	5.35	5.35	5.35	800	866	866	767	6.00	36.80	42.80	42.80	42.80	640	693	693	613
.. ...	0.75	6.00	6.50	6.50	5.75	766	900	900	847	7.50	48.00	52.00	52.00	46.00	613	720	720	678
r ...	0.75	5.75	6.75	6.75	6.35	638	750	750	706	7.50	46.00	54.00	54.00	50.80	511	600	600	564
.. ...	0.90	5.75	6.75	6.75	6.35	—	—	—	—	9.00	46.00	54.00	54.00	50.80	—	—	—	—
.. ...	—	5.25	6.25	6.50	6.25	—	—	—	—	—	44.60	53.10	55.25	50.00	—	—	—	—
.. ...	1.00	5.00	6.25	6.50	6.25	500	625	650	625	9.00	42.50	53.10	55.25	50.00	472	590	614	556
.. ...	0.80	4.75	6.25	6.25	6.00	594	781	781	750	8.00	40.35	53.10	53.10	48.00	504	664	664	600
.. ...	0.95	4.75	6.50	6.50	6.25	500	812	812	658	8.00	40.35	55.25	55.25	50.00	504	691	691	625
.. ...	1.00	5.65	6.45	6.10	6.10	565	645	610	610	10.00	45.20	51.60	48.80	48.80	452	516	488	488
.. ...	0.90	5.00	6.50	6.50	6.25	555	722	722	695	8.00	40.00	52.00	52.00	50.00	500	650	650	625
.. ...	0.825	5.35	6.45	6.10	6.15	648	782	739	745	8.25	42.80	51.60	48.80	49.20	518	625	592	596
ch maker	0.70	—	—	—	—	—	—	—	—	7.00	—	—	—	—	—	—	—	—
.. ...	0.70	4.75	6.50	6.50	6.25	678	928	928	893	7.00	38.00	52.00	52.00	50.00	543	743	743	715
.. ...	1.00	6.00	9.25	9.25	600	925	925	925	900	9.00	48.00	74.00	74.00	74.00	533	822	822	822
.. ...	0.95	5.25	6.50	6.50	6.35	552	684	684	669	8.55	42.00	52.00	52.00	50.80	491	608	608	594
.. ...	0.80	5.00	6.25	6.25	6.10	625	781	781	762	7.60	40.00	50.00	50.00	48.80	525	658	658	642
.. ...	0.95	4.75	6.50	6.50	6.25	500	684	684	658	8.00	40.35	55.25	55.25	50.00	504	691	691	625
.. ...	0.85	4.75	6.50	6.50	6.00	559	765	765	706	7.25	38.00	52.00	52.00	48.00	524	717	717	662
ulptor	1.20	5.50	7.50	7.50	7.30	458	625	625	608	10.80	44.00	60.00	60.00	58.40	407	556	556	541
.. ...	—	5.00	6.50	6.50	—	—	—	—	—	—	42.50	55.25	55.25	—	—	—	—	—
.. ...	0.90	5.75	6.65	6.65	6.00	638	739	739	667	7.65	46.00	53.20	53.20	58.00	601	695	695	627
rades)	0.875	5.25	6.64	6.61	6.34	600	759	756	725	8.12	42.75	53.99	53.83	50.72	526	665	663	625

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APPENDIX 3—continued.

NORMAL EARNINGS IN CERTAIN OCCUPATIONS IN FRANCE FOR THE YEARS 1911 AND 1928-1933.

B. PRINCIPAL TOWNS IN THE PROVINCES.

Occupation	Average hourly wage										Average daily wage									
	October					Index Numbers					October					Index Numbers				
						(Base 100 for 1911)										(Base 100 for 1911)				
	1911	1928	1930	1931	1933	1928	1930	1931	1933	1911	1928	1930	1931	1933	1928	1930	1931	1933		
	Fr. c.	Fr. c.	Fr. c.	Fr. c.	Fr. c.					Fr. c.	Fr. c.	Fr. c.	Fr. c.	Fr. c.						
... ..	0.40	3.01	3.60	3.52	3.41	752	900	880	853	4.21	25.38	30.40	30.02	28.54	602	722	713	678		
... ..	0.50	3.86	4.45	4.45	4.34	772	890	890	868	4.94	31.24	35.85	35.85	34.98	632	726	726	708		
... ..	0.43	3.65	4.27	4.27	4.23	848	993	993	989	4.67	29.47	34.30	34.30	33.02	631	734	734	726		
... ..	0.40	3.20	3.80	3.80	3.57	800	950	950	893	4.09	25.95	30.55	30.55	28.79	634	747	747	704		
... ..	0.42	3.22	3.80	3.80	3.67	766	905	905	874	4.26	26.60	31.05	31.05	29.94	624	729	729	703		
... ..	0.38	3.09	3.65	3.65	3.48	813	960	960	916	3.95	25.56	30.40	30.40	28.30	647	770	770	717		
... ..	0.44	3.48	4.10	4.10	3.82	790	932	932	868	4.55	28.55	33.60	33.15	31.21	627	739	729	686		
... ..	0.42	3.17	3.77	3.77	3.03	754	898	898	864	4.13	25.85	30.80	30.80	29.24	625	746	746	708		
... ..	0.35	2.83	3.27	3.23	2.94	808	934	923	840	3.32	22.97	26.40	26.04	23.65	691	795	784	712		
... ..	0.38	3.01	3.48	3.48	3.37	792	916	916	887	3.64	24.55	28.10	28.10	27.28	674	772	772	750		
... ..	0.43	3.44	4.00	4.06	3.82	800	930	944	889	4.44	28.47	32.50	32.75	31.23	641	732	738	704		
... ..	0.50	3.53	4.20	4.17	3.98	706	840	834	796	4.88	28.98	34.20	34.05	32.25	593	701	698	661		
... ..	0.44	3.41	4.03	4.07	3.85	775	916	925	875	4.48	27.31	33.30	33.50	31.20	609	743	748	697		
... ..	0.49	3.70	4.50	4.30	4.07	755	918	878	830	4.86	29.84	37.02	35.02	32.92	613	762	720	677		
... ..	0.51	3.64	4.20	4.27	4.04	713	824	837	792	5.06	29.79	34.40	34.75	32.75	588	680	687	647		
... ..	0.45	3.45	4.10	4.10	3.94	766	911	911	875	4.57	28.41	34.10	34.10	32.35	621	746	746	708		
... ..	0.51	3.68	4.23	4.39	4.13	721	829	861	810	5.05	30.45	36.60	36.60	33.70	602	725	725	667		
... ..	0.47	3.54	4.16	4.16	3.94	753	885	885	838	4.70	29.19	34.30	34.30	31.93	621	730	730	679		
... ..	0.53	3.68	4.37	4.47	4.26	694	824	843	804	5.40	29.86	35.75	36.40	34.54	552	662	674	640		
... ..	0.47	3.54	4.05	4.17	3.93	753	862	887	836	4.74	29.12	34.15	34.35	31.97	614	721	724	674		
... ..	0.49	3.60	4.20	4.32	4.06	734	857	882	828	4.92	29.58	35.00	35.55	33.08	601	712	723	672		
... ..	0.50	3.60	4.22	4.29	4.00	720	844	858	800	5.12	29.79	34.45	35.05	32.63	581	673	685	638		
... ..	0.44	3.44	4.00	4.00	3.79	781	909	909	861	4.40	28.06	33.08	33.00	30.81	637	752	750	700		
... ..	0.50	3.48	4.10	4.20	3.98	696	820	840	796	5.04	28.52	33.75	34.50	30.50	565	670	684	645		
... ..	0.46	3.46	4.10	4.15	3.92	752	891	902	852	4.65	28.46	33.97	34.20	31.94	612	730	735	687		

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...	0.53	3.66	4.37	4.37	4.16	690	824	824	785	5.39	29.85	35.97	35.97	33.61	553	667	667	623
watch maker	0.55	3.75	4.47	4.47	4.40	681	813	813	800	5.31	30.42	36.55	36.45	35.47	572	688	687	668
...	0.42	3.40	4.07	4.07	3.74	809	969	969	890	4.16	28.35	33.93	33.05	30.42	681	816	809	731
...	0.52	3.84	4.67	4.67	4.35	738	898	898	837	5.11	31.88	38.33	38.25	35.52	623	750	748	695
...	0.49	3.71	4.42	4.42	4.06	757	902	902	828	4.80	30.99	36.78	36.78	33.28	645	766	766	694
...	0.39	3.14	3.75	3.75	3.50	805	962	962	897	3.82	26.13	31.30	31.30	28.47	684	819	819	745
...	0.52	3.73	4.32	4.38	4.14	717	830	842	796	5.05	31.12	35.95	36.45	33.95	616	712	722	672
ter	0.49	3.52	4.17	4.17	3.97	718	851	851	810	4.76	29.14	34.48	34.48	32.49	612	724	724	683
sculptor	0.65	4.51	5.27	5.21	4.83	693	811	802	743	6.39	36.94	43.00	42.45	39.28	578	673	664	615
r	0.41	3.28	4.00	3.87	3.67	800	976	944	895	4.17	27.65	33.40	32.15	29.93	663	801	771	718
...	0.42	3.18	3.87	3.83	3.71	757	922	912	883	4.26	31.37	31.65	31.40	30.64	736	743	737	719
...	0.49	3.37	4.15	4.09	3.85	687	847	835	786	4.72	27.81	33.60	33.10	31.39	589	712	701	665
...	0.33	2.66	3.18	3.15	2.91	806	958	934	882	3.26	22.20	26.50	26.04	23.81	680	813	799	730
l trades)	0.46	3.45	4.08	4.08	3.89	750	887	887	846	4.61	28.57	33.66	33.60	31.70	619	730	729	688
ale Labour	0.22	2.00	2.48	2.48	2.33	909	1,127	1,127	1,059	2.15	16.28	20.25	20.25	18.78	757	942	942	874
...	0.23	1.98	2.45	2.45	2.30	860	1,065	1,065	1,000	2.28	16.17	20.13	19.90	18.75	709	883	873	822
...	0.21	1.91	2.29	2.29	2.16	909	1,090	1,090	1,029	2.08	15.50	18.76	18.76	17.54	745	902	902	843
...	0.25	1.98	2.43	2.45	2.33	792	972	980	932	2.50	16.12	19.78	20.00	18.98	644	791	800	759
...	0.22	2.01	2.47	2.49	2.20	913	1,123	1,132	1,000	2.13	16.23	19.92	20.15	17.47	761	935	946	820
...	0.25	1.96	2.39	2.43	2.24	784	956	972	896	2.44	16.18	19.56	20.10	17.80	663	802	824	730
...	0.25	1.97	2.46	2.38	2.23	784	984	952	892	2.48	15.94	20.10	18.95	17.95	642	810	764	724
l trades)	0.23	1.97	2.42	2.42	2.26	856	1,054	1,054	983	2.29	16.06	19.79	19.73	18.18	701	866	862	794

APPENDIX 4.

WAGES IN METALLURGICAL AND ENGINEERING OCCUPATIONS, 1928 to 1933.

PARIS.

Predominant earnings of various classes of metalworkers. (In francs per hour).

	Time					Piece				
	1928	1930	1931	1932	1933	1928	1930	1931	1932	1933
	Fr. c.	Fr. c.	Fr. c.	Fr. c.	Fr. c.	Fr. c.	Fr. c.	Fr. c.	Fr. c.	Fr. c.
<i>Metallurgical Works.</i>										
Wire drawer	4.75	5.23	5.77	5.48	5.38	5.17	5.84	6.42	5.94	5.83
Smelter—										
Cupola (iron and steel) ...	4.11	5.23	5.34	5.02	5.12	4.61	5.98	6.22	5.76	5.91
Crucible (aluminium) ...	4.41	5.32	5.43	5.22	5.22	5.13	6.16	6.38	6.03	6.14
Crucible (copper & bronze)	4.66	5.49	5.68	5.38	5.41	5.35	6.41	6.57	6.14	6.35
Moulder (aluminium) ...	5.19	6.41	6.40	6.03	6.12	6.23	7.50	7.33	6.67	6.76
Hot roller	4.46	5.11	5.22	4.90	5.08	5.19	6.07	6.18	5.87	6.03
Cold roller	3.89	4.79	4.87	4.59	4.62	4.41	5.38	5.49	5.19	5.23
Semi-skilled	3.78	4.72	4.75	4.52	4.51	4.37	5.37	5.15	4.90	4.96
Unskilled	3.28	4.53	4.55	4.39	4.41	3.63	4.87	4.98	4.82	4.85
<i>General Engineering.</i>										
Fitter	4.78	6.01	6.07	5.60	5.79	5.16	6.70	6.94	6.48	6.64
Tool-room fitter	5.33	6.74	7.03	6.53	6.74	5.69	7.37	7.63	7.12	7.19
Turner	4.98	6.30	6.46	5.84	5.99	5.41	7.08	7.24	6.79	6.88
Tool-room turner	5.42	6.97	7.04	6.66	6.84	—	7.72	7.81	7.20	7.32
Pattern-maker	5.91	7.08	7.22	6.62	6.78	6.42	7.83	7.81	7.22	7.47
Tinmith	4.68	5.85	5.88	5.71	5.83	5.59	6.71	6.77	6.56	6.65
Steam-hammer smith ...	5.04	6.32	6.46	5.89	6.07	6.17	7.53	7.68	7.02	6.96
Handsmith	4.96	6.32	6.29	5.84	6.08	5.40	7.03	7.16	6.66	6.74
Tool-room smith	5.40	6.77	6.98	6.67	6.63	—	7.53	7.81	—	—
Sheet-metal worker ...	4.71	5.97	6.05	5.57	5.81	5.43	6.95	7.22	6.58	6.62
Boring machinist	4.89	6.38	6.62	6.39	6.54	5.37	6.96	7.19	6.92	7.15
Grinding machinist ...	5.22	6.19	6.38	6.27	6.52	5.60	7.16	7.33	6.95	7.05
Milling machinist	5.01	6.32	6.37	5.82	5.98	5.40	7.09	7.28	6.72	6.89
Slotting machinist and planing machinist	4.31	6.08	6.39	5.88	6.02	4.62	6.84	6.97	6.71	6.73
Acetylene welder	4.69	6.08	6.23	5.71	5.72	5.25	6.83	7.04	6.54	6.57

Bar-lathe man :										
Automatic	—	—	—	—	—	4.44	5.30	5.71	5.35	5.47
Semi-automatic	4.81	6.14	6.21	5.76	5.74	5.37	6.74	6.98	6.46	6.57
Boilermaker	4.48	5.97	6.03	5.62	5.87	5.19	6.88	7.02	6.58	6.79
Striker	3.83	4.97	5.04	4.77	4.93	4.30	5.58	5.66	5.26	5.58
Semi-skilled	4.09	5.05	5.24	4.93	5.02	4.48	5.69	5.91	5.69	5.78
Unskilled	3.28	4.22	4.24	4.11	4.09	3.63	4.71	4.81	4.62	4.63
<i>Boiler Shops.</i>										
Fitter	4.63	5.85	5.98	5.71	5.72	5.04	6.28	6.53	6.08	6.12
Tool-room fitter	5.01	6.08	6.68	6.62	6.61	5.39	6.57	7.09	6.97	7.00
Turner	4.71	5.79	6.13	5.92	5.89	5.08	6.25	6.61	6.19	6.32
Coppersmith	5.21	6.48	6.46	6.06	6.19	5.96	7.39	7.35	7.13	7.15
Handsmith	4.54	6.12	6.31	5.97	5.95	5.56	7.27	7.46	6.95	6.94
Sheet-metal worker	4.61	5.76	5.96	5.61	5.87	5.35	6.68	6.96	6.44	6.75
Acetylene welder	4.68	5.93	6.13	5.69	5.86	5.31	6.67	6.96	6.42	6.61
Boilermaker	4.58	5.98	6.09	5.59	5.76	5.24	7.06	7.11	6.61	6.73
Erector	4.39	5.66	5.92	5.59	5.62	4.93	6.30	6.72	6.32	6.33
Hand riveter	4.26	5.72	5.68	5.45	5.47	4.66	6.37	6.40	6.03	6.07
Semi-skilled	4.03	4.70	5.22	4.88	4.92	4.50	5.60	5.94	5.62	5.70
Unskilled	3.28	4.22	4.24	4.11	4.09	3.63	4.71	4.81	4.62	4.63
<i>Railway and Tramway Construction.</i>										
Fitter	4.46	5.77	6.11	5.61	5.42	4.83	6.45	6.79	6.32	6.12
Tool-room fitter	4.86	6.02	6.76	6.43	6.61	—	—	—	—	—
Turner	4.89	6.07	6.36	5.78	5.84	5.30	6.72	7.09	6.64	6.73
Handsmith	4.58	5.77	6.23	5.81	5.84	4.89	6.14	6.33	6.38	6.45
Milling machinist	—	—	—	—	—	—	6.78	7.08	6.58	6.71
Slotting machinist and planing machinist	—	5.27	5.94	5.52	5.68	—	6.03	6.36	6.09	6.13
Joiner	4.48	5.67	5.96	5.59	5.63	4.71	6.13	6.49	6.21	6.24
Sheet-metal worker	4.21	5.42	5.62	5.47	5.50	4.70	6.08	6.17	6.22	6.27
Locksmith	4.50	5.77	6.10	5.66	5.30	4.80	6.36	6.74	6.32	6.17
Boilermaker	4.16	5.34	5.63	5.39	5.46	4.48	6.13	6.44	6.11	6.21
Erector	4.07	5.34	5.67	5.38	5.58	4.37	5.81	6.26	5.96	6.04
Semi-skilled	3.99	4.96	5.16	4.98	5.04	4.41	5.51	5.73	5.52	5.59
Unskilled	3.28	4.22	4.24	4.11	4.09	3.63	4.71	4.81	4.62	4.63

APPENDIX 4—continued.

	Time					Piece				
	1928	1930	1931	1932	1933	1928	1930	1931	1932	1933
	Fr. c.	Fr. c.	Fr. c.	Fr. c.	Fr. c.	Fr. c.	Fr. c.	Fr. c.	Fr. c.	Fr. c.
<i>Electrical shops.</i>										
Fitter	4.55	5.92	6.12	5.63	5.84	4.91	6.64	6.96	6.45	6.66
Tool-room fitter	5.27	6.77	7.17	6.53	6.73	—	7.36	7.66	7.16	7.22
Turner	4.68	6.22	6.40	5.91	5.97	5.30	6.93	7.24	6.72	6.78
Tool-room turner	5.37	6.79	7.26	6.85	6.92	—	7.37	7.69	7.18	7.27
Cabinet maker	4.77	5.96	6.15	5.91	6.09	5.39	6.55	6.79	6.49	6.64
Tool-room milling machinist	5.30	6.87	7.26	6.85	6.82	—	7.49	7.73	—	—
Milling machinist	4.79	6.18	6.31	5.73	5.91	5.33	6.90	7.27	6.61	6.74
Electrical fitter	4.49	5.87	6.04	5.59	5.87	4.92	6.64	6.85	6.41	6.66
Sheet-metal worker	4.59	5.67	5.94	5.74	6.77	5.05	6.51	6.66	6.59	6.54
Electrical winder	4.46	5.81	6.01	5.52	5.73	4.89	6.52	6.81	6.32	6.55
Erector	4.15	5.72	5.94	5.54	5.63	4.39	6.48	6.87	6.31	6.56
Electrical fitter-erector	4.36	5.83	5.94	5.59	5.69	4.76	6.58	6.71	6.32	6.42
Locksmith	4.32	5.98	6.10	5.92	5.95	4.85	6.75	6.89	6.59	6.59
Joiner	4.49	5.56	5.72	5.63	5.59	4.81	5.19	6.19	6.11	6.18
Semi-skilled	4.06	5.07	5.29	4.92	4.97	4.32	5.42	5.81	5.50	5.54
Unskilled	3.28	4.22	4.24	4.11	4.09	3.63	4.71	4.81	4.62	4.63
<i>Automobile works.</i>										
Fitter	4.86	6.03	5.92	5.52	5.78	5.19	6.69	6.70	6.27	6.61
Tool-room fitter	5.32	6.71	7.17	6.59	6.77	5.74	7.32	7.57	7.09	7.18
Turner	5.03	6.32	6.29	5.79	6.02	5.41	7.08	7.13	6.62	6.81
Tool-room turner	5.40	6.00	7.27	6.73	6.89	—	7.48	7.64	7.02	7.23
Tool-room milling machinist	5.48	6.86	7.14	6.72	6.77	—	7.52	7.67	7.00	7.14
Milling machinist	5.13	6.37	6.51	6.11	6.14	5.49	7.08	7.12	6.71	6.88
Bar-lathe man :										
Automatic	—	—	—	—	—	4.33	5.46	5.60	5.58	5.59
Semi-automatic	—	—	—	—	—	5.32	6.74	6.74	6.44	6.48
Grinding machinist	5.24	6.26	6.52	6.38	6.49	5.59	7.03	7.29	6.93	7.04

Slotting machinist and planing machinist	5.06	6.24	6.54	6.24	6.22	5.51	6.93	7.01	6.87	6.87
Boring machinist	4.97	6.49	6.63	6.37	6.60	5.28	6.98	7.15	6.88	7.18
Coppersmith	5.02	6.42	6.38	6.29	6.31	5.33	7.34	7.13	7.08	7.12
Electrical fitter-erector	4.42	5.71	6.02	5.71	5.73	4.92	6.45	6.63	6.28	6.39
Try-out engine tester	4.94	6.12	6.29	5.94	5.97	5.36	6.77	6.93	6.77	6.81
Semi-skilled	4.14	5.17	5.26	5.03	5.08	4.63	5.74	5.93	5.63	5.72
Unskilled	3.28	4.22	4.24	4.11	4.09	3.63	4.71	4.81	4.62	4.63
<i>Optical and Precision Instrument Manufacture.</i>										
Tool-room turner	5.57	6.89	7.25	6.94	7.13	—	7.67	7.87	7.23	7.38
Turner	5.32	6.49	6.86	6.41	6.44	5.70	7.13	7.28	6.93	6.96
Milling machinist	5.26	6.44	6.59	6.18	6.29	5.74	7.23	7.37	7.06	7.15
Bar-lathe turner	5.09	6.38	6.51	6.08	6.27	5.58	6.97	7.14	6.79	7.02
Grinder and polisher	5.36	6.52	6.72	6.24	6.38	6.38	7.67	7.73	7.26	7.35
Semi-skilled	4.36	5.24	5.56	5.31	5.35	4.46	5.73	6.10	6.03	6.00
Unskilled	3.28	4.22	4.24	4.11	4.09	3.63	4.71	4.81	4.62	4.63
<i>Miscellaneous.</i>										
Night watchman	3.12	3.88	3.94	3.94	3.97	—	—	—	—	—
Carter	3.95	5.15	5.29	5.21	5.23	—	—	—	—	—
Staff electrician	4.43	5.87	6.11	5.76	5.94	—	—	—	—	—
Packer	4.29	5.24	5.37	5.33	5.36	4.76	5.80	6.08	5.96	5.94
Delivery service	3.84	4.75	4.98	4.93	4.94	—	—	—	—	—
Storeman	3.81	5.08	5.07	5.16	5.33	—	—	—	—	—
<i>Apprentices*.</i>										
Engineering—										
1st year	0.71	0.84	0.85	0.81	0.79	1.03	—	—	—	—
2nd "	1.10	1.31	1.29	1.25	1.24	1.63	2.18	2.21	2.24	2.25
3rd "	1.77	2.37	2.40	2.33	2.30	2.73	3.51	3.50	3.37	3.39
Metallurgical—										
1st year	1.03	1.22	1.24	1.18	1.14	1.35	—	—	—	—
2nd "	1.63	2.05	2.01	1.84	1.86	2.04	2.32	2.34	2.36	2.42
3rd "	2.17	2.66	2.65	2.51	2.54	2.80	3.28	3.26	3.42	3.40

* Note.—Some companies grant a bonus of from 50 to 1,000 francs at the termination of the apprenticeship, whilst others accord a bonus of from 5 to 30 per cent. of the total earnings of the apprentice during the period of his apprenticeship.

APPENDIX 4—continued.

	Time					Piece				
	1928	1930	1931	1932	1933	1928	1930	1931	1932	1933
	Fr. c.	Fr. c.	Fr. c.	Fr. c.	Fr. c.	Fr. c.	Fr. c.	Fr. c.	Fr. c.	Fr. c.
Boiler shop—										
1st year	1.07	1.28	1.19	1.14	1.17	1.52	—	—	—	—
2nd „	1.69	2.12	2.16	2.12	2.17	2.37	2.79	2.82	2.61	2.65
3rd „	2.20	2.71	2.74	2.89	2.93	2.83	3.52	3.50	3.44	3.48
Others—										
1st year	0.84	1.26	1.21	1.06	1.08	1.27	—	—	—	—
2nd „	1.32	1.64	1.60	1.41	1.37	1.95	2.59	2.62	2.55	2.56
3rd „	2.02	2.43	2.48	2.39	2.38	2.56	3.08	3.11	3.28	3.24
<i>Female Workers.</i>										
Winders	2.77	4.26	4.43	4.19	4.20	3.13	4.71	5.02	4.61	4.62
Milling cutters	3.03	3.87	4.02	3.71	3.78	3.46	4.53	4.81	4.54	4.74
Turners	2.96	3.88	4.03	3.82	3.77	3.44	4.44	4.78	4.63	4.61
Acetylene welders	3.39	4.31	4.66	4.35	4.74	3.69	4.74	4.95	4.82	5.19
Semi-skilled	2.72	3.58	3.66	3.48	3.51	3.12	3.97	4.22	4.03	4.06
Unskilled	2.41	3.38	3.44	3.25	3.23	2.73	3.66	3.77	3.68	3.67

APPENDIX 5.

WAGES IN PARIS DRESSMAKING TRADE.

(Compiled from data furnished by the central employment office of the dressmaking trades).

A.—Weekly wages in Paris dressmaking establishments.

	First Hands	Second Hands	Third Hands	Apprentices
	Fr. c.	Fr. c.	Fr. c.	Fr. c.
October, 1925	150.00	120.00	75.00 to 80.00	—
" 1926	190.00	135.00	105.00	—
" 1927	180.00 to 187.00	123.00 to 138.00	99.00 to 102.00	49.00 to 53.00
" 1928	189.60	141.60	100.00	45.60 ,, 55.00
" 1929	208.80	156.00	110.00	50.40 ,, 79.00
" 1930	218.40	163.20	115.20	52.80 ,, 82.80
" 1931	218.40	163.20	115.20	52.80 ,, 82.80
" 1932	192.60	134.60 to 148.30	92.00 to 111.30	45.80 ,, 54.85
" 1933	194.40	139.20	93.00	46.25 ,, 55.40

B. Monthly wages in Leading Dressmaking Houses.

	Good Finishers	Medium Finishers	Junior Finishers	Apprentices
	Fr. c.	Fr. c.	Fr. c.	Fr. c.
October, 1925	550.00	450.00	375.00	166.00
" 1926	768.00	634.00	495.00	200.00
" 1927	770.00	630.00	500.00	200.00
" 1928	832.00	776.00	500.00	160.00 to 222.00
" 1929	832.00	776.00	500.00	160.00 ,, 222.00
" 1930	936.00	748.40	520.00	208.00 ,, 260.00
" 1931	936.00	748.40	520.00	208.00 ,, 260.00
" 1932	936.00	748.40	520.00	208.00 ,, 260.00
" 1933	866.60	738.35	433.35	208.00 ,, 260.00

APPENDIX 6.

IMPORTS OF COAL AND COKE INTO FRANCE FOR HOME CONSUMPTION

(Thousand tons)

(i) Coal

Country	1913	1928	1929	1930	1931	1932	1933
Great Britain ...	11,257	8,506	13,216	13,581	10,783	9,153	8,895
Germany (a) ...	3,491	4,510	5,148	5,096	4,616	4,071	4,016
Belgium (b) ...	3,669	3,223	3,566	3,548	4,421	2,776	2,961
Holland ...	275	838	995	1,545	2,031	987	1,142
Poland ...	—	383	649	769	978	619	714
United States ...	12	13	8	27	48	4	—
Other countries ...	7	38	88	201	211	254	224
Totals ...	18,711	17,511	23,670	24,767	23,088	17,864	17,952

(ii) Coke

Great Britain ...	10.0	5.7	22.6	48.7	11.5	2.6	—
Germany ...	2,393	3,925	3,648	2,868	1,918	1,246	1,419
Belgium (b) ...	547	849	697	640	556	322	373
Holland ...	112	588	1,074	1,003	911	390	448
Other countries ...	8	—	9	6	0.9	3	6
Totals ...	3,070	5,368	5,451	4,566	3,398	1,963	2,246

(a) Imports from the Saar, now reckoned as French territory, are included in the German total for 1913.

(b) Economic Union of Belgium and Luxemburg from 1928 onwards.

APPENDIX 7.

*Coal Mines*AVERAGE WAGES, OUTPUT AND PROPORTIONAL LABOUR COST IN THE WHOLE
FRENCH COAL-MINING INDUSTRY

Year	Average daily earnings		Average daily output		Cost of labour per metric ton extracted
	Under-ground	Underground and surface	Under-ground	Underground and surface	
	Fr. c.	Fr. c.	Kilogr.	Kilogr.	Fr. c.
1900 ...	5.11	4.66	1,009	721	6.46
1910 ...	5.50	5.01	944	672	7.46
1911 ...	5.58	5.12	959	682	7.45
1912 ...	5.70	5.19	980	698	7.44
1913 ...	5.96	5.40	978	695	7.77
1914 ...	5.88	4.94	975	668	8.10
1915 ...	5.64	4.78	856	626	—
1916 ...	6.35	5.49	916	610	—
1917 ...	7.83	6.92	870	634	—
1918 ...	11.15	10.12	827	564	—
1919 ...	15.21	13.44	803	506	28.68
1920 ...	20.84	16.25	765	475	40.25
1921 ...	20.49	18.84	767	500	38.90
1922 ...	18.81	17.17	758	487	32.85
1923 ...	21.55	20.05	796	547	36.61
1924 ...	24.67	22.80	799	566	40.21
1925 ...	25.60	23.72	807	578	42.73
1926 ...	30.66	28.40	846	612	48.18
1927 ...	34.33	31.39	840	606	51.24
1928 ...	33.53	31.01	915	650	47.82
1929 ...	37.18	34.30	986	694	49.49
1930 ...	40.07	36.99	988	694	53.34
1931 ...	38.71	35.72	1,042	720	49.57
1932 ...	35.72	32.87	1,153	783	41.97
1933 ...	35.37	32.52	1,239	833	39.04

APPENDIX 7—*continued.*

AVERAGE DAILY WAGES IN FRANCS IN PRINCIPAL DISTRICTS

Year	Nord		Pas-de-Calais		Loire	
	Under-ground	Underground and surface	Under-ground	Underground and surface	Under-ground	Underground and surface
1900	5.43	5.04	5.27	4.86	5.21	4.75
1905	5.00	4.62	5.16	4.81	4.73	4.30
1910	5.67	5.22	5.81	5.37	5.14	4.66
1911	5.73	5.25	5.89	5.43	5.21	4.69
1912	5.84	5.36	6.01	5.54	5.31	4.76
1913	6.09	5.57	6.25	5.72	5.51	4.06
1918	—	—	12.33	11.67	11.78	10.27
1919	—	—	16.63	15.62	15.97	13.12
1920	—	—	21.55	20.12	21.82	16.70
1921	—	—	22.77	21.11	18.65	17.78
1922	—	—	19.04	17.63	19.71	17.89
1923	22.47	20.92	21.70	20.51	22.74	20.82
1924	24.82	23.22	25.49	23.89	25.06	23.01
1925	25.36	23.97	26.36	24.72	25.97	23.83
1926	30.11	28.46	31.33	29.39	30.07	28.76
1927	33.21	31.42	34.53	32.39	34.80	31.76
1928	32.91	30.78	33.86	31.79	35.13	31.67
1929	36.82	34.23	37.23	34.88	38.07	34.44
1930	40.26	37.44	40.05	37.52	41.19	37.19
1931	38.47	35.86	38.92	36.41	39.27	35.16
1932	35.46	33.00	36.03	33.65	36.35	32.34
1933	35.01	32.56	35.66	33.26	36.29	32.23

APPENDIX 8.

IRON AND STEEL PRODUCTION, 1913 TO 1933
(Thousands of metric tons)

Year	Pig Iron		Steel	
	Monthly average	Total production	Monthly average	Total production
1913	438	5,207	391	4,687
1914	224	2,690	221	2,656
1915	49	586	91	1,088
1916	124	1,489	163	1,952
1917	145	1,735	186	2,232
1918	109	1,306	151	1,808
1919	201	2,412	182	2,186
1920	286	3,434	254	3,050
1921	285	3,417	259	3,102
1922	436	5,229	372	4,471
1923	453	5,432	426	5,110
1924	641	7,693	575	6,900
1925	708	8,494	621	7,446
1926	786	9,432	703	8,430
1927	773	9,273	692	8,306
1928	832	9,981	792	9,500
1929	864	10,364	808	9,699
1930	842	10,106	784	9,412
1931	685	8,217	651	7,808
1932	464	5,563	467	5,606
1933	527	6,328	543	6,519

MONTHLY PRODUCTION OF IRON AND STEEL, 1931 TO 1933
(Thousands of metric tons)

Month	Pig Iron			Steel		
	1931	1932	1933	1931	1932	1933
January	801	502	488	746	469	505
February	726	461	452	693	464	495
March	775	471	525	722	464	586
April	739	459	516	675	457	554
May	724	459	554	674	445	594
June	691	452	551	650	468	586
July	679	453	570	651	465	581
August	680	457	564	644	473	564
September	655	446	538	655	456	550
October	637	457	537	626	467	527
November	567	458	509	538	469	488
December	543	488	523	535	509	492

APPENDIX 8—continued.

NUMBER OF BLAST FURNACES IN OPERATION					
1st January, 1921	...	...	...	...	91
" " 1922	...	...	...	...	73
" " 1923	...	...	...	...	116
" " 1924	...	...	...	...	125
" " 1925	...	...	...	...	133
" " 1926	...	...	...	...	147
" " 1927	...	...	...	...	156
" " 1928	...	...	...	...	142
" " 1929	...	...	...	...	153
" July, "	...	...	...	...	155
" January, 1930	...	...	...	...	156
" July, "	...	...	...	...	147
" January, 1931	...	...	...	...	137
" July, "	...	...	...	...	122
" January, 1932	...	...	...	...	90
" February, "	...	...	...	...	85
" March, "	...	...	...	...	81
" April, "	...	...	...	...	78
" May, "	...	...	...	...	79
" June, "	...	...	...	...	79
" July, "	...	...	...	...	79
" August "	...	...	...	...	81
" Sept., "	...	...	...	...	82
" Oct., "	...	...	...	...	81
" Nov., "	...	...	...	...	81
" Dec., "	...	...	...	...	82
" Jan., 1933	...	...	...	...	82
" February, "	...	...	...	...	82
" March, "	...	...	...	...	82
" April, "	...	...	...	...	85
" May, "	...	...	...	...	87
" June, "	...	...	...	...	92
" July, "	...	...	...	...	92
" Aug., "	...	...	...	...	92
" Sept., "	...	...	...	...	92
" Oct., "	...	...	...	...	91
" Nov., "	...	...	...	...	90
" Dec., "	...	...	...	...	91
" Jan., 1934	...	...	...	...	90
" Feb., "	...	...	...	...	90

APPENDIX 9.

PRODUCTION OF MINERALS IN FRANCE IN 1913 AND IN THE YEARS 1928-33
(In thousands of metric tons)

Mineral substance	1913	1928	1929	1930	1931	1932	1933
Coal	40,844	52,429	54,977	55,027	51,063	47,258	47,941
Iron ore	21,918*	49,328	51,030	48,821	38,784	27,762	30,423
Pyrites	311	202	194	198	193	191	168
Bauxite	310	598	643	538	348	394	478
Asphalt	48	55	46	57	58	48	38
Mineral oils	48†	81	82	82	79	85	90
Potash salts—							
Gross weight	355†	2,580	3,134	3,136	2,203	1,901	—
Weight of K ₂ O	56†	447	531	546	396	321	322
Rock salt—							
Raw	116	233	190	166	156	141	142
Refined	313	377	389	419	355	389	365
For soda	554	987	931	1,004	879	899	1,295

* Within pre-war boundaries. The output of Lorraine was 21,136 thousand tons.

† Including Alsace-Lorraine.

APPENDIX 10.

FRENCH FOREIGN TRADE.

(arranged in three principal sub-divisions).

A. Weight in thousands of metric tons.

B. Value in millions of francs.

(i) IMPORTS. (for consumption).

Sub-division	1909-13 Annual average		1922-26 Annual average		1928		1929		1930		1931	
	A.	B.*	A.	B.*	A.	B.*	A.	B.†	A.	B.†	A.	B.†
Food and drink ...	4,725	1,601	5,337	8,616	5,825	12,612	6,712	13,167	6,376	11,822	9,102	14,001
Raw materials ...	32,845	4,548	44,362	26,275	42,007	33,101	50,630	35,125	52,170	29,325	46,930	19,036
Manufactures ...	1,274	1,478	1,443	5,404	1,507	7,931	2,119	9,928	2,374	11,364	2,065	9,169
Totals‡ ...	38,844	7,627	51,142	40,295	49,339	53,644	59,461	58,220	60,920	52,511	58,097	42,206

700

(ii) EXPORTS. (French and nationalised produce and manufactures).

Sub-division	A.	B.*	A.	B.*	A.	B.*	A.	B.†	A.	B.†	A.	B.†
	Food and drink ...	1,407	822	1,342	2,650	1,683	6,318	1,513	6,078	2,144	5,886	1,602	4,301
Raw materials ...	14,264	1,852	22,942	10,848	34,150	13,102	33,033	12,568	29,730	9,992	24,805	7,179
Manufactures ...	2,159	3,650	3,691	25,592	5,294	32,684	5,360	31,493	4,806	26,957	3,929	18,956
Totals‡ ...	17,830	6,324	27,975	40,090	41,127	52,104	39,906	50,139	36,680	42,835	30,336	30,436

* Based on average values fixed by the Permanent Customs Evaluation Commission.

† Declared values.

‡ Not including bullion and specie.

See pages 470, 473 and 483 for corresponding figures for the years 1932 and 1933.

APPENDIX II.

PRINCIPAL EXPORTS FROM FRANCE

In millions of francs: arranged in order of importance in 1909-13)

Commodity	1909-13* (average)	1928*	1929†	1930†	1931†	1932†
<i>Food and Drink</i>						
Wines	215	1,123	1,177	887	665	425
Dairy produce ...	95	716	600	472	335	236
Table fruits ...	65	535	577	456	359	205
Sugar (raw and refined) ...	63	757	717	602	511	497
Brandies & Spirits	55	680	685	612	456	312
Vegetables: fresh, salted & preserved	40	325	364	301	254	129
Fish: fresh, dried, salted & preserved ...	37	259	265	214	160	92
Potatoes	27	258	160	120	182	46
Cereals	15	102	22	910	371	142
<i>Raw Materials</i>						
Wool and wool waste	335	2,180	2,032	1,200	875	583
Silk and silk floss	167	194	238	147	68	33
Hides and pelts, raw	154	1,054	927	599	366	227
Raw cotton & waste	121	250	172	187	99	59
Ores	76	527	522	539	418	287
Pig-iron, iron and steel	69	2,871	2,632	2,405	1,929	1,108
Common timber ...	62	489	432	312	195	89
Oils, pure fixed (excluding olive) ...	58	328	347	260	220	161
Copper	47	265	339	382	178	79
Coal, coke & patent fuel	41	753	812	649	541	406
Paper-making materials (chiefly rag waste) ...	38	217	246	142	90	57
Fodder, bran, oil-cake	36	451	356	367	243	185
Stone, marble and building materials	34	485	558	497	363	262
Vegetable wax & resinous products	18	204	170	134	93	56
Pearls	9	602	660	407	293	131
Precious stones ...	—	540	584	451	240	171
<i>Manufactures</i>						
Cotton fabrics ...	353	2,963	2,713	2,145	1,414	971
Silk & rayon ...	324	3,819	3,439	2,866	1,989	1,083
Woolen	205	2,339	2,045	1,571	1,099	419

* & See footnotes on previous page.

APPENDIX 11—continued

Commodity	1909-13* (average)	1928*	1929†	1930†	1931†	1932†
Underwear & ready-made clothing ...	205	2,096	1,844	1,662	691	192
Motor-cars ...	192	1,541	1,608	1,123	837	549
Chemical products	178	1,610	1,691	1,676	1,308	931
Yarns :—						
Woolen ...	82	1,456	1,275	1,010	746	351
Linen, hemp, etc.	42	262	245	142	94	59
Silk & rayon ...	21	488	494	535	419	291
Cotton ...	16	669	559	453	348	284
Hides, cured ...	130	871	882	776	491	254
Paper, books and printed matter ...	126	918	893	875	666	523
Tools and metal goods ...	110	1,993	1,850	1,733	1,253	774
Machines, boilers & machine parts ...	108	2,041	2,193	2,107	1,552	957
Pottery, glass & crystal ...	86	890	892	716	468	293
Skin and leather goods ...	82	438	487	457	323	189
Rubber and gutta-percha goods ...	73	770	636	580	388	258
Furs, prepared ...	69	513	475	360	310	151
Perfumes and soaps	46	879	935	788	576	351

* † See footnotes to Appendix 10.

APPENDIX 12

PRINCIPAL IMPORTS INTO FRANCE

(In millions of francs : arranged in order of importance in 1909-13.)

Commodity	1909-13* (average)	1928*	1929†	1930†	1931†	1932†
<i>Food and Drink</i>						
Cereals	420	2,464	3,016	2,081	3,000	2,871
Wines	264	2,271	2,137	2,156	2,939	2,317
Coffee	161	1,776	1,652	1,121	976	1,021
Dairy produce ...	110	373	467	517	822	409
Fish : fresh, frozen & salted	73	490	543	378	393	177
Potatoes and pulse	72	516	599	353	456	308
Sugar, raw & refined	68	786	795	576	486	354
Table fruits	64	1,001	1,028	1,192	1,315	1,067
Rice	62	428	400	356	286	283
Meat : fresh, chilled and salted	40	398	267	587	742	244
Brandies & spirits ...	19	373	596	457	432	461
<i>Raw Materials</i>						
Wool & wool waste	685	5,305	5,146	3,180	1,801	1,270
Cotton & cotton waste	532	4,184	4,483	3,280	1,502	1,138
Coal, coke & patent fuel	476	3,256	4,288	4,439	3,629	2,402
Oleaginous seeds, &c.	359	2,579	2,544	2,091	1,458	1,333
Silk and silk floss ...	335	2,274	1,681	963	509	199
Crude rubber and gutta-percha ...	222	527	645	468	174	84
Hides & pelts, raw	216	1,729	1,158	1,047	701	380
Common timber ...	184	1,156	1,309	1,549	1,156	513
Copper	157	1,255	1,740	1,456	798	382
Flax and hemp ...	124	639	628	530	209	159
Mineral oils, includ- ing heavy oils ...	119	2,269	2,658	2,937	1,903	1,784
Ores	103	521	572	494	287	130
Nitrate of soda ...	77	434	679	313	405	281
Stone, marble and building materials	75	632	776	852	603	384
Jute	56	464	460	306	177	103
Cellulose pulp ...	52	518	606	599	435	300
Tin	38	316	324	230	152	107
Pearls	7	579	554	350	196	137
Precious stones ...	—	871	980	465	237	145
<i>Manufactures.</i>						
Machines, boilers & machine parts ...	274	1,805	2,851	3,398	2,566	1,421
Chemical products...	147	953	923	864	684	589

* † See footnotes to Appendix 10

APPENDIX 12—*continued*

Commodity	1909-13* (average)	1928*	1929†	1930†	1931†	1932†
Tools & metal goods	78	449	752	928	738	440
Paper, books, etc. ...	76	516	616	553	491	368
Furs, prepared ...	75	469	368	357	324	210
Pottery, porcelain & glassware ...	69	376	410	483	413	284
Hides, cured ...	65	316	262	256	209	109
Yarns ...	64	317	332	331	204	118
Rubber and gutta- percha goods ...	63	149	201	245	201	130
Cotton fabrics ...	58	113	162	253	169	70
Woollen ...	46	185	229	256	200	112
Skin and leather goods ...	33	100	114	149	182	83
Ships ...	19	120	178	489	441	136
Motor-cars ...	12	214	300	324	207	132
Jute, etc., fabrics ...	11	122	168	154	109	68
Dyestuffs ...	7	104	101	84	68	59

* † See footnotes to Appendix 10.

APPENDIX 13.

NOTABLE CHANGES IN FRENCH FOREIGN TRADE—EXPORTS.

Selected classes showing INCREASES by weight in 1928-30 as compared with 1913.

Commodity	Weights in thousands of metric tons					Values in millions of francs				
	1913	1928-30 Average	1931	1932	1933	1913	1928-30 Average	1931	1932	1933
<i>Food and Drink.</i>										
Sugar	201	279	270	283	280	75	692	511	497	413
Potatoes and pulse	199	279	203	93	78.3	32	228	215	67	51
Vegetables : fresh, salted and preserved	105	136	126	67	43	50	330	254	129	82.4
Cereals	40	288	371	159	275	11	344	371	142	143
Mineral waters	38	59.2	51.3	51	46.5	7.5	66	59	53	48
Cattle	36	40.3	2.7	1	1.2	31	216	16.9	7	7
Fish of all kinds	31	51	34.8	22.9	18.5	36	264	174	100	76
Rice	29.5	100	42.5	39	35	7.8	158	48	33	22.7
Beer	13.6	20.5	17	14.3	14.2	5.5	25.7	20.6	17.6	17.6
Syrups, confectionery, bis- cuits, &c.	11.8	26.3	21.6	20.6	18.7	16	182	143	119	100
Eggs	6.8	29	6.9	1.1	0.4	10	223	41.3	6	2.3
Olive oil	6.4	9.2	11	10	10.5	7.4	68.7	69.5	55.7	46
Poultry and game	5.6	7.8	3.9	2.2	1.6	13	96	49	24	16.4
Meal, grain, semolina, and macaroni	5.1	18.3	92	112	81.4	1.8	38.6	144	132	74
<i>Raw Materials.</i>										
Ores	10,330	16,498	12,632	10,319	11,317	84	529	418	287	302
Building material, stones & earths	2,200	2,903	2,175	1,684	1,876	52	443	323	237	243
Coal, coke and patent fuel	1,743	5,259	4,157	3,621	3,320	47	738	541	406	362

APPENDIX 13—continued.

Commodity	Weights in thousands of metric tons					Values in millions of francs				
	1913	1928-30 Average	1931	1932	1933	1913	1928-30 Average	1931	1932	1933
<i>Raw Materials—continued</i>										
Timber, common	1,373	1,647	885	444	340	73	411	195	89	70.3
Pig iron, iron and steel	1,008	4,132	3,468	2,378	2,617	87	2,636	1,929	1,108	1,281
Flax and hemp	86	142	67	94	64	22	163	39.3	41	35.6
Resinous products	58	68.2	55.4	41	30.8	23.5	169	93	55.5	37.6
Fixed vegetable oils	56	65.3	69	59	57.5	48	312	220	161	141
Mineral tar, asphalt & bitu- men	40	68.6	55.6	26.3	29.7	2.3	28.5	24	12	10.5
Marble	11	35.4	20.8	14.6	15.7	3.3	42.7	23.4	14.4	11
Timber, tropical	10.6	21.1	15.1	9.4	5.6	2.7	30.9	17.3	10.2	7.1
Feathers and down	1.5	2.5	1.2	1.1	0.9	3.7	56.2	22.6	13.9	12.7
Pulp for paper-making	0.7	11	9.3	8.1	2.6	0.1	25.5	15	10	5.8
<i>Manufactures.</i>										
Chemical products	1,113	2,824	2,248	1,478	1,712	211	1,659	1,308	931	931
Glass, pottery, porcelain, etc.	262	374	220	157	160	93	833	468	293	281
Tools and metals wares	149	761	542	372	437	137	1,859	1,253	773	787
Machines, boilers & machine parts	82	241	179	118	118	123	2,114	1,552	957	857
Paints, inks and pencils	68	95	73	60	64	25	211	163	122	120
Paper and printed matter	64	96	82	74	78	134	895	666	523	480
Cotton fabrics	55.4	64.7	43.1	39	43	38.5	2,607	1,414	971	966
Perfumes and soaps	51	86.3	76.4	64.8	64	48	867	576	351	286
Ships	47	110	82.5	47.6	99	15	198	32.3	117	22
Motor-cars and parts	26	80.6	48	35.4	50.4	227	1,424	837	549	689
Woolen fabrics	23	25	18.5	8.9	8.2	220	1,985	1,099	419	347

Commodity	Weight in thousands of metric tons					Values in millions of francs				
	1913	1928-30 Average	1931	1932	1933	1913	1928-30 Average	1931	1932	1933
Prepared hides and leather wares	20	23.3	17.5	13.3	12.4	233	1,304	814	443	334
Yarns: woollen	14.8	26.3	22.8	13.2	15.6	97	1,247	746	351	385
linen	11.5	11.8	8	6.3	5.2	43	216	94	59	49
cotton	9.9	17.1	8.7	7.4	6.5	23	560	348	284	229
silk, natural	1.4	1.6	1.4	1.1	1.0	24	239	128	64.6	50
rayon	0.5	6.7	8.9	8.7	10.4	8.2	264	291	227	234
Underwear & ready made garments	7.8	9.2	6.8	4.6	5.9	253	1,867	691	192	181
Vehicles other than motor- cars	9	30.3	21.3	9.2	7.5	17.3	234	138	75	66
Rubber and gutta-percha wares	7	27.3	20.6	15.7	15.5	100	662	388	258	226
Rayon fabrics	0.03	3.7	5.6	5.5	4.8	0.9	828	876	588	478
Prepared medicines	1.2	18.4	14.6	10.6	10.7	33.7	426	330	252	278
Hats and caps of silk, cloth, etc.	0.7	4.9	1.8	0.9	0.8	4	135	45.3	17.5	13
Aircraft and parts	0.5	2.2	1.9	0.8	0.8	11.8	190	167	81	72

APPENDIX 14.

NOTABLE CHANGES IN FRENCH FOREIGN TRADE—EXPORTS.

Selected classes showing DECREASES by weight in 1928-30 as compared with 1913.

Commodity	Weights in thousands of metric tons					Values in millions of francs				
	1913	1928-30 Average	1931	1932	1933	1913	1928-30 Average	1931	1932	1933
<i>Food and Drink.</i>										
Table fruit	329	139	127	95	118	76	523	359	205	169
Wines	191	148	94	81	83	203	1,062	665	425	477
Brandies, spirits and liqueurs	61	39.5	30	24	20.6	62	659	456	312	278
Animal fats, margarine, &c.	39	18.5	16.9	14.4	10.9	34.3	72	47	35	26.4
Vegetable fats, edible ...	19.6	3	5.3	7.5	5.8	23.3	14.6	20.7	21.7	15.9
Chicory	8.1	2.1	2.6	2.8	2.7	4	5.6	8.2	8.5	7.7
Meat: fresh and frozen ...	5.8	4.6	1.5	1.3	1.3	10.2	37.3	16.4	13	11.7
<i>Raw Materials.</i>										
Sulphur, including pyrites ...	117	33.6	27.2	41	20.5	6	23.7	28.8	25	16.5
Rags for paper-making ...	107	94.5	58	48	65.3	41	176	74.5	47	61
Wool and wool waste ...	81	65	60	48	65	310	1,804	875	583	810
Raw hides and pelts ...	67	49.2	40.6	45.5	49.6	180	860	366	227	292
Cotton and cotton waste ...	61	28.2	25.8	16.8	17.6	102	203	99	59	47
Seeds for sowing	31.3	16.8	18.9	10.9	7.5	50	131	113	61.8	47
Organic fertilizers	31	15.8	13.3	11.0	17.6	3.1	8.6	6.5	4.2	8.2
Zinc	30	19.7	10.7	5.9	5.3	18	59.4	19.2	11.9	9.9
Oleaginous seeds and fruits ...	23.6	7.8	4.2	4.7	3.2	8.4	17.8	8.1	7.1	4.3
Beetroots and beetroot pulp ...	18.7	4.2	2.3	1.6	0.8	0.3	0.8	0.3	0.2	0.1
Dyes and tannins	16	4.8	4.1	3.7	2.9	3.9	5.6	3.6	2.6	2.6
Silk and silk floss	8.8	2.6	1.3	1.1	1.1	179	193	68	32.7	25.6
Mineral oils, crude and refined	7.2	0.7	0.6	7	18.8	1.7	2.1	1.5	10.6	6.5
<i>Manufactures.</i>										
Furniture and works in wood	119	55.3	42.3	29.2	30.6	53	454	285	167	147
Fish and other glues	8.5	5.2	4.1	3.1	2.9	12.1	46.5	29.6	18.2	14.9
Manufactured dyes	8.2	6.7	6	6.2	5.4	8.2	80	78	87	67
Silk fabrics, natural	6.6	6.2	4.2	2.6	2.1	428	2,546	1,113	495	394
Linen, hemp & ramie fabrics	5	3.1	2.2	1.8	1.5	27.4	94	54.8	31.5	26.2
Prepared furs	1.7	1.6	1.2	0.7	0.5	86	449	310	151	87.3
Buttons	1.6	0.7	0.4	0.4	0.3	12.4	24.5	10.6	10.1	8.9

APPENDIX 15.

NOTABLE CHANGES IN FRENCH FOREIGN TRADE—IMPORTS.

Selected classes showing INCREASES by weight in 1928-30 as compared with 1913.

Commodity	Weights in thousands of metric tons					Values in millions of francs				
	1913	1928-30 Average	1931	1932	1933	1913	1928-30 Average	1931	1932	1933
<i>Food and Drink.</i>										
Wines	884	1,458	1,832	1,617	2,013	275	2,188	2,939	2,317	3,154
Potatoes and pulse	445	500	622	415	327	93	489	456	308	251
Table fruit	266	489	713	737	718	88	1,074	1,315	1,067	947
Rice	262	275	307	378	569	65	395	286	283	319
Coffee	115	171	194	187	195	208	1,516	976	1,021	878
Sugar, raw and refined	115	455	338	410	396	34	719	486	404	456
Fish : fresh, salted and pre- served	75	128	117	70	83	71	470	393	177	225
Sago, tapioca & kindred foods	40	63.4	54.3	54.7	51.7	11.3	85.5	52	44	41
Brandy and spirits	38	72.7	66	92	55.6	21	475	432	461	294
Vegetables : fresh, salted &c.	37	114	154	187	159	14	195	235	237	215
Cocoa	30	41.3	45.6	47.3	44.7	54.6	284	173	138	103
Animal fats, margarine, etc.	27.4	34.5	18.9	18.1	18	26	164	66	51	45
Olive oil	15.7	26	23.1	27.4	27.7	18.5	137	103	95	79
Syrups, confectionery, bis- cuits, etc.	6.3	12.6	17.3	15.6	13.9	8.6	67.3	76	46	47
Meat extracts, preserves, pâté de foie, etc.	3.6	7.1	11.1	8.5	7.6	11.7	83	109	75	59
Meal, grain and semolina	3.2	33.2	37	44.2	45.3	1.3	77	90	96	83
Fresh and frozen meat	3.2	51.8	105	47	39	5.4	343	631	193	136
Horses for consumption	0.3	4.1	27.7	16.2	7.6	0.1	9.6	81.8	34	12

APPENDIX 15—continued.

Commodity	Weights in thousands of metric tons					Values in millions of francs				
	1913	1928-30 Average	1931	1932	1933	1913	1928-30 Average	1931	1932	1933
<i>Raw Materials.</i>										
Coal, coke and patent fuel ...	22,867	28,390	28,057	20,918	21,302	584	3,994	3,629	2,402	2,246
Building material ...	2,486	3,484	3,336	2,608	2,203	29	254	224	137	103
Timber, common ...	2,033	2,310	2,474	1,439	1,594	210	1,338	1,156	513	506
Ores ...	1,945	2,106	1,503	846	1,304	94	529	287	130	175
Stones and earths for arts & crafts ...	1,484	2,447	1,808	1,459	1,744	45	434	301	216	253
Oleaginous seeds and fruits ...	1,024	1,165	1,236	1,177	1,351	388	2,405	1,458	1,333	1,177
Sulphur, including pyrites ...	708	1,068	776	705	727	36	213	158	118	126
Mineral oils: crude and refined ...	553	2,052	2,868	3,190	4,568	139	1,955	1,363	1,294	1,302
Rags and pulp for paper-making ...	542	690	626	603	784	81	731	514	365	432
Cotton and cotton waste ...	329	373	248	261	367	577	3,982	1,502	1,138	1,574
Nitrate of soda ...	322	404	374	304	212	83	475	405	281	170
Wool and wool waste ...	286	312	266	262	319	702	4,544	1,801	1,270	1,545
Pig iron, iron and steel ...	203	350	415	372	382	37.6	372	333	184	182
Timber, tropical ...	165	282	214	73	98	26	229	137	49	47
Heavy oils & petroleum residues ...	145	1,039	1,168	1,316	1,297	26	666	540	491	432
Copper ...	117	172	149	114	137	193	1,484	798	382	412
Lead ...	78	104	119	113	134	37	289	219	150	156
Fixed vegetable oils (except olive) ...	33	49.6	39.2	43	46	26	185	111	90	82
Phorium tenax & similar fibres ...	32.4	59.4	49.7	43	58	16.3	220	121	69	83

Beetroots and beetroot pulp	23	156	1.6	6	9	0.3	27.7	0.7	2.6	3.5
Crude rubber & gutta-percha	17	69	54.4	47	71	123	547	174	84	154
Tin	8.8	12.5	11.5	9.4	10.7	43.4	290	152	107	160
<i>Manufactures.</i>										
Chemical products	732	937	1,000	1,282	1,190	157	913	684	589	621
Ships	114	158	166	80	43.4	39	262	441	136	54
Tools and metal wares ...	79	104	118	70	53	96	710	738	440	495
Paper and printed matter ...	30	201	166	164	103	71	562	491	368	275
Jute, etc. fabrics	28.5	40	34	31	25.6	14.7	148	109	67.5	48.5
Rubber and gutta-percha wares	3.3	7	10	9	8.3	44	198	201	130	108
Motor cars and parts	2.2	24.5	15.6	10.2	8.5	17.6	279	207	132	96
Underwear & ready-made garments	0.7	1.6	4	3.2	2.6	11	72.3	124	95	75
Rayon fabrics	0.04	0.4	0.6	0.3	0.3	1.2	89.5	101	39.4	30
Jute and phorium tenax yarns	0.02	5.6	6.3	4.1	7.7	0.02	32.2	25	11.6	16.4

APPENDIX 16.

NOTABLE CHANGES IN FRENCH FOREIGN TRADE—IMPORTS

Selected classes showing DECREASES by weight in 1928-30 as compared with 1913.

Commodity	Weights in thousands of metric tons					Values in millions of francs				
	1913	1928-30 Average	1931	1932	1933	1913	1928-30 Average	1931	1932	1933
<i>Food and Drink.</i>										
Cereals	2,930	2,165	4,065	3,976	1,885	566	2,520	3,000	2,871	1,341
Cattle	58	53	152	63	55	49	317	821	277	230
Eggs	36	17.6	39	15.5	17.6	46	141	240	90	90
Mineral Waters	16.8	1.4	1.3	0.9	0.9	3.4	1.8	1.3	0.8	0.7
Beer	15.8	5.3	6.2	3.6	2.8	5.4	7.7	8.8	4.5	3.3
<i>Raw Materials.</i>										
Mineral tar, asphalts and bitumens	361	158	157	240	220	21.3	83.7	65.2	89.7	69.5
Fodder and bran	242	129	150	141	76	34	102	87	72	35
Oil cake and malt	169	68	93	144	157	22	44.8	58.6	70.3	67.4
Flax	113	59	37	42.7	44	117	430	125	128	141
Organic fertilizers	83	42.3	40	48	48.8	8.5	17.3	18	14.8	19.5
Raw Hides and pelts	76	74.5	66	45.3	58.7	249	1,311	701	380	484
Cattle horns, hoofs and bones	46	24.7	16.3	11.2	7.6	18	40.3	21.8	11.3	9
Silk and silk floss	19.8	13.8	8.2	4	5.3	301	1,639	509	199	241
Dyes and tannins	22	18.4	16.8	12.7	16.6	17.3	43.2	28.2	17.6	17.9
<i>Manufactures</i>										
Engines, boilers & machine parts	221	211	230	114	104	321	2,685	2,566	1,421	1,231
Vehicles other than motor-cars	23	15.8	14	2.6	1.6	23	111	109	26	18.8
Prepared skins & leather goods	10.6	8.4	11.1	6.6	6.3	113	399	391	192	180
Linen and hemp fabrics	5.1	4.2	2.7	2	1.5	10.2	37.3	25.2	14.4	11.2
Works of art & luxury goods	5	3.2	3.9	3.1	3.3	165	408	336	210	196
Cotton fabrics	4.8	2.7	3.2	1.5	1.5	56.5	176	169	70	66.4
Woolen fabrics	4.3	1.9	2.1	1.5	1.7	51	223	200	112	114
Prepared furs	1.5	0.9	1.5	1.4	1.4	88	398	324	210	184
Silk fabrics, natural	0.8	0.4	0.7	0.4	0.4	48	131	135	69.7	63.4

APPENDIX 17.

PRINCIPAL IMPORTS INTO FRANCE FROM GREAT BRITAIN.

(Arranged according to importance in value in 1913).

(Values in millions of francs).

Commodity	1913	1928	1929	1930	1931	1932	1933
Coal, coke and patent fuel	281	1,107	1,749	1,817	1,344	958	894
Wool and wool waste	97	754	370	230	101	135	133
Machines and parts thereof	67	286	403	419	299	135	137
Crude rubber and gutta-percha	41	214	184	145	33.3	10.7	5.3
Yarns—Linen, hemp, etc.	(a)	12.5	16.2	10.1	5.2	1.6	1.2
Cotton	41	91	105	81	39	9.7	7.8
Woollen	5	18.4	26.4	22.5	15.7	6.1	5.9
Alpaca, mohair, etc.	4.5	26.3	25.8	19.3	13.5	7.1	6.9
Woollen manufactures	36	116	143	131	96	45	48
Hides, dressed	31	132	91	69	52	25	25
Chemical products	30	121	154	147	126	107	101
Paper and printed matter	30	37.7	45.6	53.3	48.4	27.3	23.9
Ships	28	51	93	132	49	50	15.3
Skin and leather goods	18	17.8	18.9	19	16	6	4
Tools and metal wares	17	56	91	103	80	43	39.8
Pig iron, iron and steel	16	79	132	118	57	18.2	21.4
Hides and pelts, raw	16	191	153	165	145	101	100
Rubber and gutta-percha goods	15	46	48	67	45	29.5	24.6
Cotton fabrics	15	61.5	60	58.8	40.8	16.8	19.2
Copper	14.2	81	77	94	43	26	32
Cotton and cotton waste	13	79	84	56	11	28.8	10.5
Furs, prepared	13	140	97	83	71	28	20
Motor-cars and parts (b)	11.8	15.6	14.6	27.1	23.8	22	26.8

(a) Not separately distinguished.

(b) Figures in 1913 column include all vehicles.

APPENDIX 17—*continued.*

Commodity	1913	1928	1929	1930	1931	1932	1933
Tin	7	127	111	77	41	29.3	34.3
Waste rags for paper-making	5.5	53	50	41	30	26.6	36.8
Fixed vegetable oils	5	28.5	26.6	23.5	12.4	5.7	5
Fish : fresh, salted and preserved	4	31	35	36	38.5	22.7	15.9
Meat : fresh and frozen	3	4.5	2.8	16.8	33.1	4.2	0.1
Shellfish	2.5	24.7	24.2	39.1	32.4	34.4	4.2
Nickel	1.9	22.1	36.2	23.2	24.2	11.8	13.2
Gold and platinum leaf, wire and thread	1.3	33.4	57	18.6	14.5	5	6.6
Pearls	0.5	314	268	121	61	69	34.7
Precious stones	(a)	255	236	82	68.5	43	23.4
Total of above items	871	4,627	5,028	4,545	3,110	2,089	1,877
Total imports during year	1,109	5,309	5,828	5,273	3,724	2,457	2,167

(a) Not separately distinguished.

PRINCIPAL IMPORTS INTO FRANCE FROM GREAT BRITAIN
(Arranged in order of value in 1913). (Weight in metric tons.)

Commodity	1913	1928	1929	1930	1931	1932	1933
Coal, coke and patent fuel	11,442,278	8,640,301	13,368,710	13,795,749	10,906,343	9,232,087	8,991,751
Wool and wool waste	38,854	39,899	22,324	23,382	14,400	27,687	25,247
Machines and spare parts	47,731	20,450	26,946	27,543	18,772	10,634	10,951
Crude rubber and gutta-percha	5,081	18,546	17,879	21,855	7,912	5,780	4,446

Yarns—Cotton	4,429	2,295	2,837	2,580	1,450	506	443
Woolen	727	387	564	532	453	225	211
Alpaca, mohair, etc.	570	433	431	355	327	278	345
Linen, hemp, etc.	280	230	260	175	122	60	36
Woolen fabrics	3,030	943	1,102	1,096	959	599	695
Hides, cured... ..	4,148	2,622	1,985	1,749	1,773	1,142	1,377
Chemical products	103,709	95,074	247,905	215,236	204,602	223,128	184,576
Paper and printed matter	10,175	3,766	4,618	5,897	7,498	3,330	3,299
Ships (a)	105,153	39,302	70,891	55,511	22,671	21,555	16,047
Skin and leather wares	1,062	239	225	243	277	260	146
Tools and metal wares	13,018	4,325	5,371	6,645	5,082	3,648	3,483
Pig iron, iron and steel	56,757	45,090	66,566	84,823	49,457	19,022	25,965
Hides and pelts, raw	2,779	2,774	1,889	2,825	3,038	2,816	4,343
Rubber and gutta-percha wares	1,262	1,296	1,490	2,759	2,384	2,223	1,799
Cotton fabrics	2,375	968	957	1,047	865	408	504
Copper	8,085	10,704	9,834	13,734	9,884	9,757	13,025
Cotton and cotton waste	8,362	6,195	7,324	6,493	2,322	6,955	2,946
Furs, prepared	243	287	202	277	408	223	155
Motor-cars (b)	2,208	9,462	9,443	1,395	1,799	1,960	2,482
Tin	1,367	4,617	4,555	4,338	3,383	2,776	2,355
Waste rags for paper-making	49,704	64,754	67,335	62,626	62,338	55,072	84,446
Fixed vegetable oils	5,120	6,813	6,386	6,257	4,137	2,368	2,319
Fish: fresh, salted and preserved	3,139	9,261	15,652	16,128	14,313	12,060	8,593
Meat: fresh and frozen	1,586	886	450	2,414	4,545	1,411	33
Nickel	517	1,131	1,846	1,112	1,193	640	739
Gold and platinum leaf, wire and thread (c)	305	781	1,194	610	683	261	449
Shellfish	1,000	2,224	2,126	2,855	2,948	3,223	715

(a) Gross tonnage.

(b) 1913 column includes cycles, motor-cycles and other vehicles. Numbers of cars imported, 1928-33, were 109, 142, 135, 55, 365, and 237 respectively.

(c) Kilogrammes.

APPENDIX 18.

PRINCIPAL EXPORTS FROM FRANCE TO GREAT BRITAIN.

(Arranged according to importance in value in 1913).

(Values in millions of francs).

Commodity	1913	1928	1929	1930	1931	1932	1933
Silk fabrics	212	1,249	1,154	893	794	357	260
Woollen fabrics	99	635	521	442	355	30	29
Linendrapery and ready-made clothing ...	75	722	789	848	333	26	30.7
Alcoholic beverages : Wines	39	196	230	185	150	63	91
Brandies and spirits	17	145	164	157	111	75	81
Liqueurs	2	8.3	12.8	9.4	8.2	4.7	6.4
Motor-cars and parts (a)	55	140	94	74	47	17.6	37.5
Cotton fabrics	52	176	187	168	117	26.6	17.1
Woollen yarns	51	307	320	253	213	10	10.7
Wool and wool waste	44	315	257	152	128	69	146
Skin and leather wares	42	76	96	68	64	18.7	18.8
Hides, cured... ..	39	208	208	212	180	75	36.4
Rubber and gutta-percha wares	31	70	51	33.7	34	11.1	7.4
Chemical products	27	140	111	155	96	64	54.3
Timber, common	27	117	107	93	59	19	12
Table fruit	25	147	189	144	132	77	59.3
Copper	21	83	113	99	43	9	3.3
Vegetables : fresh, salted and preserved, excluding potatoes	16	103	111	98	92	30.6	16.2
Furs, prepared	16	198	172	126	112	35	14.4
Potatoes (b)... ..	12	144	79	61	126	1.4	—
Tools and metal wares (c)	8	86	85	75	54	16.2	11.5

Engines and machine parts	6.4	102	111	94	80	39.3	28
Ores	6	16.7	17.5	17	10.4	8.9	11.1
Perfumes and soaps	5.9	97	111	90	76	20.9	14.4
Pig iron, iron and steel	5	421	301	348	335	130	79
Vegetable wax and resinous products	4	18	12.6	9.1	7.4	4.6	3.2
Pearls	1	231	183	112	134	64	44
Precious stones	—	142	184	188	50.6	80	47.7
Total of above items	938	6,450	5,971	5,203	3,942	1,384	1,170
Total exports to Great Britain	1,454	7,935	7,573	6,845	5,043	1,962	1,676

(a) Figures for 1913 include all kinds of vehicles.

(b) Figures for 1913 include also pulse and pulse meal.

(c) Figures for 1913 relate to metal wares only.

PRINCIPAL EXPORTS FROM FRANCE TO GREAT BRITAIN

(Arranged in order of value in 1913).

Weight in metric tons, except where otherwise indicated.

Commodity	1913	1928	1929	1930	1931	1932	1933
Silk fabrics	3,481	3,329	3,453	2,759	3,523	2,238	1,643
Woolen fabrics	10,480	7,102	5,951	5,678	5,414	619	664
Linen drapery and ready-made clothing	1,560	1,123	1,210	967	1,114	159	150
Alcoholic beverages—Wines (a)	3,632,442	2,965,011	3,108,824	2,672,080	2,394,952	1,509,028	1,787,050
Brandies & spirits (b)	1,591,917	655,018	693,293	587,953	421,492	333,650	349,560
Liqueurs (a)	132,000	89,647	120,351	81,965	90,153	46,683	61,253

(a) Gallons.

(b) Gallons of pure alcohol.

APPENDIX 18—continued.

Commodity	1913	1928	1929	1930	1931	1932	1933
Motor-cars and parts (c)	6,400	7,595	5,469	4,156	2,312	1,144	3,108
Cotton fabrics	4,321	3,272	3,036	2,636	1,835	465	524
Woollen yarns	7,558	5,105	5,811	5,500	6,238	279	298
Wool and wool waste	11,744	11,358	9,762	8,744	10,303	7,026	12,995
Skin and leather wares	832	689	675	547	413	165	226
Hides, cured	3,355	3,623	2,692	3,312	2,925	1,414	1,043
Rubber and gutta-percha wares	1,971	2,147	2,305	1,640	1,860	793	632
Chemical products	82,033	111,573	82,714	93,375	54,159	31,138	32,212
Timber, common	826,269	864,224	805,400	731,734	492,316	216,042	148,993
Table fruit	36,818	29,425	41,156	33,632	57,073	46,613	27,159
Copper	10,819	9,472	10,262	9,767	5,245	1,742	843
Vegetables: fresh, salted and preserved excluding potatoes	33,769	40,265	45,529	46,413	51,718	19,787	12,070
Furs, prepared	327	540	395	343	325	173	81
Potatoes (d)... ..	83,789	189,065	123,694	109,226	107,872	3,753	2
Tools and metal wares (e)	3,888	23,009	24,000	22,564	13,809	4,053	2,430
Engines and machine parts	4,470	10,485	8,503	7,380	5,986	4,401	2,721
Ores	482,009	224,797	252,462	217,210	119,826	82,332	154, 68
Perfumes and soaps	3,879	3,428	3,278	2,818	3,003	981	713
Fig iron, iron and steel	41,549	706,317	480,225	638,232	733,561	392,712	251,529
Vegetable wax and resinous products	11,993	7,221	5,305	4,517	5,222	3,717	2,967

(c) Figures for 1913 include all kinds of vehicles. Numbers of cars exported in 1928-33 were 3,597, 2,198, 1,188, 1,053, 340, and 407 respectively.

(d) Figures for 1913 include also pulse and pulse meal.

(e) Figures for 1913 relate to metal wares only.

APPENDIX 19.

FRENCH TRADE WITH NEIGHBOURING COUNTRIES, 1899 TO 1933.

(In millions of francs).

Period	Germany		Belgium‡		Spain		Italy		Switzerland	
	Exports to	Imports from	Exports to	Imports from	Exports to	Imports from	Exports to	Imports from	Exports to	Imports from
1899-1903*	473	410	606	353	130	186	170	151	223	103
1904-1908*	618	547	771	367	121	167	231	169	306	111
1909-1913*	795	914	1,031	510	138	223	301	192	383	138
1914	511	614	602	318	112	193	215	174	305	102
1915	—	7.9†	36	23	140	581	388	433	298	244
1916	—	5.6†	57	7.3	190	884	782	717	406	512
1917	—	5.7†	69	4.9	207	1,348	971	815	490	509
1918	—	5†	36	5	183	578	780	818	409	432
1919	1,560	755	1,597	1,187	388	1,464	678	1,017	713	738
1920	1,502	2,668	4,794	3,567	970	1,052	1,249	1,283	1,792	1,044
1921	1,877	2,615	3,413	1,830	503	490	686	616	1,093	445
1922	1,970	1,446	4,194	1,880	518	366	797	774	1,002	488
1923	1,080	1,174	5,721	2,534	899	651	1,173	1,140	2,133	576
1924	3,959	2,051	7,222	2,734	1,168	900	1,481	1,481	2,641	653
1925	3,833	2,346	7,742	3,349	1,456	877	2,225	1,727	2,974	771
1926	4,384	4,925	9,525	4,877	1,705	1,073	2,623	2,231	3,642	1,008
1927	6,630	4,170	8,263	3,980	1,623	1,444	2,064	1,551	3,355	757
1928	5,623	5,004	7,955	4,040	1,694	1,620	2,129	1,525	3,226	934
1929	4,743	6,613	7,224	3,920	1,588	1,442	2,209	1,516	3,382	1,075
1930	4,155	7,937	5,442	4,199	1,129	1,509	1,681	1,527	3,095	1,133
1931	2,749	6,142	3,582	3,633	685	1,405	992	1,437	2,309	904
1932	1,699	3,613	2,240	2,447	386	717	595	630	1,511	607
1933	1,703	3,044	2,140	1,966	377	686	492	622	1,330	632

* Average annual values.

† Goods taken from bond under authority, sequestrations and military requisitions.

‡ Including Luxemburg from 1919 onwards

NOTE.—The figures given above for the years 1929 onwards represent "declared" values; all the others are based on average values fixed by the Permanent Customs Evaluation Commission.

APPENDIX 20.

FRENCH TRADE WITH THE U.S.S.R., HOLLAND, UNITED STATES, ARGENTINA AND BRAZIL, 1899 TO 1933.

(In millions of francs).

Period	U.S.S.R.		Holland		United States		Argentine Repub.		Brazil	
	Exports to	Imports from	Exports to	Imports from	Exports to	Imports from	Exports to	Imports from	Exports to	Imports from
1899-1903*	51.4	226	53.8	49.6	253	472	50	265	43.3	80
1904-1908*	59.6	260	54.3	82	332	582	100	268	50	108
1909-1913*	70	392	74	116	426	791	169	332	76	164
1914	60	319	40.6	81	377	795	93	231	39	155
1915	113	77	43.7	65.6	446	3,028	108	473	55.5	210
1916	880	224	39.3	61.6	622	6,163	154	930	80	292
1917	419	153	17	24	682	9,771	140	1,046	84	509
1918	0.5	68	7.1	12.8	420	7,140	115	1,073	92	551
1919	124	70	235	235	893	9,218	176	1,614	118	956
1920	132	136	441	353	2,257	10,866	445	2,992	363	901
1921	4.5	29	357	546	2,193	3,539	271	723	165	516
1922	39.4	121	396	661	2,007	3,845	314	991	158	485
1923	15.2	173	653	1,009	2,473	4,851	675	1,459	256	718
1924	10.6	369	1,171	1,149	3,151	5,586	723	2,000	377	1,106
1925	45.7	437	1,232	1,273	3,095	6,377	835	1,762	457	1,407
1926	110	758	1,785	1,776	3,673	7,820	1,220	2,216	615	1,588
1927	98	942	1,802	1,994	3,152	6,808	1,095	2,631	497	1,091
1928	161	725	1,343	1,705	3,033	6,177	1,125	2,244	533	1,154
1929	256	788	1,257	1,047	3,335	7,160	1,069	2,374	459	1,079
1930	170	886	1,225	1,756	2,435	6,148	878	1,203	309	783
1931	59	496	927	1,609	1,543	3,800	514	1,428	140	628
1932	47	520	609	1,044	957	2,900	322	1,068	119	535
1933	44	506	644	833	868	2,851	329	581	162	445

* Average annual values.

NOTE.—The figures given above for the years 1929 onwards represent "declared" values: all the others are based on average values fixed by the Permanent Customs Evaluation Commission.

APPENDIX 21.
BALANCE SHEETS OF THE BANK OF FRANCE.
(In millions of francs).
(1) ASSETS.

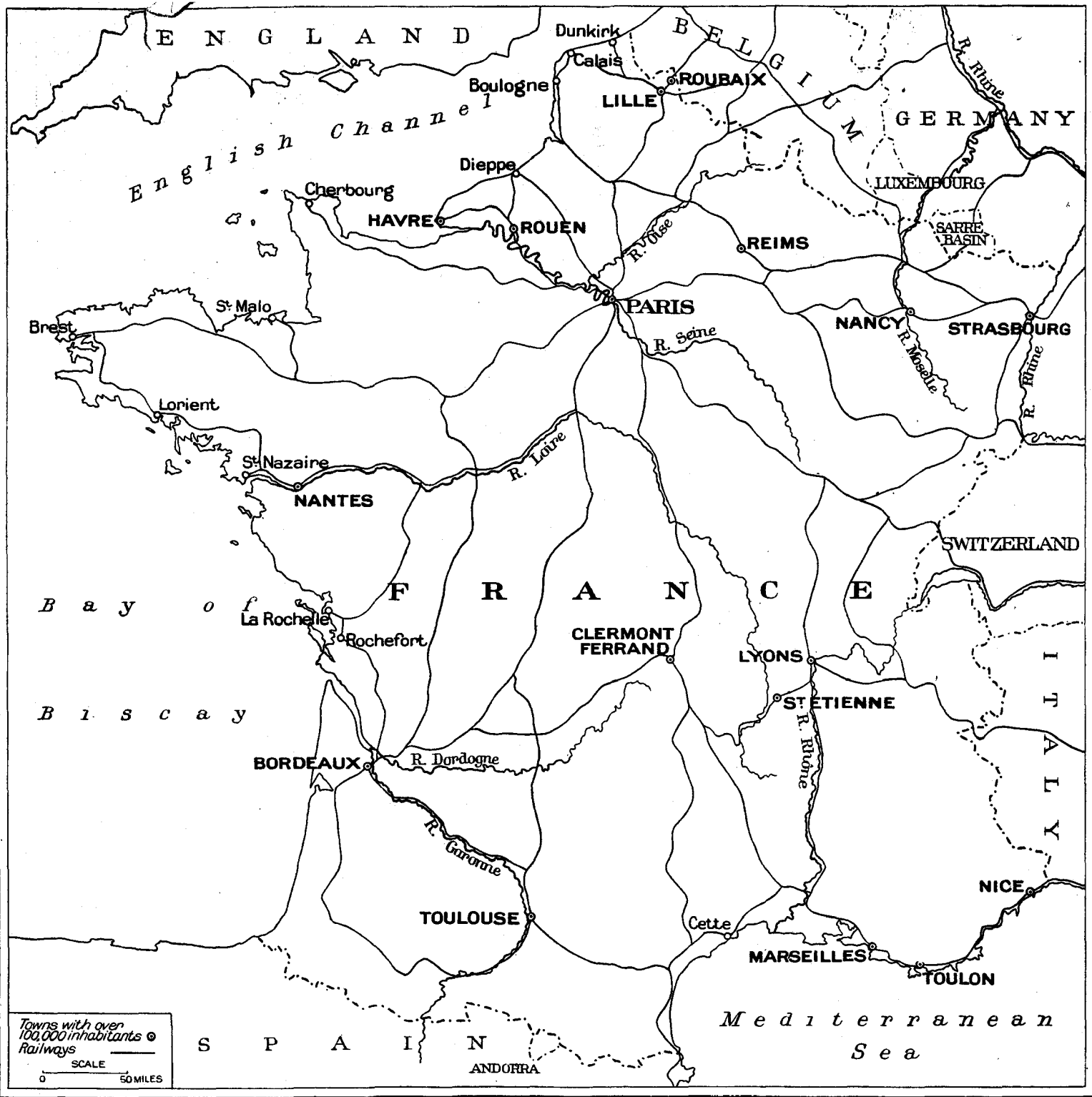
	End of December :							March 30th. 1934
	1913	1928	1929	1930	1931	1932	1933	
Gold	3,517	31,977	41,668	53,578	68,863	83,017	77,098	74,613
Silver, etc.	640	732	221	582	963	1,384	580	484
Postal cheque accounts	—	415	387	367	437	454	428	395
Credits abroad	—	13,510	7,249	6,792	12,354	2,938	15	12
Commercial bills discounted	1,525	5,751	8,612	8,385	8,056	3,692	4,856	6,213
State securities purchased in France	—	—	63	75	233	7	117	219
State securities purchased abroad	—	19,131	18,642	19,355	7,857	1,284	909	822
Advances against bullion and cash	30	—	—	—	1,266	1,468	1,414	1,563
Loans on securities	743	2,223	2,521	2,901	2,730	2,515	2,921	2,973
Loans to the State	205	3,200	3,200	3,200	3,200	3,200	3,200	3,200
Autonomous Sinking Fund bonds	—	5,930	5,612	5,304	7,157	6,802	6,122	6,007
Special State bonds	213	113	113	113	113	113	113	113
Bank premises and equip- ment	44	220	220	221	221	221	4	4
Miscellaneous	320	1,420	1,462	2,127	2,345	2,357	2,513	2,469
Totals	7,237	84,622	89,970	103,000	115,795	109,452	100,290	99,087

APPENDIX 21—*continued.*

(2) LIABILITIES.

	End of December :							March 30th, 1934
	1913	1928	1929	1930	1931	1932	1933	
Capital	183	183	183	183	183	183	183	183
Additional capital from profits	8	273	273	273	273	273	273	273
Reserves :								
Securities	22	22	22	22	22	22	22	22
Real property	4	4	4	4	4	4	4	4
Special reserve	8							
Notes in circulation	5,714	63,916	68,571	76,436	85,725	85,027	82,613	82,833
Current accounts :								
Public Treasury		6,835	7,582	4,639	337	193	261	89
Autonomous Sinking Fund	978	5,379	4,155	7,986	5,561	2,118	2,061	1,632
Other		7,018	7,850	11,698	22,183	20,072	13,414	12,632
Miscellaneous	320	992	1,330	1,759	1,507	1,560	1,459	1,419
Totals	7,237	84,622	89,970	103,000	115,795	109,452	100,290	99,087
Total amount of engagements at sight				100,759	113,806	107,411	98,350	97,187
Proportion of gold reserve to sight engagements (Statutory proportion being 35%)				53.17%	60.51%	77.29%	78.39%	76.77%

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REPORTS by H.M. Trade Commissioners, Commercial, Diplomatic and Consular Officers on commercial and financial conditions in the following countries, issued, or in course of preparation, by the Department of Overseas Trade.

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B.—During the year 1933.

No.		No.	
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548	Czechoslovakia ... 2s. od. (2s. 1d.)	534	Philippines ... 1s. 6d. (1s. 7d.)
535	Ecuador 1s. 6d. (1s. 7d.)	537	Portuguese East Africa ... 2s. 6d. (2s. 8d.)
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	B. E. Africa (In preparation)	576	Poland 2s. od. (2s. 1d.)
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571	Costa Rica 1s. od. (1s. 1d.)	566	Salvador 1s. 9d. (1s. 10d.)
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