

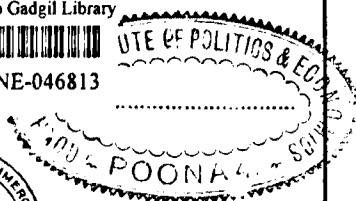
U. S. DEPARTMENT OF COMMERCE  
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# MANUFACTURING DEVELOPMENTS IN ARGENTINA

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## FOREWORD

A paradox of the economic depression in South America is the fact that the period of greatest decline in exports within recent years has coincided with a period of industrial advance in several of the leading countries of that continent.

Although the economy of these countries is still based essentially on the export of crude products of mines, forests, farms, and pastures, manufacturing has made more headway than is generally realized, and is now one of the leading sources of national income in several major Latin-American countries. The increase in manufacturing is of significance in connection with the trend toward greater diversification and away from excessive dependence on one or two export products, which has heretofore characterized Latin-American development. The industrialization of Latin America is the counterpart to the trend toward agrarian self-sufficiency in Europe, which is restricting the outlet for Latin-American raw produce and forcing those countries to fall back upon their own resources. This shift of emphasis is one of the outstanding developments now taking place in the countries to the south of us.

While the extractive industries have been greatly affected by the world-wide depression since 1929, manufacturing has enjoyed an unusual degree of prosperity.

Manufacturing developments in Argentina are of especial interest, in view of the importance of Argentina in world economy. Judged from some points of view (such as the number of persons engaged, or its relative significance to the total national economic activity), manufacturing is less developed in Argentina than in Brazil. However, a comparison of the relative standing of the Latin-American countries, from the standpoint of the equivalent in dollars of the value of manufactured goods in 1933 (the only recent year for which estimates are available in Argentina) shows Argentina as occupying first place among the American republics south of the United States. Admittedly, these conclusions are based on rough approximations, and there is some doubt as to the comparability of the statistics of the different countries. As regards the position of manufacturing in Argentina, itself, in relation to other activities, the latest available data are for 1927, when the total value of all physical production was placed at 5,460,000,000 pesos, of which the value added by manufacturing accounted for 1,540,000,000 pesos, or 28 percent of the total. It is probable that the relative importance of manufacturing has increased materially since that time.

In view of the paucity of published material on manufacturing developments in Latin America, it is believed that this study, which is based on official documents and reports from American consular officers and the office of the American commercial attaché at Buenos Aires, will be timely.

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*Bureau of Foreign and Domestic Commerce.*

NOVEMBER 1934.

# MANUFACTURING DEVELOPMENTS IN ARGENTINA

By George Wythe, Chief, Latin American Section, Division of Regional Information

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## ARGENTINA'S ECONOMIC IMPORTANCE

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### AREA AND POPULATION

Of the Latin American countries Argentina is most like the United States in the business aggressiveness of the people and in the rapid settlement and development of the agricultural areas. However, Argentina has an area of only about one-third of that of the United States, and it lacks the variety of mineral resources of the United States. Furthermore, its development is much more recent, as Argentina has attained an important economic position only since 1880, and is only now beginning to develop a complex economic structure.

Although Argentina stretches for a distance of over 2,300 miles, from the Tropic of Capricorn to the Antarctic regions at the extreme tip of the South American Continent, the bulk of the territory lies within the Temperate Zone, where the great centers of population are to be found. Nearly one-half of the population is concentrated in the Federal Capital (embracing the city of Buenos Aires and suburbs) and in the Province of Buenos Aires, which surrounds the capital. One out of every five live in the Federal Capital.

Argentina may be divided geographically into three great plains—the Gran Chaco in the north, the Pampa in the center, and Patagonia in the south—and a mountainous region stretching the entire length of the western frontier with Chile.

Of the South American republics, Argentina occupies second place both as regards area and population. Out of an estimated population of 84,000,000 in all South America (of which approximately one-half is in Brazil) Argentina has 12,000,000, or 14 percent. The rapid growth of the population is revealed by a comparison of the returns of the three national censuses, as shown in the following statement:

First census, 1869.....	1, 736, 923
Second census, 1895.....	3, 851, 542
Third census, 1914.....	7, 535, 669

This rapid growth of the population is explained by the heavy European immigration, the net annual gain from that source during the period 1910 to 1913 amounting to 169,304 persons. There was a net annual loss of 44,685 during the years of the World War, but the net annual immigration during the decade 1920 to 1929 amounted to 100,000. The net overseas immigration from 1857, when the records begin, to 1913 (inclusive) amounted to 3,373,292. There was a net loss of 209,753 during the war years 1914 to 1918; a net gain of

962,374 from 1919 to 1931, and a further net loss of 18,317 during 1932 and 1933, making a net gain of 4,107,596 from 1857 through 1933.

The Argentine birth rate has been declining steadily during the last decade.

#### ECONOMIC LEADERSHIP IN SOUTH AMERICA

Argentina occupies a position of economic leadership in South America. In fact, according to calculations made in 1924, Argentine business activity, at least in those activities for which statistical data are available, represented 50 percent or more of the entire activity of the South American Continent. (See table 1.) Argentina's relative importance among the South American countries has declined somewhat in recent years, due primarily to the development of Brazil.

The Argentine economic structure has been built up during the last 50 years, primarily through exports of wool, meats, and grains. Argentina is now the leading corn exporting country of the world, and the most important corn producing country after the United States. It is in second place as a wheat exporting country, but comes only sixth from the standpoint of wheat production; and now occupies third place as a producer and exporter of wool.

TABLE 1.—ECONOMIC ACTIVITY IN ARGENTINA, AS COMPARED WITH THE REST OF SOUTH AMERICA

Activity	Percent- age of all South America	Activity	Percent- age of all South America
Exports, 1932.....	41	Railways, passengers carried, 1930.....	44
Imports, 1932.....	47	Automobile vehicles, 1933.....	53
Total foreign trade, 1932.....	43	Telephones, instruments, 1930.....	49
Railways, mileage, 1930.....	40	Telephones, messages, 1930.....	35
Railways, freight tonnage, 1930.....	40	Postal service, pieces of mail, 1930.....	53

#### ARGENTINE DEPENDENCE ON FOREIGN TRADE

Argentina's dependence on foreign trade is shown by the fact that the country has the highest per capita foreign trade of any of the South American republics (about \$47 in 1932). The value of Argentina's foreign trade fluctuates greatly from year to year, depending on the state of the crops and ruling world prices for meats and grains. The prosperity of the country and the volume of imports, in turn, vary according to value of exports.

In 1927 it was estimated that 42 percent, by value, of the total production of the country was exported.<sup>1</sup> Of the principal grain crops 76 percent of the corn, 54 percent of the wheat, and 85 percent of the linseed are exported.<sup>2</sup> In 1932, 31 percent of the cattle slaughterings and 65 percent of the sheep slaughterings were exported.

<sup>1</sup> *Revista de Economía Argentina* (Buenos Aires), September 1931, p. 199.

<sup>2</sup> By volume; average for period 1924-28.

### STAGES OF INDUSTRIAL DEVELOPMENT

For half a century Argentina has been looked upon as an outstanding example of a country whose economy consisted primarily of the exchange of raw produce for the manufactures of Europe and the United States. Such manufacturing as existed was unimportant in comparison with the value of exported meats and grains. In view of the large profits from such operations, and the sparseness of the population in relation to the total arable area, this situation was generally accepted, and there was less agitation for industrial development than in most other Latin American countries.

The World War brought the first important break in this trend. The country was forced to manufacture innumerable articles that had formerly been imported. With the return of peace, some of these new industries disappeared, but others survived, or even expanded. Psychologically, too, the war had a tremendous influence in emphasizing the disadvantages and dangers of depending to such a large degree on other countries for many of the necessities and conveniences of life. In 1924 a leading Argentine economist declared that this was the last generation of importers and ranchers (*estancieros*), and that the next generation would consist of farmers (*granjeros*) and manufacturers.<sup>3</sup>

The next important stage in industrialization began in 1931, and is still under way. This period may be considered as one of the most significant turning points in Argentina's economic history, and as representing a definite shift of emphasis from the heretofore all-important export market toward balanced internal development. Although this change in direction cannot be said to have been entirely voluntary on Argentina's part, since it was forced upon her by the growing agrarian self-sufficiency of Europe and by the policy of British Imperial preference that found expression in the Ottawa pacts, the new road has been accepted as one from which there is no turning back. As Great Britain is Argentina's best customer, and normally takes around 84 percent of that country's exports of live-stock products, the signing of the Ottawa agreements on August 29, 1932, made a profound impression on the Argentines and intensified the sentiment in favor of developing a broader basis for the economic life of the nation.

The rapid increase in manufacturing since 1931 has been fostered directly by increases in import duties, and indirectly by the manipulation of exchange control. In addition to the numerous instances of upward revision of duties on individual items in 1930, 1931, and 1932, an additional duty of 10 percent ad valorem was "provisionally" levied on all imported goods, including goods previously duty free, by decree of October 6, 1931, which was still in force in the late summer of 1934.

<sup>3</sup> Funge, Alejandro E., address reproduced in *La Economía Argentina* (Buenos Aires, 1928).

## COMPARISON WITH PRE-WAR DEVELOPMENT

Even before the World War there was considerable industrial development, especially in the processing of foodstuffs and also in the manufacture of certain articles of common use, such as furniture, shoes, cheap cotton cloth, building materials, soap and toilet preparations, cigarettes, wine, and beer. Some hint as to the extent of industrialization before the war is given by the census of 1914,<sup>4</sup> but the returns are not in such form as to permit exact comparison with later data. A better idea of the increase in industrialization between 1913 and 1931 is afforded by a comparison of statistics of fuel consumption, which shows that in the former year it amounted to the equivalent of 3,974,000 tons of coal (converting oil fuel and installed water power to terms of coal), as against 6,603,000 tons in 1931 (wood, factory residues, etc., not included).

A comparison of the changes from 1914 to 1933 in the occupational distribution of the gainfully employed portion of the population also confirms the trend away from agriculture and stock raising and toward industry and commerce. (See table 2.)

TABLE 2.—DISTRIBUTION, BY OCCUPATIONS, OF THE GAINFULLY EMPLOYED IN ARGENTINA, 1914 AND 1933

Occupation	Number		Percentage of total population	
	1914	1933	1914	1933
	<i>Thousands</i>	<i>Thousands</i>		
Industry.....	1,246	2,156	38.5	43.0
Agriculture and stock raising:				
Agriculture.....	585	756		
Stock raising.....	205	381		
Total.....	880	1,137	27.2	22.6
Commerce.....	349	603	10.8	12.1
Transportation.....	111	151	3.4	3.0
Other occupations.....	647	971	20.1	19.3
Grand total.....	3,233	5,018	100.0	100.0

## FUEL AND POWER RESOURCES

A shortage of fuel and power resources has been a handicap to industrial development in Argentina, but this drawback has been partly overcome through the exploitation of petroleum resources. In 1913 Argentina relied almost entirely upon imported coal for fuel requirements. In that year the grand total of coal, oil fuel, and water power available was equivalent to 3,947,000 tons of coal (converting oil fuel at 4 barrels to 1 ton of coal, and installed water power on the basis of 6 tons of coal to 1 horsepower-year), of which imported coal accounted for 96 percent, oil fuel 3 percent, and water power less than 1 percent.

<sup>4</sup> For particulars of industrial development in 1914, see Investments in Latin America and the British West Indies, Special Agents Series No. 169 (Bureau of Foreign and Domestic Commerce, Washington, 1918), p. 97; and Investments in Latin America: I—Argentina, Trade Information Bulletin No. 362 (Bureau of Foreign and Domestic Commerce, Washington, 1925), p. 74.

Small quantities of petroleum were produced as early as 1886 near Mendoza, but operations there were not successful, and developments are usually dated from 1907, when oil was discovered in the Comodoro Rivadavia field, from which has come the bulk of the petroleum produced in Argentina. In 1913 production amounted to only 130,409 barrels, but expansion was pushed during the war as a result of the coal famine. In 1933 the output reached 13,688,410 barrels (1,955,793 metric tons), which was 66.7 percent of the total consumption in that year.

The increasing output of petroleum has meant a steady decline in the dependence on imported fuels, although both coal and fuel oils are still imported in considerable quantities. In 1928 the total quantity of fuel available in the Republic, calculated in terms of coal, was 6,732,000 tons, of which coal supplied only 45 percent, while oil fuel supplied over 52 percent and water power a little more than 2 percent. In 1931 total fuel consumption amounted to the equivalent of 6,603,000 tons of coal, of which coal supplied 39.2 percent; oil fuel, 58.9 percent; and hydraulic energy, 1.9 percent.

Only a small percentage of the potential water-power resources of Argentina has been developed, owing largely to the distance separating the sources of energy from the consuming centers, and to the lack in the past of a large-scale demand for current. In 1933 the total kilowatt capacity installed was 1,039,626,000; kilowatt-hours produced that year amounted to 1,629,256,000.

Coal has not been produced in commercial quantities except during the war.

#### WAGES AND LABOR CONDITIONS

The average wage of unskilled or semi-skilled laborers in Buenos Aires varies between 4.45 and 6.65 paper pesos per day,<sup>5</sup> and from 8 to 12 pesos for skilled labor. The wage scale in interior cities is somewhat lower.

The following examples may be cited as average wages in certain industries in Buenos Aires in 1928 and 1929, according to studies made by the National Department of Labor (subsequent reductions in wages amounting to 5 or 10 percent have been made):

Shoes:	Paper pesos per day
Pattern cutters:	
Skilled.....	7.33
Semiskilled.....	4.57
Lining cutters.....	3.08
Machinist:	
Skilled.....	7.97
Semiskilled.....	5.44
Paint:	
Foremen.....	8.17
Paint maker:	
Skilled.....	6.65
Unskilled.....	4.45
Glass:	
Glass workers:	
Skilled.....	8.07
Semiskilled.....	5.07
Apprentice.....	3.52
Laborer.....	4.59

<sup>5</sup> One paper peso equaled \$0.425, United States currency, at par, before January 1934. The "official" rate during the first half of 1934 averaged around \$0.34, but the free market rate fluctuated around \$0.25 during that period.

There is an 8-hour day law in Argentina, which limits the number of working hours per week to 48.

The great influx of European immigrants has provided Argentina with a population well suited to industrialization.

#### FOREIGN ENTERPRISE AND CAPITAL

Argentina is an outstanding example of the difficulty of distinguishing between "foreign" and "national" enterprise and capital, particularly where manufacturing is concerned. A census taken in Buenos Aires in 1887 showed that of all persons engaged in industry (doubtless including artisans) only 15 percent were Argentines, 50 percent were Italians, 14 percent were Spanish, 9 percent were French, 2 percent were Uruguayans, and 1½ percent were Germans. In 1914, out of 410,201 persons engaged in industry in the entire Republic, 50 percent were Argentines. The change is doubtless largely owing to the fact that many immigrants were in 1887 listed as foreigners, whereas in 1914 they were classed as Argentines.

There is a strong tendency for all manufacturing enterprises, including even branch factories of foreign concerns, to take on a national character with the passing of time and the development of a strong feeling of nationalism.

A study made in 1910 showed foreign investments of 8,391,500 gold pesos in the meat refrigerating industry and 41,650,100 gold pesos in "various companies",<sup>6</sup> which represented only 2.2 percent out of a total foreign investment of 2,256,531,079 gold pesos.<sup>7</sup>

After the war Mr. Bunge estimated the total foreign investment at 7,025,000,000 paper pesos (\$3,020,750,000), but the amount invested in industry was not shown separately.<sup>8</sup>

In 1932 about 28 American firms were reported as having branch factories in Argentina, of which the principal ones were meat packing, assembly of motor vehicles, petroleum refining, manufacturing tires and rubber goods, chemicals, soap and toilet preparations, and office appliances.

#### REGIONAL DISTRIBUTION

Although no statistics are available showing the regional distribution of manufacturing plants, there is no doubt that Buenos Aires and its suburbs embrace a large proportion of the industrial activity of the country. In few countries is there such a concentration in one city of population and of industrial and commercial activity in relation to the remainder of the country, as there is at Buenos Aires. On January 1, 1933, the population of the Federal Capital was estimated to be 2,214,702, and in addition the population of the suburbs of Buenos Aires, including Avellaneda, was placed at around 500,000, out of a total population on that date of 11,846,655. The industrial importance of the other leading cities is roughly in keeping with their rank in population, which is as follows: Rosario (485,000), Cordoba (238,000), La Plata (182,401), Santa Fe (125,000), Bahia Blanca (102,000), Parana (74,338), and Mendoza (66,200). There are also

<sup>6</sup> The gold peso at that time equaled \$0.9648.

<sup>7</sup> Bunge, Alejandro E., "*La Economía Argentina*", vol. II, p. 129, Buenos Aires, 1928.

<sup>8</sup> *Ibid.*, p. 130.



various important industrial establishments at smaller centers along the Rio de la Plata or its great tributaries, the Parana and the Uruguay.

Rosario, a deep-water port about 188 miles by rail from Buenos Aires and about 245 miles via the water route, is the chief grain port of Argentina and also the leading center after Buenos Aires of the flour milling industry. Other industrial activities there include tanning, sugar refining, meat-packing, distilling, brewing, brick-making, and the manufacture of macaroni and pastes, bags, tobacco, glass, shoes, cement, and chemicals.

Santa Fe, on the Parana above Rosario, is also a deep-water port. It has had considerable development since the war.

Tucuman is the center of the sugar and alcohol industry, and Mendoza is dependent on the wine trade.

### STATISTICAL MEASUREMENT OF INDUSTRIAL DEVELOPMENT

A statistical summary of the leading industrial groups in Argentina in 1933, showing the number of establishments, capital invested, value of production, and the number of employees, is given in table 3, which was compiled by the Chamber of Commerce of the United States of America in the Argentine Republic, based on official and unofficial sources. The totals given in this table should be adjusted to allow for one or two activities listed that are not strictly industrial. For example, the table shows 65,000 persons engaged in the wine industry and 45,000 persons engaged in producing yerba maté, although it appears likely that most of these are employed in essentially agricultural occupations, and that only a small proportion are engaged in the "manufacturing" end of the businesses.

On June 15, 1934, the Argentine Congress transmitted to the President for signature a bill providing for an industrial census in Argentina.

The best available estimates indicate that in 1927 the total value of physical production in Argentina was 5,460,000,000 paper pesos, of which the value added by manufacture accounted for 1,540,000,000 pesos, or 28 percent of the total.<sup>9</sup> The total value of manufactured products in 1933, as shown in table 3, is understood to include the value of raw materials.

TABLE 3.—ARGENTINE INDUSTRIAL DEVELOPMENT IN 1933

(Values in thousands of paper pesos)

Industry	Number of establishments	Capital	Value of production	Number of employees
			<i>Paper pesos</i>	
Wine.....	2, 638	958, 000	340, 000	65, 000
Vegetable oils.....	25	16, 859	7, 511	950
Nonalcoholic beverages.....	55	11, 184	7, 645	1, 507
Wheat and corn products.....	179	90, 000	150, 000	5, 000
Breweries.....	17	80, 884	72, 698	4, 751
Chocolates and confections.....	23	11, 317	14, 525	1, 545
Distilleries.....	31	16, 461	24, 319	1, 150
Sweets and conserves.....	30	12, 152	11, 860	1, 834
Flour pastes.....	28	6, 774	6, 220	893
Risotto's.....	21	11, 211	13, 084	2, 146
Tomato extract.....	6	2, 158	1, 600	286

<sup>1</sup> Estimated.

<sup>9</sup> Revista de Economía Argentina, Año 14, No. 159, September 1931 (Buenos Aires).

TABLE 3.—ARGENTINE INDUSTRIAL DEVELOPMENT IN 1933—Continued

Industry	Number of establishments	Capital	Value of production	Number of employees
			<i>Paper pesos</i>	
Ice.....	28	21,000	4,000	200
Dietetic products.....	4	1,567	1,875	242
Vinegar.....	6	411	692	58
Yerba mate.....	21	22,432	45,000	1,364
Packing house industry.....	12	145,000	1,416,000	30,000
Sugar industry.....	42	120,000	160,000	15,000
Dairying.....	8,000	100,000	53,000	30,000
Cotton textiles.....	27	60,000	40,000	11,350
Woolen textiles.....	22	60,250	48,000	10,000
Knit goods.....	200	51,250	45,250	7,500
Silk goods.....	40	19,500	35,000	7,000
Toilet preparations.....	126	10,000	25,000	1,800
Shoe manufacturing.....		46,000	69,725	
Sport footwear.....		6,500	12,156	
Alpargatas.....	491	12,000	35,487	23,400
Hat manufacturing.....	20	9,299	8,544	1,780
Button factories.....	4	300	400	200
Bonnet and millinery.....	90	450	600	300
Other toilet and wearing apparel factories.....	1,500	10,000	25,000	3,000
Metallurgy.....	326	107,000	120,000	20,000
Iron and steel.....		5,000	6,000	10,800
Cement.....	30	60,800	29,000	1,315
Sand, stone, and shale.....	89	48,000		11,000
Crushed stone.....	21	24,000	9,000	
Glass.....	17	18,000	20,000	4,500
Lead.....	23	14,000	12,264	1,263
Paint.....	14	7,000	8,000	614
Petroleum.....		457,000		
Automobile tires.....	3	27,000	11,459	6,000
Rubber manufacturing.....	9	21,778	15,293	1,737
Tobacco.....	25	60,000	165,000	20,000
Matches.....	25	12,753	13,000	2,814
Paper manufacturing.....	18	30,000	36,000	2,718
Agricultural machinery.....	32	7,000	9,000	1,570
Chemicals.....	61	60,000	85,000	1,970
Quebracho extract.....	17	89,000	32,000	5,320
Tanneries.....	200	25,000	35,000	2,000
Starch.....	4	1,000	1,831	223
Pharmaceuticals.....	11	2,500	1,678	250
Box making.....	36	2,778	4,771	1,269
Cordage.....	8	3,325	1,691	250
Toothpicks.....	3	200	150	
Soap and candles.....	25	8,225	18,000	900
Graphic arts.....	1,700	60,000	130,000	
Furniture.....	1,441	62,000	87,000	29,000
Jewelry.....	1996	150,000	140,000	14,297
Automotive.....		150,000	160,000	15,000
Electric materials and radio.....		35,000	50,000	8,000
Total.....	20,695	3,262,317	2,687,298	389,066

<sup>1</sup> Estimated.<sup>2</sup> Exports.<sup>3</sup> 1914 figures.

## MEAT PACKING

In Colonial times livestock formed the principal item in Argentine wealth. The large herds of cattle that ran wild on the pampas were descendants of the stock brought from Europe by the early Spanish settlers. In that period and during the first half-century of independence, the cattle were valued principally for their hides and tallow, but the exportation of live cattle and jerked meat also developed.

The first shipment of frozen beef as a commercial venture was made in 1877 to France on the steamer *Frigorifique*.<sup>10</sup> The first freezing works were established at Campana in 1885 by the River Plate Fresh Meat Co., but shipments of refrigerated meats did not

<sup>10</sup> See Trade Information Bulletin No. 647, *Cattle Raising in Argentina* (Bureau of Foreign and Domestic Commerce, 1929) for further particulars.

attain important proportions until 1900, when the British Government closed its ports to live Argentine cattle. The outbreak of the South African War also provided an important outlet for Argentine beef. There were four frigorificos in 1902. Between 1903 and 1905 five new frigorificos were established, all but one of which were British owned. In 1908, one of the largest American packing companies purchased a British-owned frigorifico at La Plata, and within a short period three other American packers had entered the field. The American companies played an important part in encouraging the breeding of high-grade stock and in developing the chilled-beef trade, which requires a higher class of animal and more careful treatment than is the case with frozen beef. Small shipments of chilled beef began in 1900, but they did not become an important factor in the meat trade until after 1910, when they began to displace American chilled beef in the London market. After a temporary set-back during the World War, shipments expanded rapidly after 1920 and soon exceeded those of frozen beef.

The dependence of the livestock industry on exportation is readily seen from the following table showing the number of head of cattle, sheep, and swine slaughtered in 1932 and 1933:

TABLE 4.—SLAUGHTERINGS OF CATTLE, SHEEP, AND HOGS IN ARGENTINA, 1932 AND 1933

Item	Cattle	Sheep	Swine
1932			
For export.....	<i>Head</i> 1,690,907	<i>Head</i> 4,385,818	<i>Head</i> 212,879
For domestic consumption.....	3,653,561	2,361,233	790,296
Total.....	5,344,468	6,767,051	1,003,175
1933			
For export.....	1,718,142	4,100,988	311,305
For domestic consumption.....	3,964,851	2,927,656	931,060
Total.....	5,702,993	7,028,644	1,242,365

The slaughtering companies are generally classified as frigorificos, extract plants, saladeros, and the municipal slaughterhouse of Liniers (Federal Capital). The frigorificos, which are largely foreign-owned, operate principally for the export trade, but also slaughter for the local market. With the renovation of the municipal slaughterhouse in 1931, the Government adopted the policy of restricting the amount of meat that the frigorificos could introduce into the Federal Capital. In 1932 and 1933 the municipal plant supplied about 60 percent of the total consumption of beef, 65 to 68 percent of the sheep, and 76 to 79 percent of the swine. The frigorificos also ship canned meats. There are two important meat-extract plants, both British-owned, although one discontinued operations toward the end of 1933. The export of jerked beef has declined in importance, with the rise of the refrigerating plants, but there are still two companies engaged in this trade. One of these, the Concordia cooperative enterprise, was founded in 1923, by cattlemen of the Provinces of Entre Rios and Corrientes, and flourished for some years, but owing to the increased customs duties in Cuba in 1928, it took up the manufacture of canned beef and meat extracts

as well. One of the smaller frigorificos, at Gualeguaychu, is also a cooperative.

Within recent years, and particularly since the depression has made itself felt, there has been a considerable extension of governmental control over the meat trade. Special mention may be made of the National Meat Board, which was created by law no. 11,747 of October 7, 1933, with extensive regulatory powers, and the authority to convert the present municipal slaughterhouse and packing plant into a national frigorifico.

Several of the leading cities have local abattoirs, either operated by the municipality or leased to concessionaires. In addition to the larger firms, there are also about 150 concerns subject to national inspection engaged in slaughtering, canning, or preparing jerked meat.

A complete line of packing house products is put up for domestic consumption.

Byproducts of the meat-packing industry that are of outstanding importance are hides and skins, tallow, casings, premier jus, stearin, blood and fertilizer, hair, horns and hoofs.

#### DAIRY INDUSTRY

Dairy farming is centered chiefly in the Provinces of Buenos Aires and Santa Fe. It is estimated that there are about 3,000,000 dairy cows in the Republic (principally shorthorns), of which more than 70 percent are in the Province of Buenos Aires. Exports of butter and cheese increased phenomenally during the World War. About 500 tons of butter were exported as early as 1895, and this had increased to 3,784 tons by 1913; it rose to nearly 19,000 tons in 1918. The production of cheese was almost entirely for domestic consumption before the war, but production practically quadrupled from 1913 to 1918 and exports during the latter year amounted to 6,431 tons.

In 1932 Argentina produced 36,874 tons of butter of which 25,365 tons were exported, principally to the United Kingdom. In 1933 exports dropped nearly 50 percent. Faced with this situation, the Argentine Government on April 12, 1934, created a regulating board for the dairy industry with authority to stabilize prices, improve the quality and presentation of Argentine exported butter, promote domestic consumption, and plan for the better organization of the industry. Producers of butter and casein also were authorized to sell their export bills in the open market, which in effect amounts to a subsidy, as most export bills are requisitioned by the Government at a rate below that of the free market.

The cheese producers have fared better, as they produce primarily for the domestic market, and have received indirect protection from the operation of foreign exchange control. Production increased from an average of 16,000 tons in 1927-29 to nearly 24,000 tons in 1932; imports declined from 1,814 tons in 1929 to 180 tons in 1933; and exports increased from 361 tons in 1929 to 941 tons in 1933.

Exports of casein began in 1902, when shipments of 94 tons were reported. They rose rapidly to 1,694 tons in 1904, and to 3,020 in 1905. The next large upward movement began in 1920. Exports in 1933 reached a peak of 23,585 tons. Domestic consumption of casein

is estimated at around 250 tons annually. There are several small manufacturers of casein glue in Buenos Aires.

The production of powdered milk has made rapid progress within recent years.

#### FLOUR MILLS

Flour exports began in 1875, but did not reach significant proportions until around 1902. Imports ceased in 1903. In 1905 exports reached the prewar peak of 144,700 tons, which was not exceeded until 1918. Since 1927-28 exports of flour have shown a downward tendency, but exports of bran and shorts have increased.

In 1932, wheat flour production reached 1,294,063 metric tons, of which 57,949 tons were exported and 1,236,966 tons consumed in the country. Within the last decade, the milling industry has been highly developed, the smaller old-fashioned mills being replaced by up-to-date mills with greater capacity. There were 179 mills in 1932. Buenos Aires is the center of the industry, having 11 mills with a daily capacity of 2,665 tons. The Province of Santa Fe, with 23 mills having a capacity of 1,970 tons, comes next, and is followed by the Province of Buenos Aires (44 mills having a combined capacity of 1,746 metric tons), the Province of Cordoba (19 mills, capacity 1,555 tons), and the Province of Entre Rios (33 mills, capacity 1,112 tons).

#### SUGAR

There are some 42 sugar mills in Argentina, of which 29 are in the Province of Tucuman, 3 in the Province of Jujuy, 2 in the Province of Salta, 2 in the Province of Santa Fe, 1 in the Province of Corrientes, and 1 in the Territory of Chaco. There are two refineries at Buenos Aires. In addition to these plants grinding and refining cane sugar, there are two plants for making sugar from sugar beets, one of which is located in the Province of San Juan and the other in the Territory of Rio Negro. The sugar industry has been largely developed by Argentines, and not less than 80 percent of the 350,000,000 pesos of capital invested in the industry is national.

The first notice of sugarcane cultivation in Argentina referred to a plantation in Tucuman in 1646. Later the Jesuits established a mill. The industry was revived in 1821 in Tucuman, using wooden mills worked by oxen; and became important after 1876, in which year the cane-growing areas were connected by railway with the coast, but sugar continued to be imported in considerable quantities until 1894. The Government granted a bounty on sugar exports during the period 1894 to 1904, but the rapid expansion of the industry led to overproduction.

Since 1928 various sugar restriction plans have been carried out under governmental auspices.

#### BEVERAGES

*Wine*.—Although Argentina ranks sixth (sometimes fourth) among the large wine producing countries of the world, the wine is almost entirely used in local consumption. In 1933, the production of wine was estimated at 670,000,000 liters, importation at 1,100,000

liters, and exportation at 120,000 liters. The capacity for production is around 850,000,000 liters annually, which exceeds by 77 percent the average production in 1912-14. As consumption has not kept pace with this increase in capacity, and as the quality of the wine does not permit of much exportation, an overproduction has developed. The Federal Government is endeavoring to encourage exportation by permitting exporters to sell in the "free" market, at a premium, the exchange derived from foreign sales. The governments of the Provinces of Mendoza and San Juan, the principal producing areas, also have granted a rebate of 4 centavos per liter from the tax of 6 centavos on exported wine.

*Beer.*—The production of beer and related products in 1932, according to official statistics, was as follows: Beer, 107,737,942 liters; malt, 6,008,338 kilograms; malt yeast, 5,037,518 kilograms; carbonated waters, 374,039 dozen bottles; carbonic acid, 2,162,704 kilograms; ice, 39,963 metric tons. These quantities were produced by 16 breweries operating in Argentina, in which there was stated to be a capital investment of 78,954,121 paper pesos.

It was reported in March 1934, that a large Buenos Aires brewery was planning to enlarge its plant and to install a malt house to supply the brewery with malt manufactured from locally grown barley. The production capacity of the first section, which was expected to be ready in October, was to be 18,000 kilograms of barley daily and 15,000 kilos of malt. When completed, the plant will produce double that amount. In 1932 Argentina imported 2,856,949 kilos of malt.

*Nonalcoholic.*—Bottled fruit juices and other nonalcoholic beverages also are put up in Argentina. The latest figures show that 9,839,124 dozens of bottles are produced annually. The soft-drink industry gives employment to 1,500 persons.

#### VEGETABLE OILS

The production of edible vegetable oils has more than doubled in the last decade. The output in 1933 amounted to 42,683 metric tons, consisting principally of peanut, rapeseed, cottonseed, linseed, and sunflower seed oils. Small quantities of castor-bean, soybean, and sesame oils were also produced. Linseed is produced on a very large scale, but primarily for export as seed, exports in 1933 amounting to 1,392,315 metric tons. Local oils are blended with imported olive oil to suit the tastes of the large Italian and Spanish population in Argentina. Imports of edible oils, principally olive and soybean oil, have declined with the rise of the domestic oil industry.

Of the 33 plants engaged in crushing oil seeds, about half are located in or near Buenos Aires.

#### PRESERVED AND CANNED GOODS

There are some 30 establishments producing canned goods, to a total value of 12,000,000 pesos, and in addition there are 6 tomato extract factories. The latest statistics show an annual production of about 265,000 kilograms of tomato paste, with a tendency to increase. Imports of this item have dropped heavily in recent years, as domestic production increases. The heavy demand comes from

the Italian immigrants and their descendants, who constitute a large proportion of the Argentine population.

There are several fish canning companies at Buenos Aires, which pack salmon, hake, merluce, shrimp, conger eels, and anchovy. However, they are not able to supply the entire demand, and imports of codfish, sardines, and other canned fish are considerable.

#### MISCELLANEOUS FOODSTUFFS

The manufacture of miscellaneous grocery products has increased notably within recent years. A national foodstuffs exhibit was held at Buenos Aires in 1931, and foodstuffs were also featured at the industrial exposition in 1933. Among the articles now produced in the country are biscuits, cereal specialties, fruit essences, flavoring extracts, confectionery, vinegar, canned fruits and vegetables, dietetic products, and baby foods.

Although not strictly a manufacturing industry, some mention should be made of the rapid extension of the cultivation in Argentina of yerba maté, the cured leaves of which provide what may be called the national drink. Maté tea was known to the aboriginal Indians of the River Plate region, and early became a popular beverage with the Spanish and Portuguese colonists. Until recently, Argentina imported the bulk of its requirements from Brazil and Paraguay. In 1907, for example, Argentina produced only about one-tenth of the total consumption, and as late as 1925, only about one-seventh. However, in 1932, the production was estimated at 30,000 metric tons as against an estimated consumption of 100,000 tons. The 1934 harvest increased to 51,000 tons. Most of the production comes from the Territory of Misiones, where extensive new plantations have been established, and it is estimated that within 5 years Argentina will be self-sufficing.

#### TOBACCO

Buenos Aires is the center of the tobacco industry and trade, the three principal manufacturing companies being located there. Another important company is located in the Province of Cordoba. Domestic production in 1932 amounted to 652,958,200 packages of cigarettes (12 to the package, amounting to 7,835,000,000 cigarettes), 39,395,335 packages of smoking tobacco, 117,602,599 cigars, and 63,628,614 bundles of leaf.

The use of locally produced tobaccos increased materially in 1932 and 1933, and it is now estimated that only about one-third of the tobacco used in manufacturing is imported. Domestic production was around 29,000,000 pounds in those years as against 23,840,000 pounds in 1931. The principal producing areas are the Provinces of Corrientes, Salta, and Tucuman and the Territory of Misiones. Tobacco has long been cultivated in Argentina, and in 1895 the area planted was larger than in recent years.

#### TEXTILES

*Cotton.*—Although there have been cotton weaving mills in Argentina for more than 40 years, spinning was first undertaken during the war, under the pressure of necessity. Since 1930 both spinning and

weaving facilities have undergone rapid expansion, under the stimulus of higher import duties and the indirect protection afforded by depreciation and exchange control. (See table 5.)

TABLE 5.—EMPLOYMENT IN ARGENTINE TEXTILE INDUSTRIES<sup>1</sup>

Industry	Number		Wages	
	1930	May 1934	1930	1933
Silk weaving.....	2,300	8,900	<i>Paper pesos</i> 3,650,000	<i>Paper pesos</i> 14,240,000
Wool spinning and weaving.....	7,150	11,000	7,550,000	11,800,000
Cotton spinning and weaving.....	5,580	9,770	5,550,000	9,850,000
Knitting mills.....	14,000	17,000	14,000,000	17,000,000
Total.....	29,030	46,670	30,850,000	52,890,000

<sup>1</sup> Data compiled by the Union Industrial Argentina.

There are some 27 cotton spinning and weaving mills in Argentina, producing about 9,000,000 kilos of yarn and 7,650,000 kilos of woven goods, valued at about 40,000,000 pesos. In 1933 it was estimated that the industry utilized 3,500,000 pesos' worth of imported materials. There are 6 spinning mills, with about 54,000 spindles installed up to September 1931, 13,000 more on order, and an additional 10,000 to 15,000 under consideration. Five of the spinning mills are operated in conjunction with weaving mills. The other one was formerly part of a wax match factory, but was separated in 1929. No combed yarn is produced. The yarn is spun from Argentine cotton. Production is limited to unbleached yarn, although local mills do bleach some imported yarn for their own use. In 1928 and 1929 one local mill imported combed yarn and mercerized it in Argentina, but this was abandoned in 1930.

It is estimated that there are from 2,500 to 3,500 looms in the Argentine cotton mills, most of which are concentrated in 5 or 6 large plants. About three-fourths of the output is cotton duck, which is extensively used in the manufacture of alpargatas, awnings, cots, and the like. Other items produced are drills, sheeting, ticking, blankets of cotton waste, and towels.

Only small quantities of thread are produced in Argentina.

*Wool.*—Argentina is one of the great wool-producing countries of the world, with an annual clip of over 300,000,000 pounds. Less than one-tenth of this is consumed by the domestic woolen industry, which comprises some 22 mills in or around Buenos Aires, equipped with around 80,000 spindles and from 2,000 to 3,000 looms. Argentine wool is spun in the coarser numbers, and some imported yarn is also used. It is estimated that the domestic industry supplies about 65 percent of the worsteds used in the country. Most of the woolen blankets used in Argentina are manufactured in the country, as are also the bulk of the felt for men's hats. The cheaper grades of worsted suitings are also produced.

There are seven wool washing plants, in addition to the woolen mills, which prepare their own wool.

*Silk.*—The silk weaving industry has had an extraordinary development during the past decade, and now produces a good quality



of crepe de chine, crepe georgettes, moroccan crepes, satins, upholstery fabrics, and printed silks.

There are nine mills reported as making silk cloth, most of which also make rayon piece goods. There are about 312 silk and rayon looms.

The Department of Agriculture has attempted to foster the raising of silkworms, but with little success. Imports of rayon yarn in recent years have ranged from 1,078,895 kilos in 1930 to 2,284,510 kilos in 1933.

*Knit goods.*—There are over 300 knit-goods factories producing hosiery, underwear, sweaters and pullovers, women's knit dresses, and bathing costumes.

The annual production of hosiery is around 4,000,000 dozen pairs of circular stockings, valued at 15,000,000 pesos, and 500,000 dozen pairs of full-fashioned hosiery, valued at 10,000,000 pesos. The production of full-fashioned silk hosiery began in 1928, and is now estimated to supply over 90 percent of the demand.

The value of the output of knit goods other than hosiery is placed at about 32,000,000 pesos, of which 22,000,000 pesos is for underwear and the balance for outerwear.

The number of tubular knitting machines installed for seamless hosiery is variously estimated at between 4,000 and 6,000; tubular machines for underwear at between 1,000 and 1,500, while the number of full-fashioned machines is estimated at 173.

*Manufactured articles.*—The medium and better grades of clothing in Argentina are made to order, but there are numerous small shops producing the cheaper grades of men's and women's apparel. A large proportion of the domestic consumption of shirts, collars, neckties, garters, handkerchiefs, corsets, cloth underwear, and other notions are produced in the country.

There is a Government uniform factory, with 250 sewing machines.

Other articles produced include absorbent cotton; rayon bedspreads; ribbon, cords, elastic webbing, etc.

The bulk of Argentina's grain crops is shipped in bags. In 1929, for example, Argentina used 118,121,000 new bags and 36,866,000 used bags in handling its crop of wheat, corn, and linseed. In addition, 28,358,000 new bags and 17,338,000 used bags were required for other crops. Most of these bags are made locally of imported burlap.

*Jute and hemp.*—There are some 7 mills spinning jute and about 55 mills spinning sisal hemp. The jute is used principally for the soles of canvas shoes (alpargatas), and the hemp for rope and twine. Experiments are being made in the cultivation of various fibers in Argentina. The flax grown on a large scale in Argentina is of the oil-bearing seed variety, which is different from the textile variety.

Argentina has an extensive area of fine cotton lands, and production is steadily increasing. Although cotton was known to the aborigines before the arrival of the Spanish conquerors, and was also cultivated during the Colonial era, modern commercial cultivation may be said to have begun during the period of the American Civil War. The Ministry of Agriculture interested itself in cotton cultivation beginning in 1903, and in 1924 two American experts

were engaged. Production has increased rapidly since 1918. In the 1931-32 season, production of raw cotton amounted to 275,560,827 pounds, which yielded 80,877,102 pounds of fiber and 185,920,889 pounds of seed. Although a larger area was planted during the 1932-33 season, the crop was smaller, due to damage by locusts and drought.

Most of the cotton is produced in the territory of the Chaco, but some is grown in the Provinces of Corrientes and Santiago del Estero and the Territory of Formosa. There are 81 cotton gins, principally in the Chaco.

Argentine exports of cotton during the crop year from March 1, 1933, to February 28, 1934, amounted to 100,429 bales, as against shipments of 139,008 during the previous year. The decline in exports was due to the increased demand by the domestic textile industry.

### SHOES

The production of shoes in 1933 was estimated at 14,058,400 pairs of leather shoes, and 40,610,400 pairs of cheap shoes, as shown in the following statement:

	<i>Pairs</i>
Men's leather shoes.....	3,771,700
Women's leather shoes.....	4,702,000
Children's leather shoes.....	5,584,100
Cheaper shoes:	
Of cloth.....	1,157,200
Of rubber.....	2,294,000
Slippers with leather sole.....	5,439,000
Slippers with rubber sole.....	3,002,200
Alpargatas.....	28,628,000

Of the raw materials used in the manufacture of leather shoes, 11.25 percent were imported, and in the manufacture of the cheaper shoes 2 percent were imported.

Of the numerous factories manufacturing shoes, there are about 50 medium and larger sized ones, most of which are located at Buenos Aires.

The manufacture of shoes is one of the oldest and best established industries in the country. The 1913 census showed that it was largely in foreign hands, but the percentage of Argentine capital and management has increased.

The cheaper grades of shoes, such as alpargatas, are largely made in household establishments.

### LEATHER AND TANNING

As one of the leading livestock producing countries of the world, and the home of a great meat refrigerating industry, Argentina is likewise an outstanding exporter of hides and skins. The production of cattle hides and sheep skins in 1931 was estimated by the Ministry of Agriculture as follows: Cattle hides, 6,400,000; sheep skins, 10,700,000. Most of the skins came from the great frigorificos and other packing establishments, but some came from the smaller abattoirs, butcher shops, and ranch killings. Exports of hides in 1931 were as follows: Wet cattle hides, 4,128,151; dry cattle hides 1,196,870; wet calfskins 864,286; dry calfskins 329,217; horsehides

188,917. In addition there were exported 37,496 bales of sheep and lamb skins, 3,943 bales of goatskins, and 605 bales of kidskins.

Only about 15 percent of the hides produced in Argentina are consumed in the country. A summary of the domestic leather situation is given below.

Argentina produces between 17,000,000 and 20,000,000 pounds of sole leather annually, which covers domestic requirements and leaves a considerable surplus for export.

It is estimated that about 400,000 cattle hides are worked annually into side and patent upper leathers, representing about 90 percent of the domestic consumption. The quality has been considerably improved in recent years.

The production of calf upper leathers is placed at about 7,000,000 square feet annually, which is insufficient for domestic requirements. Most of the better grades are imported.

It is estimated that about 60,000 dozen goat and kid skins and about 120,000 sheep and lamb skins are tanned annually, comprising from 90 to 95 percent of local requirements.

Argentina is also the leading producer of quebracho extract, which is discussed under chemicals.

#### HATS

All except a small proportion of the felt hats worn in Argentina are made locally from domestic felt. Practically all of the caps also are manufactured in Argentina, although part of the cloth is imported. Straw hats are manufactured from imported braid. Most of the women's felt and straw hats are finished locally, but most of the shapes are imported.

#### IRON AND STEEL

Although Argentina possesses considerable deposits of iron ore in the Provinces of Cordoba, Santiago del Estero, and Tucuman, production of pig iron has been negligible, as the ore is of poor quality, the mines are not advantageously situated, and Argentina lacks coal. However, the manufacture of fabricated iron and steel products, using scrap (the export of which is prohibited) and imported pig iron as raw material, is increasing. The leading organization in the iron and steel industry is the firm Talleres Metalurgicos San Martin, which was formed by the fusion of two important companies, and now operates two plants in the vicinity of Buenos Aires. One of these, the "General Bosch" plant, produces cast-iron pipe by the centrifugal system (capacity 6,000 metric tons per year), sanitary ware, wood screws, bolts, and nuts (capacity 6,000 metric tons), galvanized iron sheets (capacity 40,000 metric tons), and miscellaneous foundry products. The "San Francisco" plant specializes on boilers, drawing and galvanizing of wire, wire nails, steel shapes and beams, barbed wire; agricultural implements, such as wheelbarrows, spades, harrows, etc.; and structural steel. The total capacity of the two plants is said to be in the neighborhood of 125,000 tons per year. The main furnace installations of the Talleres Metalurgicos San Martin consist of two Siemens-Martin units of 15 tons capacity, and 3 rolling mills of 450, 300, and 200 mm.

In 1931 there were 82 foundries in Argentina, of which 60 were located in Buenos Aires. Among the more important of these are the foundries operated by the railways and steel car companies.

The local manufacture of agricultural implements, builder's hardware, automotive parts and accessories, and miscellaneous iron and steel goods has increased considerably since 1931. There are about 150 companies making metal beds, night tables, hospital furniture, and the like. There is extensive manufacture of plows, plowshares, harrows, cultivators, and windmills. Combines are also manufactured locally. One company produces all kinds of industrial pumps. Several German companies have established small branch factories to produce builder's hardware.

There are three companies producing expanded metal, for building and highway construction, from imported black sheets.

There are several concerns manufacturing steel office furniture, lockers, and metal door and window frames.

Practically all of the tin containers used in Argentina by the meat-packing, canning, and petroleum industries are made locally. Crown tops for the beer and soft-drinks industries are also produced. The center of the tin-plate using industries is Buenos Aires, and it is reported that between 40 and 50 percent of the total production is made by one large firm. The demand for tin-plate in Argentina has averaged about 87,000,000 pounds annually for the last 10 years.

#### NONFERROUS METALS INDUSTRY

The principal foundries produce all kinds of brass castings. Copper wire and cable are being manufactured from imported electrolytic copper.

Lead is the principal metal produced in Argentina. There are five lead smelters which refine the Argentine ores and also treat imported Bolivian ores.

A factory for the production of aluminum foil began operations in 1932.

#### CONSTRUCTION MATERIALS

Various kinds of building materials, such as calcareous rocks, marble, granite, sandstone, and sand, are extensively quarried in Argentina. Gypsum is also extraordinarily abundant. Considerable sand, however, is imported from Uruguay.

There are three or four principal cement manufacturing companies, one of which is American owned. The equipment in these plants is comparatively new, as one plant was built in 1930 and another in 1932. Total production in 1932 was 2,940,000 barrels as against 3,149,898 barrels in 1931. The use of cement for building purposes is increasing.

Brick, roofing and floor tiles, hollow and solid tiles, and mosaic tiles, are manufactured in the country.

#### CERAMICS AND GLASS

In 1932 there were 37 establishments manufacturing ceramic products, of which the most important were roofing and building tiles, decorative and mosaic tiles, and refractory products.

Porcelain sanitary ware is manufactured by several firms.

*Glass.*—The chief items produced in Argentina are cheap glass-ware, bottles, heavy skylight glass, and glass instruments such as siphons, vials, serum tubes, measures, thermometers, retorts, droppers, etc. Plate glass and window glass are not produced. The leading plants are located in or near Buenos Aires. The glass industry in recent years has suffered from overproduction.

#### WOOD AND WOOD PRODUCTS

Although Argentina has rather a large forest wealth, most of the timber of a marketable value is found in parts of the country distant from the consuming centers, and, in general, it is cheaper to import lumber than to cut it in the timber regions and transport it to the principal markets. The most important forest region in Argentina is the Gran Chaco. Another important region is in western Patagonia, along the Chilean frontier. Commercially, quebracho is by far the most important of Argentina's forest products, its chief use being for tanning. Quebracho is found in the Gran Chaco, and also in Santa Fe, Salta, and Tucuman Provinces. The lighter variety of red quebracho is used extensively for cross-ties, fence posts, etc. The use of quebracho for railway ties is required by law. Spanish cedar is the next most important Argentine wood. It is used perhaps more than any other wood for fine furniture and interior woodwork by large manufacturers in Buenos Aires. Among the other Argentine woods used to some extent may be mentioned quavacan, lapacho, algarrobo, willow, and poplar. These species grow in rather small sizes and for the most part can be used only by wheelwrights, box-makers, and for posts and pickets for farms. Except for certain species of native cedar, Argentine woods very rarely come into direct competition with lumber imported from Europe and North America.

Most of the lumber used in Argentina for construction purposes is imported from abroad. Lumber is one of the two or three largest items of imports.

The furniture and cabinet-making industry in Argentina, which is highly developed, and which is composed of several hundred large and small factories, usually requires good quantities of imported hardwoods. The tendency appears to be away from the manufacture of quality furniture, and the increase in imports of cheap veneers and plywoods from Russia and the Balkan countries bears out this statement.

The use of cheaper woods for boxmaking is increasing. Lumber from the Parana Delta is displacing the imported variety. Russian hemlock is also coming into the market at the expense of other nations.

*Cooperage.*—There are several important cooperage consuming industries in Argentina, notably the wine, beer, maté, meat packing, and vegetable oil industries. Owing to the scarcity of suitable local woods, a large part of the requirements are satisfied by imported barrels or staves. However, there is a local industry making vats, slack barrels for the maté industry, and barrels for glucose and wine.

## PAPER

In 1925 the six paper mills in Argentina accounted for the production of paper shown in the following statement:

	<i>Kilograms</i>
Wrapping paper.....	10, 703, 571
Glazed paper for printing.....	962, 721
Heavy brown paper.....	846, 000
Pasteboard.....	129, 390
Miscellaneous.....	1, 822, 427

In 1926 five of these companies were merged, and a complete reorganization undertaken. In 1931 three plants were being operated in the towns of Bernal, Zarate, and Andino, with a total of 2,000 workmen and a daily production capacity of 180,000 kilograms. At that time there were also 4 paper mills in Buenos Aires, 1 at Cordoba, and 1 at Baradero.

Argentina produces no wood pulp. Some newsprint was produced during the war, but was later discontinued.

In 1931 a plant was erected to produce cellulose from grain straw and to manufacture high-grade paper by an electrochemical process using chlorine gas. This process was perfected by Engineer Umberto Pomilio, technical director of the company.

A new sandpaper factory began operations in 1932. When local consumption has reached a point to justify it, it is proposed to utilize the quartz deposits in the Provinces of San Luis and Cordoba for abrasives.

The printing trade in Argentina is an important one. It represents an investment of 60,000,000 pesos and normally employs about 25,000 workers, but half of these were reported unemployed in 1933.

The major share of the demand for printing and lithographic ink is supplied by a few American and European firms, which have plants in Buenos Aires, where the materials are reground and manipulated to meet the requirements of the local market. Two of these firms also manufacture ink from the initial stages. The local manufacture of ink, as contrasted with the preparation from imported ingredients, is, however, of small importance.

## ELECTRICAL APPLIANCES

For the past 10 years Argentina has made slow but steady progress in the production of the most commonly used electrical appliances. Today, of the total consumption of these commodities, it is estimated that domestic manufacturers produce 50 percent of the flatirons, 25 percent of the electrical refrigerators, 60 percent of the electric heaters, 75 percent of the electric grills and disk stoves, 25 percent of the ranges, and 75 percent of the water heaters. These products are manufactured as side lines in various industrial establishments, such as machine shops, foundries, and electrical repair shops. So far as known, there are no factories in Argentina exclusively dedicated to the manufacture of electrical appliances.

As regards radio sets, the assembling of parts and sets by local firms and branches of American firms has become sufficient to supply the demand. All chassis, whether imported or assembled locally, are supplied with locally made cabinets.

In January 1934 it was reported that a company had been formed by nine leading radio dealers for the purpose of manufacturing radio tubes, and that the machinery had been ordered from the United States.

A factory has recently been established at Buenos Aires to manufacture incandescent electric lamps, with a capacity of 1,000,000 lamps annually, or about 5 percent of the annual consumption.

### AUTOMOTIVE

Four out of every five cars and three out of every four trucks sold in Argentina are assembled in the country. The assembly of automobiles began in 1916, and is now carried on by 2 large branch plants of American car manufacturers and 5 Argentine distributors of low- and medium-priced cars. In the case of the branch factories, only the motor is received in assembled form; but the distributors only assemble the chassis.

One truck called the "Hispano-Argentina" is practically manufactured in Argentina out of parts imported from the United States and Europe.

As a rule, truck and bus bodies are built in Argentina. Small busses called "collectivos" are extensively used at Buenos Aires. There is one company doing a high grade of coach work.

Local manufacturers now supply the bulk of the demand for many types of parts and accessories, such as axle shafts, iron and aluminum pistons, ring starting gears, springs, battery terminals, Bendix springs, body hardware, hub caps, bumpers, ornaments, chains, and jacks. A start has been made in the fabrication of wrist pins.

*Airplanes.*—There is an army airplane factory at Cordoba, which also produces some commercial planes.

### RUBBER PRODUCTS

*Tires.*—In 1931 two American companies and one Italian concern established plants in Argentina for the manufacture of casings and inner tubes. The position of this industry is shown by the following table of comparative statistics:

TABLE 6.—DATA RELATING TO TIRE MANUFACTURING IN ARGENTINA

Item	Government estimate, 1930-31	Trade estimate, 1933
Number of tire manufacturers.....	3	3
Capital invested..... paper pesos.....	12,342,867	27,000,000
Raw materials used, value..... pesos.....	6,322,449	4,700,000
Salaries and wages paid..... do.....	2,659,339	2,615,000
Gross sales..... do.....	11,449,276	28,500,000
Horsepower used.....	1,816	6,500
Personnel employed.....	916	975
Production:		
Tire casings..... number.....	161,591	250,000
Inner tubes..... do.....	171,476	267,000
Bicycle tires..... do.....	17,638	
Solid tires..... kilograms.....	23,143	
Tire repair material..... kilos.....	33,246	38,000

An Argentine subsidiary of a French concern has been organized for the purpose of manufacturing tires in Argentina.

*Other rubber goods.*—Statistics relative to the production of rubber-soled canvas shoes are given under the heading "Shoes." This business was flourishing at the beginning of 1934.

There are four important concerns engaged in the manufacture of rubber heels, of which one is the subsidiary of an American company, and another is Italian.

A branch of the Italian Pirelli company manufactures rubber-insulated electric wire. An extensive line of mechanical rubber goods is also produced in the country.

#### DRUGS AND CHEMICALS

*Industrial chemicals.*—The heavy chemical industry may be considered as still in the early stages of development, but as making rapid headway. The production of alcohol, principally by sugar mills, amounts to about 25,000,000 liters annually. There are two plants making alcohol from corn, with an annual production of about 3,000,000 liters. As a byproduct of this manufacture is produced small quantities of carbon dioxide, fusel-oil products, corn oil, and a nitrogenous product called burlanda.

The *Compañía Primitiva de Gas* produces a number of tar products, including benzol, which is not refined above 50 percent, small quantities of sulphate of ammonia, sulphuric acid, carbolic acid, and bases for disinfectants and sheep dips.

Important deposits of borax are found in the northern Province of Jujuy. Most of the local requirements of borax are supplied by two companies.

Argentine commercial requirements of sulphuric acid, amounting to about 700 tons per month, are taken care of by local production. The principal producing company also manufactures muriatic acid, nitric acid, copper sulphate, acetic acid, phosphoric acid, ammonia, paris green, and silver nitrate.

The Government plant, which was established in 1917, produces about 50 tons of aluminum sulphate per day for water clarification, and large amounts of alum are being extracted from the soil along the river, which contains about 7 percent of this product. In 1923 a sulphuric-acid plant, with a daily production capacity of 30 tons, was built, producing 55° B strength, to supply the sulphate component in making aluminum sulphate. Since then a 60-ton acid plant has been built as well as a new alum plant of corresponding capacity.

It is estimated that approximately 1,500 tons of carbon bisulphide are produced annually. Production of tartaric acid has not proven successful, and has been discontinued.

There are six firms in Argentina producing compressed gases, such as oxygen, hydrogen, carbonic, and acetylene. There are also two plants supplying the local requirements for dry ice. There were 34 firms denaturing alcohol, located principally in or near Buenos Aires. The production of denatured alcohol in 1932 according to use was as follows: Heat, 10,329,947 liters; illumination, 973,787 liters; varnish, 2,355,489 liters; vinegar, 844,106 liters; and chemicals, 52,674 liters.



A factory for converting wheat and flax straw into cellulose was completed at Juan Ortiz, Province of Santa Fe, early in 1931. During the first 18 months of operation the factory produced 5,699,481 kilos of paper and 3,817,875 kilos of cellulose, and in addition the following chemical products: 375,800 kilos of hypochlorite, 403,733 kilos of hydrochloric acid, 840,227 kilos of caustic soda, and 946,197 kilos of fine salt.

While some sulphur is refined locally by the principal importers, there is no actual production of sulphur either from pyrites or other ores.

There are four companies manufacturing starch, with an annual output exceeding 500 000 kilograms.

*Pharmaceuticals and toilet articles.*—The manufacture of pharmaceuticals and veterinary products has shown a notable increase in recent years. The bulk of the proprietary and toilet articles are now put up in Argentina by branch factories or local laboratories representing foreign concerns. Well-known brands of perfume are also prepared locally with imported essences.

There are about 50 soap factories, of which a dozen are comparatively large.

Six companies, including a subsidiary of an American concern, manufacture ample quantities of absorbent cotton to supply the needs of the country.

While there are some deposits of talc in Argentina, in the Provinces of Cordoba, La Rioja, and Catamare, they are of comparatively poor quality and the talc produced is of a grayish color unacceptable in the retail talcum-powder market. However, there are seven concerns which pulverize imported talc.

*Sheep dips.*—According to data compiled by the Argentine Ministry of Agriculture, the production of sheep dips and insecticides in the fiscal year 1932-33 was as shown in the following statement:

Sheep dips.....	liters..	781, 743
Fluids: Insecticides, disinfectants, ant killers, and locust killers.....	liters..	1, 762, 809
Tick killers.....	do..	535, 000
Calcium sulphide.....	do..	2, 106, 900
Other products.....	do..	4, 092, 000
Other products.....	kilos..	5, 122, 502
Other products.....	bars..	26, 999
Other products.....	cakes..	22, 563
Ant killer candles.....	number..	230, 515

*Paint and synthetic resins.*—There are 14 paint factories in or near Buenos Aires, and 2 in Rosario. Several new plants have been built in the last few years, some of them with foreign capital. The production of paints, varnishes, enamels, putty, linseed oil, pastes, and printing ink in the fiscal year 1931-32 amounted to 10,723,519 kilograms, valued at around 10,000,000 pesos. Argentina is a leading producer of linseed, and also produces sufficient linseed oil for its own needs, with a small surplus for export. Turpentine and colors are imported.

In 1933 there were 18 firms in Buenos Aires manufacturing articles from synthetic resins of the "bakelite" type, including handles for umbrellas and household articles, trays and boxes, inkwells, cigar and cigarette holders, electric articles, combs, inkwells, and many

kinds of novelties. One company also produced synthetic resins from imported chemicals.

*Quebracho.*—Argentine produces about three-fourths of the world's supply of quebracho extract. The average annual production from 1923 to 1932, inclusive, was around 400,000,000 pounds, with an average annual value of \$15,000,000. Official statistics for the year 1931 showed 17 important establishments with headquarters in Buenos Aires, and manufacturing plants in the northern part of the Province of Santa Fe, and in the Territories of Chaco and Formosa.

Within recent years there has been a decided overproduction, and stocks of logs and extract have accumulated. It is estimated that the present capacity of the extract plants in Argentina and Paraguay is about 500,000 metric tons annually, which is almost double the 1918 capacity.

Both logs and extract are exported. The exported logs are generally sold to only about 8 or 9 countries, chiefly the United States, France, Belgium, Italy, Germany, the Netherlands, and the United Kingdom.

In 1933 Argentine tanners used 4,662,680 kilos of quebracho extract and 2,176,699 kilos of quebracho sawdust.

*Matches.*—There are 20 match factories in Argentina, mostly in or around Buenos Aires, which supply domestic requirements and export small quantities to Paraguay. Production in 1932 amounted to 88,461,018 boxes of wax matches and 261,242,910 boxes of paper matches.

#### MOTION-PICTURE FILMS

There are four studios in Argentina, which in 1933 produced six films. In 1934 the first newsreel was produced. The superimposition and cutting-in of titles in Spanish is also carried on in Argentina.

#### PETROLEUM REFINING

Petroleum has been produced continuously and on a constantly increasing scale since 1907. From 1907 to 1915, inclusive, exploitation was practically monopolized by the State, but thereafter producing areas were assigned to private companies. In 1931 private production exceeded that of the Government-owned Yacimientos Petroliferos Fiscales for the first time. The four producing zones are Comodoro Rivadavia (Chubut), which in 1933 produced 75.3 percent of the total output; Plaza Huincul (Neuquen), which produced 10.5 percent; Salta, 13.9 percent; and Mendoza, 0.3 percent.

There are about 17 oil refineries in the country, the important ones being equipped to do both topping and cracking. The private refineries utilize both Argentine and imported crude oils. In 1929 the local production of gasoline exceeded importations for the first time, and has since retained that position. In 1933 gasoline production amounted to 747,000,000 liters, as compared with imports of 58,242,414 liters.

*Lubricating oils.*—The production of lubricating oils and greases on an important scale has been developed since 1930. An American-owned company and the "El Sosneado" refinery at Mendoza have been producing lubricants for several years; the Shell-Mex Refinery went into operation during 1932; and in 1933 the new plant of the

Government-owned Yacimientos Petroliferos Fiscales, at La Plata, specializing in lubricating oils and greases, paraffins, and asphalt, began operations.

### GAS

There are two companies producing manufactured gas in Argentina. One of these, the Compañía Primitiva de Gas (Ltd.), at Buenos Aires, in 1932 produced 5,523,520 cubic meters of gas and sold 4,682,915 cubic meters. The Compañía Hispano-Americana de Electricidad controls two plants: one at La Plata, which produced and sold 2,400,000 and 2,200,000 cubic meters, respectively, in 1932, and one at Bernal, which produced 1,290,000 cubic meters in 1932 and sold 1,100,000 cubic meters.

It is estimated that the Comodoro Rivadavia field can supply 700,000 cubic meters of natural gas per day, and a large part of this is now being used by the Yacimientos Petroliferos Fiscales in the manufacture of liquid gas. Large quantities of natural gas are also used by oil-producing companies and by residents in the oil-producing zones.

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