

FRENCH INDUSTRY DURING THE WAR

**ECONOMIC AND SOCIAL HISTORY
OF THE WORLD WAR**

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TRANSLATED AND ABRIDGED SERIES

*For List of Editors, Publishers, and Plan of Series
see end of this volume.*

FRENCH INDUSTRY DURING THE WAR

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EDITOR'S PREFACE

IN the autumn of 1914, when the scientific study of the effects of war upon modern life passed suddenly from theory to history, the Division of Economics and History of the Carnegie Endowment for International Peace proposed to adjust the program of its researches to the new and altered problems which the war presented. The existing program, which had been prepared as the result of a conference of economists held at Berne in 1911, and which dealt with the facts then at hand, had just begun to show the quality of its contributions; but for many reasons it could no longer be followed out. A plan was therefore drawn up at the request of the Director of the Division in which it was proposed, by means of an historical survey, to attempt to measure the economic cost of the war and the displacement which it was causing in the processes of civilization. Such an "Economic and Social History of the World War," it was felt, if undertaken by men of judicial temper and adequate training, might ultimately, by reason of its scientific obligations to truth, furnish data for the forming of sound public opinion, and thus contribute fundamentally toward the aims of an institution dedicated to the cause of international peace.

The need for such an analysis, conceived and executed in the spirit of historical research, was increasingly obvious as the war developed, releasing complex forces of national life not only for the vast process of destruction, but also for the stimulation of new capacities for production. This new economic activity, which under normal conditions of peace might have been a gain to society, and the surprising capacity exhibited by the belligerent nations for enduring long and increasing loss—often while presenting the outward semblance of new prosperity—made necessary a reconsideration of the whole field of war economics. A double obligation was therefore placed upon the Division of Economics and History. It was obliged to concentrate its work upon the problem thus presented, and to study it as a whole; in other words, to apply to it the tests and disciplines of history. Just as the war itself was a single event, though penetrating by seemingly unconnected ways to the remotest parts of the world, so the analysis

of it must be developed according to a plan at once all embracing and yet adjustable to the practical limits of the available data.

During the actual progress of the war, however, the execution of this plan for a scientific and objective study of war economics proved impossible in any large and authoritative way. Incidental studies and surveys of portions of the field could be made and were made under the direction of the Division, but it was impossible to undertake a general history for obvious reasons. In the first place, an authoritative statement of the resources of belligerents bore directly on the conduct of armies in the field. The result was to remove as far as possible from scrutiny those data of the economic life of the countries at war which would ordinarily, in time of peace, be readily available for investigation. In addition to this difficulty of consulting documents, collaborators competent to deal with them were for the most part called into national service in the belligerent countries and so were unavailable for research. The plan for a war history was therefore postponed until conditions should arise which would make possible not only access to essential documents, but also the coöperation of economists, historians, and men of affairs in the nations chiefly concerned, whose joint work would not be misunderstood either in purpose or in content.

Upon the termination of the war, the Endowment once more took up the original plan, and it was found with but slight modification to be applicable to the situation. Work was begun in the summer and autumn of 1919. In the first place, a final conference of the Advisory Board of Economists of the Division of Economics and History was held in Paris, which limited itself to planning a series of short preliminary surveys of special fields. Since, however, the purely preliminary character of such studies was further emphasized by the fact that they were directed more especially toward those problems which were then fronting Europe as questions of urgency, it was considered best not to treat them as part of the general survey, but rather as of contemporary value in the period of war settlement. It was clear that not only could no general program be laid down *a priori* by this conference as a whole, but that a new and more highly specialized research organization than that already existing would be needed to undertake the Economic and Social History of the War, one based

more upon national grounds in the first instance, and less upon purely international coöperation. Until the facts of national history could be ascertained, it would be impossible to proceed with comparative analysis; and the different national histories were themselves of almost baffling intricacy and variety. Consequently the former European Committee of Research was dissolved, and in its place it was decided to erect an Editorial Board in each of the larger countries and to nominate special editors in the smaller ones, who should concentrate, for the present at least, upon their own economic and social war history.

The nomination of these boards by the General Editor was the first step taken in every country where the work has begun. And if any justification was needed for the plan of the Endowment, it at once may be found in the lists of those, distinguished in scholarship or in public affairs, who have accepted the responsibility of editorship. This responsibility is by no means light, involving, as it does, the adaptation of the general editorial plan to the varying demands of national circumstances or methods of work; and the measure of success attained is due to the generous and earnest coöperation of those in charge in each country.

Once the editorial organization was established there could be little doubt as to the first step which should be taken in each instance toward the actual preparation of the history. Without documents there can be no history. The essential records of the war, local, as well as central, have therefore to be preserved and to be made available for research in so far as is compatible with public interest. But this archival task is a very great one, belonging of right to the governments and other owners of historical sources and not to the historian or economist who proposes to use them. It is an obligation of ownership; for all such documents are public trust. The collaborators on this section of the war history, therefore, working within their own field as researchers, could only survey the situation as they found it and report their findings in the form of guides or manuals; and perhaps, by stimulating a comparison of methods, help to further the adoption of those found to be most practical. In every country, therefore, this was the point of departure for actual work; although special monographs have not been written in every instance.

The first stage of the work upon the war history, dealing with little more than the externals of archives, seemed for a while to exhaust the possibilities of research, and had the plan of the history been limited to research based upon official document, little more could have been done, for once documents have been labeled "secret" few government officials can be found with sufficient courage or initiative to break open the seal. Thus vast masses of source material essential for the historian were effectively placed beyond his reach, although much of it was quite harmless from any point of view. While war conditions thus continued to hamper research, and were likely to do so for many years to come, some alternative had to be found.

Fortunately, such an alternative was at hand in the narrative, amply supported by documentary evidence, of those who had played some part in the conduct of affairs during the war, or who, as close observers in privileged positions, were able to record from first- or at least second-hand knowledge the economic history of different phases of the Great War, and of its effect upon society. Thus a series of monographs was planned consisting for the most part of unofficial yet authoritative statements, descriptive or historical, which may best be described as about half-way between memoirs and blue-books. These monographs make up the main body of the work assigned so far. They are not limited to contemporary war-time studies; for the economic history of the war must deal with a longer period than that of the actual fighting. It must cover the years of "deflation" as well, at least sufficiently to secure some fairer measure of the economic displacement than is possible in purely contemporary judgments.

With this phase of the work, the editorial problems assumed a new aspect. The series of monographs had to be planned primarily with regard to the availability of contributors, rather than of source material as in the case of most histories; for the contributors themselves controlled the sources. This in turn involved a new attitude toward those two ideals which historians have sought to emphasize, consistency and objectivity. In order to bring out the chief contribution of each writer it was impossible to keep within narrowly logical outlines; facts would have to be repeated in different settings and seen from different angles, and sections included which do not lie within the strict limits of history; and absolute objectivity could not be ob-

tained in every part. Under the stress of controversy of apology, partial views would here and there find their expression. But these views are in some instances an intrinsic part of the history itself, contemporary measurements of facts as significant as the facts with which they deal. Moreover, the work as a whole is planned to furnish its own corrective; and where it does not, others will.

In addition to the monographic treatment of source material, a number of studies by specialists is already in preparation, dealing with technical or limited subjects, historical or statistical. These monographs also partake to some extent of the nature of first-hand material, registering as they do the data of history close enough to the source to permit verification in ways impossible later. But they also belong to that constructive process by which history passes from analysis to synthesis. The process is a long and difficult one, however, and work upon it has only just begun. To quote an apt characterization, in the first stages of a history like this, one is only "picking cotton." The tangled threads of events have still to be woven into the pattern of history; and for this creative and constructive work different plans and organizations may be needed.

In a work which is the product of so complex and varied coöperation as this, it is impossible to indicate in any but a most general way the apportionment of responsibility of editors and authors for the contents of the different monographs. For the plan of the History as a whole and its effective execution the General Editor is responsible; but the arrangement of the detailed programs of study has been largely the work of the different Editorial Boards and divisional editors, who have also read the manuscripts prepared under their direction. The acceptance of a monograph in this series, however, does not commit the editors to the opinions or conclusions of the authors. Like other editors, they are asked to vouch for the scientific merit, the appropriateness and usefulness of the volumes admitted to the series; but the authors are naturally free to make their individual contributions in their own way. In like manner, the publication of the monographs does not commit the Endowment to agreement with any specific conclusions which may be expressed therein. The responsibility of the Endowment is to History itself—an obligation not to avoid but to secure and preserve variant narratives and

points of view, in so far as they are essential for the understanding of the war as a whole.

* * * * *

For the most part, the text of the volumes of the various national series has been prepared in the language of the country concerned; and, as will be seen by reference to the "Outline of Plan" at the end of this volume, these texts with but few exceptions are published in their original languages. The most notable variation from this rule has been in the case of the Russian series, which, for the present at least, will be published only in English translation. There has also been some translation prior to publication, the aim being to present the entire body of the History of the War in the major languages of Europe: English, French, German or Italian, with the possible addition of Spanish if the scope of the history were extended in the direction of the Spanish-speaking countries.

In addition, however, to these original texts, a limited number of volumes of the European continental series are published by the American publishers in abridged and slightly modified translation. This "Translated and Abridged Series" has been prepared solely with regard to its possible usefulness for those who do not readily use the originals. It is therefore necessarily limited to volumes dealing with the more general subjects, such as the effect of the war upon the agriculture or manufactures of a country, and excludes the more special topics, like the treatment of individual industries, which would interest few except those who already know the language of the original study. This rule has been departed from in some instances in order to present to American or English readers data of peculiar interest which nevertheless come from a restricted field. The application of this criterion of usefulness naturally leaves the "Translated and Abridged Series" somewhat lacking in symmetry, in view of the fact that the British series and others (like the Russian and Japanese) originally appearing in English, are already available, without further editorial modification or abridgment.

The first volumes to appear in the abridged English translation deal with subjects of great importance, the effect of the war upon French industry, agriculture and food supply. There are similar

EDITOR'S PREFACE

xi

surveys of the mechanism of government control in war-time, of the social and material disturbances due to invasion, and of the doubly vexed question of France's war finance. Studies in Austrian and German war history and of that of the smaller nations parallel those of France, Belgium and Italy. These translated volumes, however, cover but a fraction of the field surveyed in the more special researches. Moreover, it should be noted that the more general monographs selected for translation are themselves the result of independent original research and are not dependent for their data upon the accompanying special studies prepared for more technical readers. This method of work, forced upon the authors by the exigencies of the scientific method, has sometimes led to seemingly different conclusions. But a careful examination of these apparent discrepancies will show that the ultimate synthesis is merely enriched by the consideration of variant aspects of a problem so vast and so elusive that no one statement, especially if cast in statistical formula, is adequate even to describe its terms.

J. T. S.

CONTENTS

INTRODUCTION	xxiii
------------------------	-------

PART I

GENERAL DESCRIPTION

CHAPTER I

<i>Situation of French Industries before the war. Industrial importance of invaded territory in relation to the whole . . .</i>	3
Personnel	3
Industrial establishments	9
Motive power	11
Output	16
Recapitulation	18

CHAPTER II

<i>Mobilization. Its immediate effects. Successive calls to the colors and casualties. Scarcity of labor and remedies . . .</i>	22
Immediate effects of mobilization on industrial activity . . .	24
Successive calls to the colors	26
Losses suffered by great industrial groups	28
Temporary exemptions and furloughs	31
Unemployment and official employment agencies. The refugees	34
Foreign and colonial labor	40
Women's labor. Increase in the number of female workers; their employments	42
The disabled	47
Prisoners of war	50
Regulation of labor	53

CHAPTER III

<i>The numbers employed in industry, their variation, and the variation in industrial activity</i>	55
--	----

CHAPTER IV

<i>General characteristics of the industrial situation, other than employment</i>	64
Condition of the workers	64
Strikes	64
Wages	65
Cost of living. Real wages	68
Wholesale prices and profits	69
Motive power and machinery	72
Hydraulic power	73
Difficulties in connection with raw materials and markets	74
Foreign trade	74
Exchange	75
Freight	78
Variations in volume of principal exports and imports	81
Foreign markets	84
Colonies	85

CHAPTER V

<i>Summary and conclusions</i>	89
Permanent changes due to the war	89
Summary of industrial activity from 1914 to 1921	89
Brief review of certain economic and social changes	91
Industrial development, methods, products	93

PART II

MONOGRAPHS RELATING TO THE SEVERAL INDUSTRIES

CHAPTER VI

<i>Mines and quarries</i>	103
Mineral combustibles	103
Metallurgical coke	107
Iron-ore	108
Salt mines	108
Quarries	109
Condition of devastated coal-mines after the armistice	109

CONTENTS

xv

CHAPTER VII

<i>Food industries</i>	111
General observations	111
Sugar	112
Alcohol	114
Variations of principal sub-groups down to July 1917	115
Milling	115
Farinaceous pastes	115
Sugar-refining	116
Breweries	117
Champagne wine	117
Liqueurs	118
Cheese	118
Preserved meat, fish, vegetables, and fruit	118
Chocolate	120
Biscuits	120
Baking	121
Chicory	121
Mustard	122
Variations from July 1917 until after the war	122
Milling	123
Farinaceous pastes	123
Baking	124
Pastry-cooks	125
Biscuits	126
Preserved meat, fish, etc.	126
Sugar and sugar-refining	129
Confectionery	130
Chocolate	130
Starch	131
Chicory	131
Alcohol distillery	131
Vermouth	133
Champagne wine	133
Breweries	134
Artificial ice	135
Butter and cheese	135

CHAPTER VIII

<i>Chemical industries</i>	136
General observations	136

Variations of principal sub-groups down to the end of 1915	136
Sulphuric acid	139
Pharmaceutical products	139
Sulphur refineries	140
Oil and soap factories and stearineries	141
Gas-works	142
Fertilizers	142
Tannic extracts	143
Petroleum refineries	144
Dye factories	144
Salt and soda	144
Perfumery	144
Variations from 1916 until the armistice	145
Works adapted to war requirements. Sulphuric acid, etc.	145
Pharmaceutical products	150
Photographic paper	151
Aniline dyes	152
Pencils	153
Artificial silk	153
Gas-works	153
Ammonia salts	154
Oil and soap factories and stearineries	155
Tannic extracts	157
Fertilizers	157
Sulphate of copper	158
Sulphur and petroleum refineries	159
Coal briquettes	159
Resinous products, sea-salt, glue	159
Perfumery	160
Variations after the armistice	161
Transformation of industries	162
Sulphuric acid	163
Pharmaceutical and photographic products	163
Gas-works, briquettes	164
Oil factories, stearineries	164
Sulphur and petroleum refineries, sea-salt, tannic ex- tracts, dyes	165
Fertilizers, perfumery	166
Conclusion	167

CONTENTS

xvii

CHAPTER IX

<i>Rubber, paper, cardboard</i>	169
General observations	169
Variations of principal sub-groups down to 1915	169
Rubber	169
Paper and cardboard	170
Variations from 1916 until after the war	172
Rubber	172
Paper	173
Cardboard	176

CHAPTER X

<i>Printing and binding</i>	177
General observations	177
Variations of principal sub-groups	177
Engravings, prints, and lithographs	178
Publishers and booksellers	178
Printing	184
Newspaper printing	187
Binding and sewing	189
Postcards. Music	189

CHAPTER XI

<i>Textile industries</i>	191
General observations	191
Wool	192
Cotton	193
Flax, hemp, jute, ramie	195
Silk	198

CHAPTER XII

<i>Making of textile goods and clothing; straw, feathers, and hair industry</i>	202
General observations	202
Variations of principal sub-groups	202
Military clothing	206
Civilian ready-made clothing	206
Dressmaking and millinery	209
Furs	214
Linen goods	215

Corsets	217
Hats	219
Cloth shoes	220
Flowers and feathers	222
Gloves	223
Laundries and dye-works	225
Basket- and straw-work	226

CHAPTER XIII

<i>Leather and skins</i>	228
General observations	228
Variations of the principal sub-groups	228
Tanneries and taweries	231
Boots and shoes	235
Fancy leather goods	240
Gloves	241
Saddlery	244
Pelts for furs	245

CHAPTER XIV

<i>Wood-working</i>	246
General observations	246
Variations of the principal sub-groups	246
Saw-mills and wood-working factories	250
Joinery and carpentry	251
Cabinet-making	251
Carriage building and wheelwright's work	255
Ship-building	260
Tools and tool-handles, walking-sticks, umbrellas	261
Wooden shoes	261
Orthopædic articles	262
Wooden pipes	262
Combs	262
Cooperage	264
Corks	264
Brushes, buttons, brooms	266
Wooden toys	267
Wooden musical instruments	267

CONTENTS

xix

CHAPTER XV

<i>Metallurgy and working of ordinary metals</i>	269
General observations	269
Cast iron	274
Steel	278
Variations of principal sub-groups	285
Metal pens	296
Constructional engineering and ship-building	296
Motor cars, cycles, tubes	298
Agricultural machinery	299
Metal toys	301
Metal caps	301
Sheet-metal and metal boxes	302
Domestic implements	303
Cutlery	304
Ironmongery	305
Hosiery needles	306
Bronze work	306
Electrical apparatus	306
Clock- and watch-making	307

CHAPTER XVI

<i>Precious metals and precious stones</i>	310
General observations	310
Variations of the sub-groups	310
Jewelers and goldsmiths	313
Gold and silver wire and braid	316
Gold-leaf	316
Cutting and manufacture of precious stones	317

CHAPTER XVII

<i>Building and kindred trades</i>	320
General observations	320
Variations of sub-groups	320
Public works	323
Stone construction	328
Stone-cutting and molding	331

CONTENTS

CHAPTER XVIII

<i>Bricks, pottery, glass</i>	333
General observations	333
Variations of sub-groups	333
Lime-kilns, plaster and cement works	336
Bricks and tiles	338
Fire clay goods, crucibles, etc.	339
Pottery	341
Earthenware	342
Porcelain	343
Glass	348
Clinical thermometers	354
Porcelain buttons	354
Glass beads	354

CHAPTER XIX

<i>Transport</i>	356
General observations	356
Railways, motor cars, river transport, harbors, commercial and industrial transport	356

CHAPTER XX

<i>Miscellaneous trades</i>	369
General observations	369
Hotels	369
Mineral waters	370
Banks	370
Theaters and amusements	373
Variations of sub-groups	375
Hotels, restaurants	375
Mineral waters	378
Rags	378
Retail trades	380

APPENDICES

I. Industrial conditions in the several districts	387
II. Loss of workers through invasion	403
III. Loss of industrial establishments through invasion	405
IV. Variations in number of female staff	406
V. Percentages of personnel employed at various dates	407

CONTENTS

xxi

VI. Proportion of pre-war personnel employed at various dates in the several districts	408
VII. Analysis of industrial activity by districts	410
VIII. Coal-mines. Percentage of personnel employed at various periods	411
IX. Percentage of personnel employed in the several industrial groups at various periods	412
X. Analysis of industrial activity by industrial groups	413
XI. Proportion of personnel employed at various dates in cer- tain industries	414
XII. Strikes	415
XIII. Wages of miners	416
XIV. Wages in sugar-factories	416
XV. Retail prices in various countries	417
XVI. Purchasing power of wages in various industries	418
XVII. Wholesale prices of chief industrial commodities	419
XVIII. Steam-power	420
XIX. Foreign and colonial trade of France	420
XX. French imports and exports in 1913	421
XXI. French imports and exports 1912-1921	422
XXII. Imports and exports of certain commodities 1912-1922	424
XXIII. Output of metalliferous mines	426
XXIV. Asphalt and mineral oil	427
XXV. Food industries. Imports and exports	428
XXVI. Chemical industries. Production and consumption in 1913	430
XXVII. Chemical industries. Imports and exports	432
XXVIII. Rubber, paper, cardboard. Imports and exports	434
XXIX. Printing and binding. Imports and exports	436
XXX. Printing and binding. Costs and prices	438
XXXI. Textile industries. Imports and exports	440
XXXII. Textile goods and clothing. Imports and exports	442
XXXIII. Leather and skins. Imports and exports	444
XXXIV. Wood-working. Imports and exports	446
XXXV. Metallurgy. Imports and exports	448
XXXVI. Precious metals and precious stones. Imports and exports	450
XXXVII. Building and public works. Imports and exports	452
XXXVIII. Lime, cement, pottery, glass. Imports and exports	454
XXXIX. Commercial railway traffic	455
XL. Movement of commercial shipping.	456
INDEX	459

INTRODUCTION

THE Carnegie Endowment for International Peace has entrusted to National Committees in a large number of countries the task of preparing a Social and Economic History of the World War. In the very full program drawn up by the French Committee, the share of the present volume relates to the internal policy adopted in France in the matter of production and consumption. In it will be described 'Industry in general,' the life of the various industries during the war, their displacements, how some developed and others stagnated. Certain industries, however, owing to their predominant rôle during war, have been dealt with in separate volumes,¹ to which the reader who desires a less summary description of them than is here provided will be able to have recourse.

In order to determine accurately the modifications that the war introduced into the life of the several industries, we shall begin by giving a general survey of the situation of French industry at the outbreak of war. The statistics relating to the various groups will enable us to show the number of works, of workmen, and the horsepower of which each disposed.

By ascertaining the geographical distribution of these industrial forces, we shall then be in a position to prepare, what is an essential preliminary, a statement of the losses due to the German invasion. Notwithstanding the victory of the Marne, the enemy were able to retain within their lines some of the richest portions of French territory. We shall have to establish the number, man-power, capacity of output and general characteristics of the factories which, within a few weeks of the commencement of hostilities, were swallowed up by the invasion.

But, as a result of the state of war, even the industries that remained within the French lines underwent profound modifications. Some became dormant or disappeared, whether from lack of labor, of raw material, or of demand for their products; others were

¹ These have not been translated into English. The student of the subjects they deal with is referred to the original French text.

created or much developed, to make good the loss of the invaded regions or to meet new needs. Many were transformed, either all at once or little by little, to suit the requirements of national defense. These, naturally, were favored by the authorities; coal and raw material were supplied to them in ample quantities; and Government provided them with labor, either by drawing on other industries or by taking skilled workmen from the ranks, and sending them to the factories where they would prove most useful.

How, in these exceptionally difficult conditions, did the other industries contrive to exist? Did they obtain coal, though none was reserved for them? Did they find labor to replace the workmen who had been called up or transferred to the war factories? No doubt they had recourse to the labor supplied by women, old men, and refugees; but the work was often of an arduous kind, too trying for women, or required a degree of skill only to be obtained by long training.

The study of these different 'displacements' between industries, of the transfers of staff between civil factories and war factories, and of the consequent progress or decay of the several industries, constitutes the subject of this volume.

But this definition is too wide. To begin with, our examination of Industries during the War will not comprise agriculture, which is dealt with in other volumes of the series, nor the maritime service, nor fisheries, nor the liberal professions, nor the public services.

Further, for the convenience of our readers, we will enumerate at the outset the industries that are treated, more fully than in this work, in special monographs forming part of the 'Economic History.'

First among these are *Coal* and *Mineral Oil*, the principal sources from which industry and transport draw their energy and, perhaps more than any other substances, the true nerves of war. Their importance is illustrated by the fact that the State, where it did not go so far as to establish a monopoly of their output, exercised a close control over its production, sale, and price.

A special monograph is designed to deal with *Timber*, in harmony with the fact that the French Government centralized in the Timber Office the purchase and distribution of felled timber. Its policy in

this respect is accounted for by the enormous timber requirements of Munitions, Aviation, etc.

Special volumes will deal with *Metallurgy*, which played a predominant part in the manufacture of munitions, rolling-stock, and motors; and with the *Chemical Industries*, which applied themselves to the production of explosives, poison gas, etc. Doubtless these industries were also able in some degree to meet private requirements, but only as a subsidiary feature in their operations. Their great and sudden development was for the purposes of war.

The *Aviation* industry, entirely devoted to national defense, and the *Railway* industry, which came in great part under the orders of the War Ministry, need merely be mentioned; and, in an auxiliary capacity, *Internal Water-ways* and *Ports*.

Finally come the *Textile Industries*, which were principally occupied with the clothing of the army, the manufacture of aeroplane fabrics, etc.

If we are asked why we have not completely excluded from our survey the ^{J.P.}industries that form the subject of special volumes, the answer is that we shall have to set forth the comprehensive statistics that include these industries in order to bring out the position of other groups. Moreover, even these industries, though engaged in the main on war work, were also employed to a considerable extent on civil ⁹¹requirements. And indeed, conversely, there is probably no industrial group that did not contribute in a greater or less degree to supply the needs of the armies.

This was notably so as regards the wood-working industries: carpentry, joinery, coach-building, cabinet-making, cooperage, brush-making, the manufacture of musical instruments and miscellaneous utensils. These industries exerted themselves to meet the needs of national defense at least as much as those of the civil population, turning out ammunition-chests, motor-bodies, wagons, gun-carriages, aeroplane parts, etc.

So it was, too, with the industries that work in leather and skins, and with the rubber industry: this last was engaged especially in production for military motor cars.

The following are the groups of industries as they will figure in

our work; the classification is that adopted for the purposes of the general census of professions carried out in France in 1906.

Extractive industries. Mines and quarries.

Manufacture of food and drink. Flour, butter, and cheese. Alcohol and sugar. Spirituous liquors and sparkling wines, beer, cider, aerated waters, ice. Baking and pastry-making. Preserves. Tripe. Starch, margarine, glucose.

Chemical industries. Pharmaceutic and various products. Non-mineral oils, candles, perfumery, animal oils and fats, gums, fertilizers. Acids, salts, and divers products. Illuminating gas, paraffin, briquettes. Explosives, phosphorus, electro-chemistry. Dyes, colors, varnishes, etc.

Manufacture of rubber, paper, cardboard, etc. Rubber and its substitutes. Paper, cardboard, paper and cardboard articles, wall-paper.

Printing, binding, and reproduction. Binding, book-sewing, etc. Printing and engraving. Photography, pictures.

Textile industries properly so called. Spinning of flax, hemp, jute, and substitutes. Weaving of linen and hemp. Spinning and weaving of cotton, wool, silk. Dyeing, dressing, bleaching, and printing of yarn and cloth. Hosiery, lace, guipure, embroidery, etc. Trimmings, ribbons, etc.

Manufacture of textile goods and clothing. Manufacture of tents, tarpaulins, and large textile articles. Clothing. Linen goods. Umbrellas. Hats. List slippers. Artificial flowers. Laundry, dyeing, cleaning.

Industries utilizing straw, feathers, hair. Basket-making, straw-plaiting. Manufacture of goods from feathers or hair.

Leather and skins. Preparation of hides and skins. Various articles. Shoes, gloves.

Wood-working. Saw-mills, carpentry, joinery. Wheelwright's work, carriage-building. Wooden utensils. Cabinet-making. Musical instruments. Fancy goods, brushes, etc.

Heavy metallurgical industries. Production of iron, steel, and divers metals.

Working of iron, steel, and ordinary metals. Forging, manufacture of edge-tools, wire-drawing. Nail-making. Constructional engi-

neering, lock-making. Sheet-iron. Gun-making. Boiler-making, foundries, engineering. Electrical apparatus. Copper or bronze apparatus and articles. Surgical instruments. Optical instruments or instruments of precision. Articles made of tinned iron, tin, lead, nickel. Clock- and watch-making. Toy-manufacture. Electroplating.

Working of precious metals and precious stones.

Stone-cutting, plaster molding, earth-work, stone construction. Public works, urban distributive services (water, electricity, etc.). Plumbing, roofing. Building.

Manufacture of lime, bricks, pottery, and glass. Manufacture of lime, cement, and plaster. Bricks and pottery. Earthenware and porcelain. Glass and enameling. Mirrors, decoration on glass.

Transport and storage. (N.B. Neither railways nor sea-transport will be dealt with in this work.)

Commerce and finance, including hotel-keeping, banks, etc.

We have retained this last group in our list because it will be interesting to glance briefly at the changes of a general character that the pressure of events imposed upon these industries.

It should be observed at the outset that although it may be possible to isolate for the purposes of a monograph some very homogeneous industry, the statistics available for the illustration of general tendencies relate to the above groups, and are not always susceptible of resolution among their constituent parts.

Before entering upon our subject, before even giving the plan of the work, we still have to define the extent of the industrial territory to which it will relate. We shall deal with so much of France as was not invaded. The conditions under which labor was carried on in the occupied districts were of a very exceptional kind; they do not enter within the scheme of this work, but will form the subject of a special monograph.

We shall assume the military front as it was fixed a few weeks after the first battle of the Marne, or, more precisely, as it was stabilized after the battle of Flanders, which ended in November 1914. From that time until the second quarter of 1918, it did not alter to an extent sufficient to modify appreciably the industrial

life that still survived in the immediate vicinity of the battle; and this is the point of view with which we are here concerned. We shall include in the region that was industrially incapacitated certain districts situated immediately on the hither side of the front and subjected to bombardments and to changes of military position; the industrial output of these districts was *nil* and many of them were even evacuated.

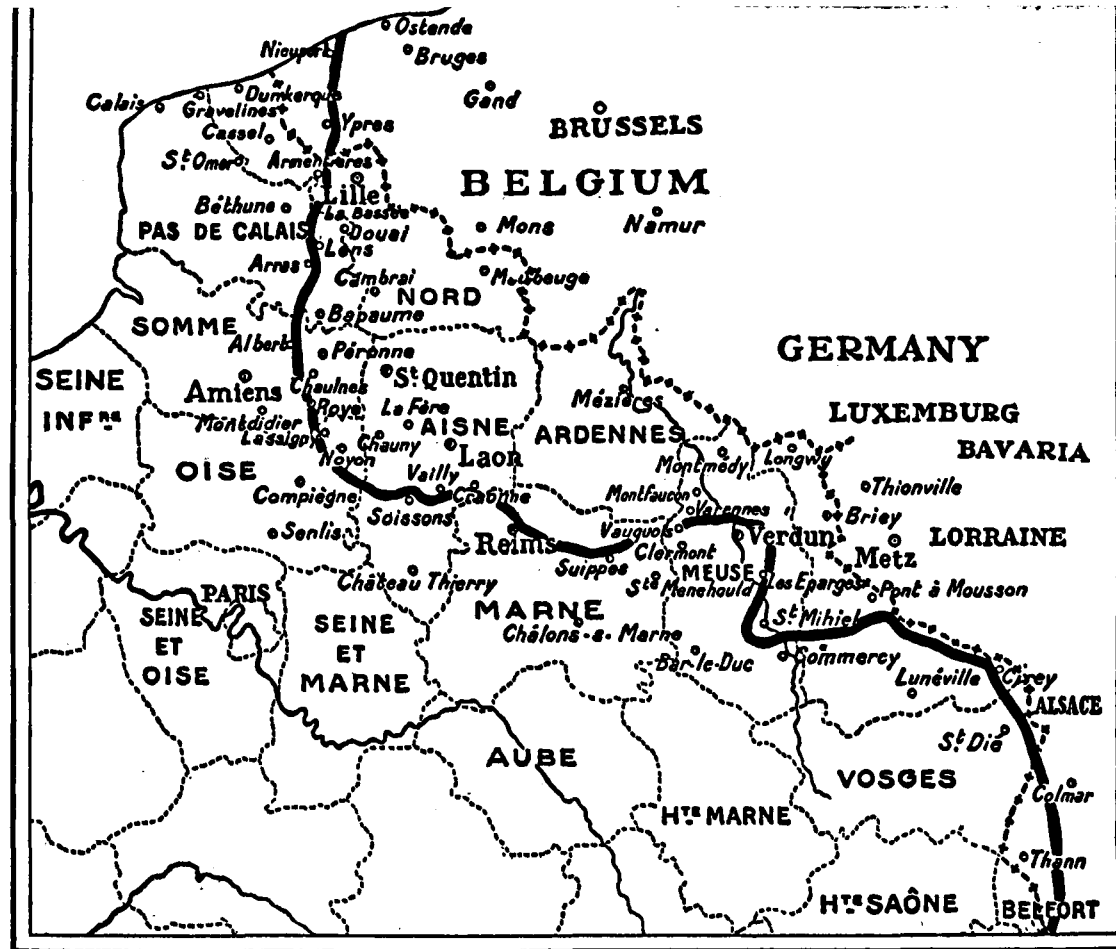
It would, however, be useless to attempt to introduce a high degree of precision in our definition of the territory: the pre-war statistics are drawn up on the basis of departments and only certain figures relate to smaller areas (*arrondissements*); and the exclusion or inclusion of particular *arrondissements* must be carried out somewhat arbitrarily, but this will have little effect on the general aspect of the phenomena. We shall first describe the front on the basis of the *arrondissements* through which it passed.

After the battle of Flanders, that is to say, from December 1914, and practically for the remainder of the war, the front, as it may be taken with sufficient accuracy from an industrial standpoint, started at Nieuport in Belgium, several kilometers to the east of Dunkerque; passed through Ypres and entered France to the east of Armentières; then led southwards slightly to the west of Lille, passed through Neuve-Chapelle, La Bassée, Lorette, and round Arras on the east.

To the south of Arras the front followed a wide semi-circle through Albert, the west of Péronne, Chaulnes, Roye, Lassigny, the north of Soissons and Craonne. It then traversed the north-east of Rheims, Perthes, Vauquois, the north and the east of Verdun, the south-west of St.-Mihiel and Pont-à-Mousson, whence it followed approximately the frontier of Alsace-Lorraine as far as the east of St.-Dié, thereafter striking directly south toward the Swiss frontier. A plan showing the line of the front is here given.

The departments traversed by the front or completely included in the conquered territory were ten in number: Nord, Pas-de-Calais, Somme, Oise, Aisne, Marne, Meuse, Meurthe-et-Moselle, Vosges, Ardennes. But they suffered, from an industrial point of view, in different degrees.

In the Nord out of seven *arrondissements* six must be considered



INDUSTRIAL CENTERS IN THE OCCUPIED AREA OF NORTHERN FRANCE

as rendered practically useless; in the Pas-de-Calais one and three-fifths out of six; in the Somme one and a half out of five; in the Oise three-fourths of one *arrondissement* out of four; in the Aisne three and three-quarters out of five; in the Marne two out of five; in the Meuse three out of four; in Meurthe-et-Moselle one and the half of each of two others out of a total of four; in the Vosges one-third of one *arrondissement* out of five. All five *arrondissements* of the department of the Ardennes were swallowed up in the invaded territory.

Thus in the ten invaded departments we find 22 *arrondissements* completely incapacitated and 7 others partly so. Several of these were among the richest in France and were industrially lost to her for the whole duration of the war.

We shall see that the 22 *arrondissements* in question represented 6 per cent of the total territory, and that the area of the 10 departments that were partially or completely incapacitated formed 11.7 per cent of the same.

We have now to state the plan of this work. It will be divided into two parts. The first will comprise, to begin with, a general survey of the industrial situation before the war, setting forth the principal characteristics of French industry and commerce as a whole, and distinguishing what the invasion immobilized from what remained of service. We shall then describe French industrial activity as a whole during the war, from July 1914 to the end of 1918, or even until 1920.

The second part will contain brief monographs on the several industrial groups.

APPENDIX I

INDUSTRIAL CONDITIONS IN THE SEVERAL DISTRICTS

WE have seen that the various parts of France fared very differently, in point of industrial prosperity, during the war; we shall here deal with each district at somewhat greater length, beginning with the districts of Lille and Nancy. These include almost the whole of the area that suffered from invasion and from military operations, and comprise, as has already been said, the chief coal- and iron-mining region, and the principal center of the heavy metallurgical industry. The information we shall give will be mainly drawn from the reports of Labor Inspectors and the complaints submitted by employers to the local Economic Commissions and Consultative Councils.

(i) *Calais.*

The Calais district (called the Lille district in the Labor Inspectors' reports) comprises the two departments of the Nord and the Pas-de-Calais. In these the disturbance caused by the mobilization was accentuated by the concentration and passage of the armies, both allied and enemy, and by the destruction caused by the fighting. The proximity of the enemy and difficulties of transport and supply made it extremely hard to organize production on any stable basis. Nevertheless, as the index-numbers of employment show, the goodwill of employers and workers was daunted neither by these impediments nor by the danger from bombardments and from enemy attacks. It was essential to keep certain centers of production going, even when they were under the fire of the German guns. These were not only coal-mines: certain factories, at Dunkirk for instance, gave up work only at the end of 1915, when demolished by shell fire. It was naturally the industries working for national defense that did well, and these, thanks to Government assistance, were by the end of 1915 giving excellent results; while the others, left to their own resources, were overwhelmed with difficulties.

The situation in 1916 was similar, but its chief characteristics

were more pronounced: work was plentiful in factories engaged on orders for the military administration, because they were supplied with the labor and other resources that they needed; production to meet civil needs and for export fell short of requirements. Complaints at this time relate to the lack of skilled male labor, and of raw material and coal, and to scarcity of tools, spare parts, etc.

At the end of 1917 it was found that many employers, under pressure of circumstances, were changing the character of their works, so as to adapt them to the needs of the moment. The necessary reorganization was rendered especially difficult by the deficiency and inferior quality of the available labor, and by the scarcity of coal. It was for this reason that several windmills were set working again in the Calais district in 1917, and water-wheels that had long been abandoned were brought into use by flour-mills, paper works, and tanneries. Nevertheless the statistics show at the end of 1917 a marked slackening of activity, for the bombardments were beginning to drive workers, male and female, from the towns.

In the first half of 1918 the German advance caused the evacuation of some highly important industrial centers (Bailleul, Béthune, Hazebrouck, etc.); transport for industrial purposes was suspended, and a considerable part of the population fell back to the south. This led to the closing of some large factories and to a reduction of work in others. (The index-numbers are based on the factories that the Inspectors were able to visit, and do not take into account those which were evacuated.)

After the Armistice, the greater part of this district remained for a time in a state of industrial lethargy. This was due to the lack of transport facilities, to uncertainty as to the economic provisions of the treaty of peace, to speculation for the rise, and so forth. Moreover, in the area that had for four years been in enemy occupation, the following conditions must be borne in mind: all means of production had been removed either by deliberate destruction or by systematic requisitions; and railway and road bridges and canal locks had been demolished. The difficulties in the way of resumption of work were here stupendous.

Nevertheless after the first few months of 1919, though Lille showed only a slight recovery, 115 factories were at work in the less

severely devastated region of Roubaix-Tourcoing, and 15,000 workers were in employment as against 42,000 before the war.

(ii) *Nancy.*

The district of Nancy comprises six departments, Aisne, Ardennes, Marne, Meuse, Meurthe-et-Moselle, and Vosges: the army front was stabilized in five of these; the sixth, the Ardennes, a highly industrial area, was completely occupied by the enemy. In this district therefore, as in the preceding one, industry was carried on with special difficulty, for the neighborhood of the fighting aggravated the uneasiness that prevailed in all parts of the country.

In January 1915, more than one-half of the industrial establishments situated in the uninvaded portion were still closed down. There was in consequence a large amount of unemployment, notably in the industries occupying women and children, such as dress-making, sewing, and embroidery. But many employers, in the early months of 1915, offered work to these women, and to boys and girls under 18, though it was work of a kind that had hitherto been done only by men. An increasing number of establishments reopened; orders flowed in, and the complaints recorded relate in particular to the constant rise in the price of coal and raw material, and to the difficulty of communications by rail and post. These and the control of lighting, together with the military occupation of factories and the danger of bombardment, were the principal impediments in the way of industry until the middle of 1917. Nevertheless the economic conditions were so good in factories working for national defense (metal works, foundries, engineering shops, boiler works, and certain cotton-spinning mills) that they were employing more than their normal staff and introducing night shifts.

The production of, and trade in, food-stuffs were in like case, owing to the extraordinary consumption in the towns and villages where French troops were quartered; both the big food businesses and the small dealers enjoyed a period of unparalleled prosperity.

But in a good number of industries the hours of work were very short, output being barely one-half of the normal, owing either to scarcity of personnel, particularly of specialist workmen; or to dearth of raw material and especially coal; or to irregularity of

transport. The industries connected with building (brick works, etc.), with furniture, and those supplying articles of luxury and fashion were completely paralyzed. A few industries (fine hosiery, optical glass, etc.) worked especially for export to England and Italy.

In 1917, whereas the restrictions on the consumption of sugar, bread, and illuminating gas and the meatless and pastryless days caused only minor discomfort, there were many complaints that the scarcity of coal, of labor, and of means of transport prevented an increase of output. The war factories alone, privileged in these respects, were working at high pressure, enlarging their premises or plant, and distributing dividends; a few other employers, taught by experience, had been able to accumulate a stock of coal, to install electric power, or to heat their furnaces with wood, sawdust, or turf. Motors and other mechanical processes were also developed for loading, unloading, and moving goods, to meet the scarcity of labor.

If the economic situation in the Nancy district in 1917 may be considered good, having regard to its proximity to the front, it became extremely bad in the first six months of 1918. The German offensive brought about the closure of the factories in the Aisne and of most of those in the Marne that had hitherto remained open. Moreover the lack of means of transport and the interruption of the great Paris-Strasburg line immobilized coal and raw material in Paris or in the ports. Short time had accordingly to be introduced in many establishments, other than wood-working factories and those utilizing waste for fuel or employing water-power. Workmen received only half wages and were occupied on such tasks as cleaning machinery, or on agricultural work.

These unfortunate conditions were even aggravated at the end of the war, when the manufacture of munitions was suspended, notwithstanding that the first coal-barges from the Saar arrived very quickly. No improvement occurred until the law of the 23rd April 1919 on the eight-hour day came into force; then, after discussions and agreements between employers and workmen, certain important works were reopened, and likewise some factories that had remained closed during the war.

None the less the year 1919 was a period of prolonged industrial

crisis. Workmen were continually complaining of the high cost of living, which neutralized the increases of wages conceded to them; for the higher wages were raised, the more rose the cost of living. This occasioned unrest and strikes. Employers complained no less keenly of the lack of means of transport, of coal, and of skilled labor; they complained of the enforcement of the eight-hour day at a moment when what was required was accelerated output; and they complained of the impossibility of getting machine-tools. Apart from a few industries (hosiery, linen goods, musical instruments), exports were at this time insignificant in amount.

The conditions prevailing in the portions of this district, as of the Calais district, evacuated by the enemy were specially aggravated during the last months of 1918 by the devastation carried out in these areas. Here, as there, many factories had been destroyed, and the plant broken up or carried off. Employers, who were impatiently awaiting contractors and material for the work of reconstruction, grumbled at the slowness with which Government granted advances of compensation, and at the delays in the arrival of machine-tools and raw materials. Finally, there was a serious crisis in labor supply, owing to the lack of housing for the workers; these moreover deserted private employment in order to accept better paid work on the restoration of the liberated regions.

(iii) *Paris.*

Paris, comprising the three departments of Seine, Seine-et-Oise, and Seine-et-Marne, is one of the districts where population is densest and industry most concentrated. The upheaval caused by mobilization was naturally felt there very acutely; but its consequences have already been set forth, and we will only remind the reader that the number of unemployed in the Paris district reached nearly 500,000 in August 1914.

The second returns of the Labor Inspectors, for April 1915, showed a marked recovery; only the building and luxury industries remained stagnant. The Inspectors have here made use of the statistics of industrial accidents as a measure of industrial activity, for these relate to all industrial and commercial establishments. The number of accidents reported in the Paris district had been steadily increasing before the war: in 1910, 109,516; in 1911, 130,192 (an

increase of 20,676); in 1912, 145,321 (an increase of 15,129); in 1913, 155,664 (an increase of 10,323). Although the rate of yearly increase was diminishing yearly by some 5,000, the normal increase had certainly not come to an end in July 1914; the number of accidents between August 1914 and April 1915 would not normally have been less than the number between August 1913 and April 1914. Yet as compared with 27,106 accidents reported in August and September 1913, there were only 4,961 in August and September 1914, or 18 per cent; against 41,140 in October, November, and December 1913, 11,701 in the corresponding months of 1914, or 28 per cent; against 36,202 in the first quarter of 1914, 16,107 in the first quarter of 1915, or 44 per cent. Even allowing for the fact that a casual and inexperienced staff had been recruited, we may see in these three percentages, 18 per cent, 28 per cent, and 44 per cent, a fair indication of the economic recovery in the Paris district during the first eight months of the war. We may recollect that the proportion of personnel employed in the establishments inspected at those dates was 29 per cent, 33 per cent, and 49 per cent; and the difference between 18 per cent and 29 per cent may be attributed in great part to the slackness of work in such establishments as remained open in August 1914.

The recovery became more pronounced in the second quarter of 1915—it is significant that most of the power-stations supplying motive force to the smaller works were now started again—and persisted in face of numberless difficulties until the end of the year, when 67 per cent of industrial undertakings were at work and employing 77 per cent of their normal personnel. During the first half of 1916 the proportion of undertakings at work rose to three-quarters and of personnel to nine-tenths of the normal; before the end of the year, the latter exceeded the normal. If many small works had to remain closed, for lack of a manager or of raw material suited to the new productions, factories working for national defense had doubled or trebled in size, and employers, after exhausting the supply of female labor, were having recourse to foreign and colonial workmen.

These conditions did not however indicate an exceptional degree of national prosperity, although some slight improvement in industries not concerned with war requirements may be observed early

in 1916. Orders could not be executed for lack of means. From the standpoint of export, not a single industry was exceeding, at the beginning of 1916, the amount of foreign business it had done prior to 1914; only a few were doing as much. And yet many articles of French production might have been supplanting similar German goods; fresh customers were coming to France, and old clients were increasing their orders. Allied or neutral countries became excellent customers, notably North and South America. The latter were asking for furniture, tiles, ironwork, etc.; England, Russia, Italy, and Spain for artificial flowers, perfumery, and toys. Unfortunately the internal difficulties already set out were aggravated by the insecurity of the sea routes and the unnecessary formalities that attend the export of goods from France.

By the middle of 1917 the industries of the Paris district working for private customers had reached a normal condition. Apart from war industries, only textiles and the manufacture of military articles, jerseys, and gloves showed a real increase. Meanwhile the dearth of coal was making itself felt and the electrification of works became increasingly frequent. But the power-stations could not supply everybody; attempts were made to supply customers in rotation, and work in the suburbs had to be suspended on certain days of the week.

Industrial activity was maintained until the first half of 1918, when it showed a pronounced reduction, due in the first place to the aggravation of the general difficulties (notably lack of transport), and particularly to the menacing aspect of the military situation, and the frequent bombardments of the district. Nevertheless factories in general continued to run, notwithstanding the removal of certain munition works and the congestion of railway transport that resulted.

The signing of the Armistice did not lead to an immediate and marked recovery. The sudden suspension of munition work took the employers by surprise. The adaptation to peace conditions proved a slow and difficult matter: not only plant and processes, but commercial habits, after four years of officialdom, required modification. The uncertainty of prices and the exhaustion of coal supplies were a further source of difficulty. At the beginning of 1919 a long period of suspense set in, during which employers felt hampered

by the introduction of the eight-hour day and by the moral condition of the workers, whose productive powers seemed impaired by indifference and fatigue. But toward the end of 1919 the symptoms were better: prices of raw materials were stabilized; successive demobilizations were releasing labor; trade conflicts were being settled; and orders were plentiful. The year 1920 was prosperous at first; the great crisis came in its last months.

(iv) *Limoges.*

The district of Limoges comprises eight departments of the center of France. After a short period during which unemployment prevailed, it suffered during the war chiefly from a prolonged scarcity of labor. From the beginning of 1915 recourse was had to female labor, works that had been closed were reopened, and wages had to be increased, in metallurgical works by 15 to 20 per cent, in plate glass factories by 20 to 25 per cent. Women were replacing men in every kind of employment, in offices, engineering shops, munition factories, hotels, and tramways. There were only a few isolated instances of slack trade, in the tapestry works of Aubusson, in the linen factories of the Indre, and in building. We need not refer to the difficulties in respect of coal and transport that prevailed everywhere.

In 1916, notwithstanding plentiful orders, only the war industries were yielding a full output. Nevertheless the Labor Inspector gives a satisfactory account of the industrial situation at the end of the year. Whereas in August 1914 only 1,127 factories were at work out of 1,985 inspected, by the end of 1916 many had resumed operations, had adopted new methods, or had even started new industries to supplant enemy products.

Unfortunately the situation changed for the worse in the first half of 1917; supplies of raw material became inadequate owing to the submarine war, and the dearth of coal was severely felt; so that it proved impossible to execute all the orders of French and foreign customers. An attempt to make good the deficiency of coal by working the peat found in the valley of the Essonne at Pithiviers was unsuccessful, the prisoners of war applied for in this connection being sent too late and in insufficient numbers. Moreover, owing to lack of organization, the electrical power that the river Vienne

might have supplied remained in large measure unutilized. Works designed for the purpose of employing this water-power and that of the Creuse took a long time to construct, and the majority of them were not completed before the end of the war. Some manufacturers improved their heating processes: porcelain works burnt wood, and tanneries the tan from their pits; other factories consumed heavy oils, or coal and coke dust.

After the Armistice, the situation remained for a time unsatisfactory, labor being scarce and dear. The unfavorable conditions persisted into 1919, the trade placing orders with timidity, and workers showing a lack of zeal. But various causes brought about a marked improvement toward the end of the year: stocks that had become exhausted during the war had to be renewed; plant and methods of work had been brought up to date; and labor was costing less, women taking men's places in work that they had never previously done.

In short, the industrial position was very similar to that prevailing before the war; if some industries had fallen into difficulties, the activity of others had increased. Certain industries even, that were formerly located in the devastated regions or in the suburbs of Paris, had now definitely established themselves in the center of France.

(v) *Dijon.*

In the ten departments constituting the Dijon district, scarcity of labor, and particularly of skilled labor, was the impediment most severely felt by industry. The economic situation, which became tolerably good in the early months of 1915, made no further progress for lack of workers. There was no unemployment except of such as would not work, and many orders had to be refused.

The Dalbiez law (see page 27), which allowed the temporary exemption of the older specialist workmen, was of great assistance to the district, and enabled numerous factories to resume work. There ensued a marked increase of industrial activity toward the end of 1916, but the increase was mainly confined to munition factories. Notwithstanding the elimination of German competition, the position was not favorable for the export trade. Factories working for private customers suffered most acutely during 1917 and the

first months of 1918, particularly from difficulties of transport and scarcity of coal. The same devices were adopted as in the district of Limoges to remedy the latter deficiency. The Creusot works set up a special section to study methods of industrial heating; it experimented with different types of furnace and gave useful advice to manufacturers. Much recourse was had to electric power.

The same period of suspense and hesitation as has been noted in other districts followed the Armistice, and there was a similar recovery at the end of 1919. But output, notwithstanding all efforts to increase it, fell far short of that obtained before the war, firstly because labor was still scarce and inefficient (although its efficiency was reported by manufacturers to be steadily improving); secondly because the scarcity of coal continued; and thirdly because means of transport were still defective.

(vi) *Rouen.*

In the eight departments grouped round Rouen all the great factories employed in connection with national defense or supplying the military administration were, by the end of 1914, working at full power, eleven or twelve hours a day, some of them day and night, and the situation throughout the early period of the war remained favorable. Unemployment was non-existent and women and children were replacing the men called up, while a few temporary exemptions allowed the indispensable operatives and managers to remain at work. The position even improved gradually until the early months of 1916, notably at Rouen, the coal port of Paris. Near Havre, Caen, and Rouen, munition factories and metal works were started or enlarged. But the scarcity of labor made itself felt in the second quarter of 1916, and applications were made for the services of disabled men, for foreign and even for Chinese labor. The rise of wages, the high cost of freight, and consequently of coal, were further causes of trouble; certain textile and other factories had, at the end of 1916, temporarily to stop work for lack of fuel, while others reduced their hours. But in 1917 manufacturers organized themselves to meet this deficiency, by adopting the expedients already referred to in connection with other districts. In short, industry in this region, with ports at hand to meet most of its

requirements, had no great difficulty in adapting itself to the circumstances of the war.

Here, as in other districts, the Armistice was followed by a period of economic uneasiness and for the same reasons: defective means of transport; uncertainty as to the conditions of the treaty of peace; introduction of the eight-hour day; strikes in the metallurgical, textile, building, and chemical industries; increase in cost of living, of labor, of coal and raw material; and difficulty of obtaining machinery. Thus the tendency to start and enlarge factories in this district, which had manifested itself during the war, was arrested.

As elsewhere in France the situation improved in 1920, to be followed by the crisis of 1921.

(vii) *Nantes.*

In the ten departments of north-western France composing this district we find, during 1915, industry hampered by the same impediments that we have already noticed in other regions. On the whole, considering the circumstances, the position remained rather favorable until the middle of 1917, when the scarcity of coal drove manufacturers to use as fuel anything capable of combustion. The district, as a whole, is not a highly industrial one, and its activity was comparatively slight during the war.

(viii) *Bordeaux.*

The district of Bordeaux comprises eleven departments in the south-west of France. Here a short period of unemployment was followed by an acute scarcity of labor. All branches of industry suffered from it, other than those employed on national defense, which were assisted by the temporary exemption of specialists, by the labor of prisoners of war and foreign workmen, and by female labor in great quantities, especially in the powder-works of Saint Médard. The low efficiency of labor and the high cost of raw material prevented French products from supplanting those of the enemy on foreign markets.

In spite of all, a tendency to recovery was observable in all industries at the end of 1915, notably in textiles and the manufacture of food-stuffs; the transport conditions were improving perceptibly, and notwithstanding the premature calling up of the class of 1917,

manufacturers were able to execute a very large number of orders. Industrial activity was maintained and increased in 1916, except in printing and binding, furniture-making, and building. A large labor supply was being obtained from Spain, Morocco, and Algeria; but exports remained insignificant and output could not cope with orders.

The year 1917 was marked on the one hand by an improvement in transport facilities, on the other by a greater scarcity of coal. The usual expedients were resorted to; but wood fuel did not suit glass-works and brick-kilns, which had to close down; it is moreover very costly and requires much labor to handle it. As a result the general position, notwithstanding the great prosperity of the munition factories, became worse, and at the end of 1917 there was actually a beginning of unemployment in female labor.

The difficulties became greater in 1918; the unemployment of women coincided with an exorbitant rise, partly due to speculation, in the cost of food. Male workers became excessively scarce, and successive increases of wages had to be conceded to them. The situation became even more acute in the last quarter of the year, after the Armistice, for the reasons noticed in connection with other districts.

There was a marked recovery at the end of 1919, but conditions, instead of developing in 1920, remained stationary, industry being hampered by the dearth of raw material and coal, and by the tardy reorganization of the means of transport. Skilled labor was scarce in the iron and wood industries, but sufficient in the others; this gave rise to temporary unemployment among demobilized men, and to protests on their part against the employment of women.

By the end of 1920 the situation was becoming serious; works were congested and were slowing down, output was diminishing, capital was immobilized, while commerce was making enormous profits. But taken as a whole the period of the war had been one of prosperity for this district.

(ix) *Toulouse.*

The district of Toulouse, composed of ten departments, occupies the south center of France and profited by its favored geographical position. After a drop in August, the curve of production

showed, by the month of October, a marked upward movement. Except during the first days after mobilization, there was no unemployment: the Chamber of Commerce of Mazamet voted a sum of 10,000 francs in August 1914 for the relief of the unemployed, but there was not a single application. The personnel of such works as were closed down took employment in other industries, notably in those connected with the war, and work was found for all refugees that were sent into the district.

The position of the workers remained favorable in 1915; an employment agency founded at Albi received no applications for places. The situation of the various industries improved likewise. No doubt it was the war industries that displayed the most feverish activity, and the powder factory of Toulouse underwent a prodigious development; but the other industries (except building and luxury trades) followed a similar course, notwithstanding the scarcity of labor.

In the first half of 1916 all the industries of the district (except printing) were in full swing, and orders were exceeding the capacity of output, which was hampered by the same obstacles that we have found in other parts of France, and notably by the failure of transport facilities. Complaints in regard to this were universal from the end of 1916 to the middle of 1917, when conditions were much improved.

The transport question was of such importance that the better facilities obtained in 1917 sufficed to maintain industry, on the whole, in a satisfactory condition in spite of other serious difficulties that arose at this moment, in particular the calling up of the class of 1918, followed by a severe 'combing out' of civilians. However, this had been foreseen, and a fresh staff of women and children had been trained by employers; moreover the military authorities granted temporary exemptions to the older managers, to foremen, and to specialist workmen. The dearth of coal was met by the devices employed in other districts.

Notwithstanding the energy and resourcefulness of the manufacturers, the situation became worse in the first half of 1918, owing to the gaps caused by the fresh calls to the colors, which neither the labor of women nor that of foreign workmen could make good.

There was a regular exodus of Spanish workmen from the factories to the farms, because of the high wages offered there.

The Armistice here as elsewhere brought an aggravation of the general conditions. There was an obvious recovery in 1919, although the introduction of the eight-hour day produced at first a position of some uncertainty. But manufacturers understood the necessity of adapting themselves to the new conditions and effected the necessary reorganization of their factories; the workmen, on their side, showed goodwill in agreeing to a certain amount of overtime.

(x) *Marseilles.*

The ten departments of the district of Marseilles had the advantage of being situated far from the theater of war, and their economic situation became favorable as early as January 1915. A short period of inactivity was followed by a vigorous recovery, due to plentiful orders, to the grant of credits by the banks, and to the enterprise of employers, who contrived to replace by such labor as was available those of their staff who had been mobilized. By July 1915 there was no unemployment among men, and as for the women, if employment was scarce for the dressmakers of Nice and other towns, all the hands from the cotton- and silk-mills could find work on the farms; it was only in two departments that, at the approach of winter, some women were without employment.

This situation went on improving throughout 1915, especially in the war industries, and that notwithstanding the causes of embarrassment that prevailed everywhere.

Industries were extremely active in 1916, in spite of a perceptible slackening in oil and soap factories, in silk-mills and cork factories, and in the luxury trades of the Riviera. The disappearance of competing German and Austrian products was a favorable factor. The energy and adaptability of the women also contributed powerfully to the development of certain manufactures, notably of chemicals, for which new factories with improved plant were constructed, with a view to excluding future German competition.

But difficulties increased during 1917, and were especially felt by the ordinary industries. The chief of these difficulties were the deficiency of transport, affecting the supply of coal and raw materials; and the insufficiency of hydro-electric power owing to the

abnormally low level of water in the basins of the Durance and the Var.

The former trouble was aggravated early in 1918 in the south-eastern part of the district by the fact that the railway lines were almost exclusively employed on the maintenance of communications with Italy, which just then was menaced by the Austrian attack. Some factories stopped work and others slowed down, and stocks in hand became enormous. Many industries—food, printing, textiles, clothing, and transport—showed less favorable results than those of the preceding year. But a few made still further progress: paper, leather, and skins, precious metals, and building. As industrial prosperity in this region is bound up with the use of hydro-electric power, various schemes were examined for utilizing waterfalls in the Alps, the Cévennes, and particularly on the Isère.

The position after the Armistice was unfavorable, and did not improve perceptibly in 1919. The total personnel employed in January 1919 fell below that of July 1918. Besides the reasons that have been noted elsewhere, reference is made in this district to the insufficiency of cheap electric power, the power companies having profited by their monopoly to raise the tariffs. Recovery did not take place until 1920.

(xi) *Lyons.*

The district around Lyons suffered from all the hindrances to industry that we have seen the war produce in other districts, but particularly, at the outset, from a lack of orders, due in part to the loss of the German market. Certain paper works and metal button factories found compensation in orders from England and America; cotton-mills were able to execute orders that the manufacturers of the north had had to refuse; and some orders were placed by the Government.

By the end of 1915 the situation was satisfactory: factories working for the export trade (silk, ribbons, gloves, paper, etc.) could not meet all the demands made upon them, for lack of specialist staff and of dye-stuffs. The war industries were working at high pressure, supplementing their staff with Algerian and Spanish labor, and with women. Those supplying ordinary requirements, though less well off, followed the general tendency, thanks to indi-

vidual enterprise and to the employment of women and of foreign labour.

At the end of 1916, although lack of transport and raw material was beginning to cause embarrassment, the chemical and metallurgical industries were far more active than in peace-time; food, textiles, paper, and leather were in their normal condition; building and wood-working, though somewhat less prosperous, were improving. These favorable conditions prevailed all through 1917, mainly because, as this district is the home of water-power, the dearth of coal was not severely felt there. Nevertheless the industrial demand for power was so great as at times to exceed the supply, so that it became necessary to cut off the current for some hours daily from factories not employed on war work.

Economic conditions, in spite of events, remained very satisfactory in the early part of 1918; it might have been expected that the bombardment of Paris, the prime market for Lyons silks, would have an unfavorable reaction on this district. But after a slight weakening, business by the end of April had resumed its normal course. Only the Armistice brought a sudden and general check, for the same reasons as previously noticed. Although fresh orders were restricted, there remained a sufficient number to prevent any acute unemployment; demobilized men found work, and women returned to their pre-war avocations. The position improved a little during 1919, after which the flow of orders rapidly exceeded the capacity of output, and the supply of labor fell short of requirements.

APPENDIX II

LOSS OF WORKERS THROUGH INVASION

<i>Industries or groups of industries</i>	<i>Number of workers (1906 census)</i>			<i>Percentage of active population of the ten invaded departments to active population of whole of France</i>
	<i>In whole of France</i>	<i>In invaded region</i>	<i>Percentage of loss</i>	
Fisheries	78,000	266	..	14.2
Forestry	62,423	9,572	15.3	24.6
Agriculture and stock-breeding	8,714,630	447,512	5.1	9.8
Mines	205,898	86,063	41.8	57.5
Quarries	75,129	8,348	11.1	20.6*
Ill-defined industries	11,283	866	7.6	11
Food industries:				
Flour, butter, cheese	101,693	5,556	5.5	
Alcohol, sugar	25,503	10,764	42.2	
Spirituuous liquors	23,850	3,998	16.7	
Beer, cider, aerated waters	32,770	13,610	41.5	
Baking and pastry-making	206,853	19,382	9.3	
Various food-stuffs, confection- ery	27,869	4,011	14.4	
Preserved meat and fish	52,602	5,328	10.1	
Butchery, tripery	4,449	606	13.5	
Starch, margarine	3,472	1,265	36.4	
Total food industries	479,061	64,620	13.4	20.4
Total chemical industries	124,644	16,029	12.8	17.6
Total rubber and paper industries	84,655	4,884	5.7	15
Total printing and binding industries	107,481	9,983	9.4	13
Textile industries:				
Flax, hemp, and jute	47,513	23,235	48.8	
Linen and hempen cloth	66,771	35,418	53	
Cotton	167,202	34,712	20.7	
Wool	171,849	110,220	64.3	
Silk	123,597	3,759	3	
Dyeing, dressing, and printing	49,790	15,788	31.7	
Hosiery	56,682	7,774	13.7	
Lace and embroidery	156,554	25,903	16.5	
Trimnings, ribbons	48,371	3,807	7.8	
Ill-defined textile industries	26,160	8,985	34.3	
Total textile industries	913,989	269,601	29.4	43.2

* This figure relates to all classes of mines. On the eve of the outbreak of war, 205,000 miners were employed in the French coal-mines, 90,000 of whom worked in mines that were occupied by the enemy in 1914, that is to say 44 per cent of the total; 25,500 miners were employed in iron-mines in 1913, of whom 15,500 or 61 per cent worked in mines that were seized by the enemy.

APPENDIX II (Continued)

<i>Industries or groups of industries</i>	<i>Number of workers (1906 census)</i>		<i>Percentage of loss</i>	<i>Percentage of active population of the ten invaded departments to active population of whole of France</i>
	<i>In whole of France</i>	<i>In invaded region</i>		
Total manufacture of textile goods and clothing	1,551,181	125,215	8	14.4
Total industries utilizing straw, feathers, and hair	42,568	9,057	21.2	28.8
Total leather and skin industries	334,203	28,831	8.6	16
Total wood-working industries	704,695	56,477	8	15.9
Metallurgical industries:				
Production of iron and steel	56,490	34,246	60.6	
Production of divers metals	13,339	2,618	19.6	
Total metallurgical industries	69,829	36,864	52.7	62.1
Ordinary metal-working industries:				
Forging, edge-tools, etc.	179,238	32,049	17.8	
Nail-making, iron and steel implements	26,398	3,209	12	
Bridge and girder work	66,088	6,514	9.8	
Sheet-iron	11,697	3,354	28.6	
Gun-making	7,875	134	1.7	
Boiler-making	282,656	49,467	17.5	
Electrical apparatus	19,648	1,577	8	
Copper and bronze articles	60,796	4,505	7.4	
Surgical instruments	1,787	34	1.9	
Optical instruments	9,210	652	7	
Musical instruments (of metal)	2,480	....	..
Tin articles	42,515	3,220	7.5	
Engraving on metal	4,730	92	1.9	
Clock-making, etc.	39,436	1,907	4.8	
Electro-plating	8,873	144	3.7	
Total ordinary metal-working industries	758,377	106,858	14	20
Total precious metals work	28,342	310	1	4.1
Total precious stones work	5,385	.....	..
Total stone-cutting and molding	46,612	5,659	12.1	16.1
Total earthwork and stone building industries	550,130	56,216	10.2	16.1
Lime, bricks, pottery, and glass-making industries:				
Lime, plaster, and cement	29,704	1,855	6.2	
Brick-making, etc.	55,889	6,645	11.8	
Earthenware and porcelain	28,262	3,786	13.3	
Glass and enamel	48,560	17,508	36	
Mirror and glass decoration	4,416	280	6.3	
Total of lime, bricks, pottery, and glass-making industries	166,831	30,074	18	28.3

APPENDIX II (Continued)

<i>Industries or groups of industries</i>	<i>Number of workers (1906 census)</i>			<i>Percentage of active population of the ten invaded departments to active population of whole of France</i>
	<i>In whole of France</i>	<i>In invaded region</i>	<i>Percentage of loss</i>	
Total handling of goods	395,012	85,427	8.9	14.5
Total of transport industries	492,325	54,287	11	17.4
Various branches of commerce	1,864,210	170,794	9.1	14.5
Amusements, agencies, etc.	63,431	5,151	8.1	15.2
Banks, insurance, etc.	75,040	5,483	7.3	11.4
Liberal professions	483,179	84,516	7.1	
Personal attendance and domestic service	1,012,232	73,766	7.3	
State services (general)	1,142,861	50,013	4.3	
State services (industrial)	77,293	2,886	3.8	5.9
Total active population	20,720,879	1,805,759	8.7	14.4
Population employed in manufacturing industries	5,979,216	821,555	13.7	21.1

APPENDIX III

LOSS OF INDUSTRIAL ESTABLISHMENTS THROUGH
INVASION

<i>Industrial group</i>	<i>Number of establishments employing hired workers</i>		<i>Proportion of establishments in invaded departments to total establishments (Col. 2: Col. 3) per cent</i>	<i>Proportion of active population in invaded departments to total active population per cent</i>	<i>Proportion of percentage in Col. 2 to percentage in Col. 4</i>
	<i>In the ten invaded departments</i>	<i>In the whole of France</i>			
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
Food	15,658	88,000	17.8	20.4	1.1
Chemicals	901	5,218	17.2	17.6	1
Rubber, paper	260	2,364	10.9	15	1.4
Printing, etc.	885	6,760	13	13	1
Textiles	12,180	87,435	82.2	43.2	1.8
Manufacture of textile goods	17,988	140,670	12.7	14.4	1.1
Straw, feathers, hair	1,628	4,662	34.9	28.8	0.8
Leather and skins	6,218	88,304	16.2	16	1
Wood-work	15,784	108,864	14.4	15.9	1.1
Metallurgy	58	173	83.7	62.1	1.8
Ordinary metals	12,736	81,287	15.6	20	1.3
Precious metals	60	2,435	2.4	4.1	1.7
Precious stones	.....	565	..	..	1
Stone-cutting	828	5,640	14.6	16.1	1.1
Earthwork, building	12,016	70,903	16.9	16.1	0.9
Glass and pottery	1,429	9,022	15.8	28.8	1.8
Total manufacturing industries	98,629	602,301	16.4	21.1	1.8
Total all industries	278,828	2,813,518	11.8	..	..
Total active population	....	....	..	14.4	..

APPENDIX IV

VARIATIONS IN NUMBER OF FEMALE STAFF
EMPLOYED IN 52,278 INDUSTRIAL ESTAB-
LISHMENTS, AUGUST 1914-JULY 1917

Industrial groups	Female staff	Percentage of pre-war staff employed				
	employed before the mobilization	In Aug. 1914	In July 1915	In July 1916	In Jan. 1917	In July 1917
Food industries	39,918	64	90	103	89	102
Chemical	14,959	54	99	137	159	164
Rubber, paper, etc.	21,683	40	74	90	94	97
Printing, binding, etc.	11,000	45	59	70	75	76
Textile industries	190,944	39	82	92	96	96
Manufacture of textile goods, straw, feath- ers, and hair	108,412	33	64	83	84	87
Leather and skins	22,596	40	78	97	103	107
Wood-working	9,047	27	78	115	140	154
Metallurgy, ordinary metals	18,815	50	343	629	846	913
Precious metals	2,883	17	52	69	70	68
Precious stones	1,306	27	58	71	73	80
Stone-cutting, earthwork, building	495	20	54	95	104	129
Lime, bricks, pottery, glass	17,153	19	43	61	67	69
Transport and storage	210	80	157	427	452	454
Various trades	33,053	57	80	93	96	101

APPENDIX VI

PROPORTION OF PRE-WAR PERSONNEL EMPLOYED IN EACH OF THE ELEVEN INDUSTRIAL DISTRICTS AT DATES OF PERIODICAL INQUIRIES (MINES AND TRANSPORT AND INVADDED DISTRICTS EXCLUDED)

<i>Date of inquiry</i>	<i>July 1914</i>	<i>Aug. 1914</i>	<i>Oct. 1914</i>	<i>Jan. 1915</i>	<i>July 1915</i>	<i>Jan. 1916</i>	<i>July 1916</i>	<i>Jan. 1917</i>	<i>July 1917</i>	<i>Jan. 1918</i>	<i>July 1918</i>	<i>Jan. 1919</i>	<i>July 1919</i>	<i>Jan. 1920</i>	
Paris															
Mean of 12 reports	100	29	83	48	64	79	96	121	127	126	121	106	..	..	86
Mean of 14 reports	100	29	88	49	63	77	93	117	120	120	115	100	91	100	
Limoges															
Mean of 12 reports	100	46	53	60	68	77	82	87	87	94	98	90	..	..	77
Mean of 14 reports	100	46	53	60	69	77	84	87	89	95	97	91	96	96	
Dijon															
Mean of 12 reports	100	25	87	52	66	71	85	83	93	99	100	94	..	..	73
Mean of 14 reports	100	23	87	52	66	71	85	85	92	99	98	93	95	100	
Nancy															
Mean of 12 reports	100	10	21	40	46	57	60	61	71	69	68	66	..	..	52
Mean of 14 reports	100	..	..	..	..	..	..	..	..	..	..	..	..	..
Calais															
Mean of 12 reports	100	46	87	53	62	80	93	106	111	107	99	101	..	..	81
Mean of 14 reports	100	..	..	..	..	..	..	..	..	..	..	..	..	..
Rouen															
Mean of 12 reports	100	89	65	74	80	89	99	114	117	125	180	125	..	..	91
Mean of 14 reports	100	89	65	73	80	89	98	112	115	123	122	109	101	118	

APPENDIX VI (Continued)

<i>Date of inquiry</i>	<i>July 1914</i>	<i>Aug. 1914</i>	<i>Oct. 1914</i>	<i>Jan. 1915</i>	<i>July 1915</i>	<i>Jan. 1916</i>	<i>July 1916</i>	<i>Jan. 1917</i>	<i>July 1917</i>	<i>Jan. 1918</i>	<i>July 1918</i>	<i>Jan. 1919</i>	<i>July 1919</i>	<i>Jan. 1920</i>	
Nantes															
Mean of 12 reports	100	46	58	59	67	70	72	71	65	67	68	65	..	..	64
Mean of 14 reports	100	45	58	58	64	68	69	70	66	66	68	64	64	65	
Bordeaux															
Mean of 12 reports	100	49	59	69	79	92	108	120	125	128	120	108	..	..	91
Mean of 14 reports	100	49	59	69	80	92	108	120	126	128	120	108	107	109	
Toulouse															
Mean of 12 reports	100	27	40	57	77	86	108	110	116	128	118	98	..	..	86
Mean of 14 reports	100	27	40	59	77	88	101	112	114	124	111	102	118	124	
Marseilles															
Mean of 12 reports	100	87	48	59	69	80	85	89	91	90	88	82	..	..	74
Mean of 14 reports	100	88	48	59	69	79	85	89	91	89	88	83	85	87	
Lyons															
Mean of 12 reports	100	89	51	67	80	97	104	109	110	109	102	86	..	..	87
Mean of 14 reports	100	89	51	66	82	94	104	105	110	106	101	98	108	184	
General average of															
12 reports	100	84	44	57	68	80	89	97	100	100	95	87	..	..	77
14 reports	100	84	44	56	67	77	86	93	96	96	91	80	..	..

Notes: The upper figure for each district and at each date gives the percentage of pre-war personnel employed at that date calculated on the numbers relating thereto recorded in successive reports down to January 1919; the lower figure gives the same percentage calculated on the numbers recorded down to January 1920. The lower figure has not been calculated in respect to the invaded districts (Nancy and Calais) for the reason given in the text. The figures in the table relating to Nancy and Calais, and the general average figures, refer to so much of the territory as remained to the S. W. of the stabilized front.

APPENDIX VII

ANALYSIS OF INDUSTRIAL ACTIVITY BY DISTRICTS

<i>Date</i>	<i>Three districts with lowest industrial activity</i>	<i>Three districts with highest industrial activity</i>	<i>Districts with more employment than before the war</i>
August 1914	Nancy Dijon Toulouse	Bordeaux Limoges Nantes Calais }	None
October 1914	Nancy Paris Dijon } Calais }	Rouen Bordeaux Nantes	None
January 1915	Nancy Paris Dijon Calais	Rouen Bordeaux Lyons	None
July 1915	Nancy Calais Paris	Lyons Bordeaux Rouen	None
January 1916	Nancy Nantes Dijon	Lyons Bordeaux Rouen	None
July 1916	Nancy Nantes Limoges	Bordeaux Lyons Toulouse	Bordeaux Lyons Toulouse
January 1917	Nancy Nantes Dijon	Paris Bordeaux Rouen	Bordeaux Paris Rouen Toulouse Lyons
July 1917	Nantes Nancy Limoges	Paris Bordeaux Rouen	Paris Rouen Bordeaux Toulouse Lyons
January 1918	Nantes Nancy Marseilles	Paris Rouen Bordeaux Toulouse	Paris Rouen Bordeaux Toulouse Lyons
July 1918	Nantes Nancy Marseilles	Rouen Paris Bordeaux	Rouen Paris Bordeaux Toulouse Lyons
January 1919	Nantes Nancy Marseilles	Rouen Bordeaux Paris	Rouen Bordeaux Paris Calais

APPENDIX VIII

COAL-MINES

<i>Years</i>	<i>Total numbers employed in French coal-mines</i>	<i>Proportion of per- sonnel of coal-mines not occupied by the enemy to their pre- war personnel</i>	<i>Proportion of per- sonnel employed in coal-mines not occu- pied by the enemy to total personnel em- ployed in coal-mines before the war</i>
1913	208,208 (all coal-mines in French territory)		100
1914 (1st half)	205,486 " "	100	
1914 (2nd half)	92,086 (excluding mines oc- cupied by enemy)		
1915	105,672 "	100	52
1916	116,983 "	117	57
1917	167,414 "	167	82
1918	168,528 "	169	82
1919	173,232 (all coal-mines in French territory)		85

APPENDIX IX

PERCENTAGE OF PERSONNEL EMPLOYED IN THE SEVERAL INDUSTRIAL GROUPS AT VARIOUS PERIODS

<i>Date of return</i>	<i>July 1914</i>	<i>Aug. 1914</i>	<i>Oct. 1914</i>	<i>Jan. 1915</i>	<i>July 1915</i>	<i>Jan. 1916</i>	<i>July 1916</i>	<i>Jan. 1917</i>	<i>July 1917</i>	<i>Jan. 1918</i>	<i>July 1918</i>	<i>Jan. 1919</i>
Food	100	49	61	69	75	79	83	81	85	76	67	67
Chemicals	100	42	51	66	79	93	102	119	120	119	116	103
Rubber, paper, etc.	100	33	42	53	62	69	74	72	78	79	76	72
Printing, binding, etc.	100	33	34	42	47	49	53	56	55	56	56	60
Textiles	100	84	50	68	71	76	78	81	82	81	79	80
Manufacture of textile, straw, etc., goods	100	31	43	45	65	72	77	78	79	83	85	87
Leather and skins	100	37	49	64	73	78	83	83	85	84	83	75
Wood-working	100	21	26	39	49	60	71	68	84	88	93	82
Metallurgy ordinary	100	33	43	63	82	110	135	159	167	143	153	120
Precious metals	100	11	9	24	36	46	60	63	68	68	66	63
Precious stones	100	19	16	32	44	48	50	51	52	54	53	54
Stone-cutting, earthwork, etc.	100	20	25	26	34	39	44	46	51	52	60	60
Lime, bricks, pottery, glass	100	20	24	34	40	46	48	55	56	57	56	55
Transport and storage	100	46	51	63	79	90	96	98	97	100	98	105
Various trades	100	49	52	56	62	68	70	70	72	72	73	72
General index-number	100	34	44	57	68	80	89	97	100	100	95	87

APPENDIX X

ANALYSIS OF INDUSTRIAL ACTIVITY BY
INDUSTRIAL GROUPS

<i>Date</i>	<i>Four groups with lowest industrial activity</i>	<i>Four groups with highest industrial activity</i>
August 1914	Precious metals Precious stones Building Pottery and glass	Food Various trades Transport Chemicals
January 1915	Precious metals Building Precious stones Pottery and glass	Food Chemicals Leather { Metallurgy Transport
July 1915	Building Precious metals Pottery and glass Precious stones	Metallurgy Chemicals Transport Food
January 1916	Building Pottery and glass Precious metals Precious stones	Metallurgy Chemicals Transport Food
July 1916	Building Pottery and glass Precious stones Printing and binding	Metallurgy Chemicals Transport { Leather Food
January 1917	Building Precious stones Pottery and glass Printing and binding	Metallurgy Chemicals Transport Leather
July 1917	Building Precious stones Pottery and glass Printing and binding	Metallurgy Chemicals Transport { Leather Food
January 1918	Building Precious stones Printing and binding Pottery and glass	Metallurgy Chemicals Transport Wood-working
July 1918	Precious stones Pottery and glass Printing and binding Building	Metallurgy Chemicals Transport Wood-working
January 1919	Building Precious stones Pottery and glass Printing and binding	Metallurgy Chemicals Transport Wood-working

APPENDIX XI

RETURN, BY INDUSTRIAL GROUPS, OF PROPORTION
OF PERSONNEL EMPLOYED AT VARIOUS DATES,
IN CERTAIN INDUSTRIAL ESTABLISHMENTS
INSPECTED ABOUT JANUARY 1ST, 1920

<i>Industrial group</i>	<i>Percentage of staff employed in</i>								
	<i>July 1914</i>	<i>Aug. 1914</i>	<i>Jan. 1915</i>	<i>Jan. 1916</i>	<i>Jan. 1917</i>	<i>Jan. 1918</i>	<i>Jan. 1919</i>	<i>July 1919</i>	<i>Jan. 1920</i>
Food industries	100	54	63	68	75	67	67	74	78
Chemical industries	100	45	66	92	106	108	102	96	80
Paper, etc.	100	39	56	69	73	79	77	88	94
Printing, binding	100	39	41	46	51	52	56	60	66
Textiles	100	50	46	55	57	58	60	66	85
Clothing, etc.	100	37	50	63	67	70	75	79	89
Leather and skins	100	34	56	67	74	80	85	93	98
Wood-working	100	26	40	54	75	76	73	76	87
Metallurgy, ordinary metals	100	30	51	77	112	119	105	101	109
Precious metals	100	11	32	48	53	57	64	81	95
Precious stones	100	20	37	46	51	55	55	59	64
Stone-cutting, build- ing	100	21	17	25	29	43	49	94	117
Pottery and glass	100	16	30	43	48	52	55	64	65
Transport	100	45	52	64	75	71	88	99	117
Various trades	100	48	53	59	64	67	72	81	87

APPENDICES

415

APPENDIX XII

STRIKES

<i>Year</i>	1912	1913	1914	1915	1916	1917	1918	1919
Number of strikes	1,116	1,073	672	98	814	696	499	2,026
Number of strikers	267,627	220,448	160,566	9,344	41,409	293,810	176,187	1,160,718
Successful strikes								
No.	193	183	129	23	73	191	100	501
Strikers involved	18,130	86,665	13,105	2,012	13,059	71,176	20,644	205,309
Compromised strikes								
No.	882	871	217	81	115	374	241	1,082
Strikers involved	71,406	5,466	56,839	4,674	21,018	198,848	102,173	778,527
Unsuccessful strikes								
No.	541	519	826	44	26	106	112	443
Strikers involved	178,091	68,317	90,622	2,658	7,332	20,261	87,002	176,882
Percentage of unsuccessful strikers	66.54	80.99	56.44	28.50	17.71	6.89	21.00	15.24

APPENDIX XIII

WAGES OF MINERS

The rates are in francs per day, the average daily rates being based on the actual yearly rates.

For the purpose of the index-numbers the rates for 1913-1914 are taken as 100.

<i>Year</i>	1913	1914	1915	1916	1917	1918	1919	1920
Pas-de-Calais								
Underground and surface								
Francs	5.72	....	5.40	6.02	7.63	11.67	15.62	20.85
Index	....	100	94	105	133	204	276	365
Underground								
Francs	....	7.48	7.23	7.88	9.76	14.20	....	....
Index	....	100	97	105	130	190	....	....
Surface								
Francs	....	4.04	3.99	4.76	6.73	10.63	....	....
Index	....	100	99	118	167	263	....	....
Loire								
Underground and surface								
Francs	4.06	....	4.91	5.56	6.85	10.27	13.12	20.51
Index	....	100	121	137	169	253	323	505
Underground								
Francs	....	7.14	7.79	8.35	10.48	16.60	....	....
Index	....	100	....	117	147	232	....	....
Surface								
Francs	....	4.41	4.48	5.13	7.21	11.39	....	....
Index	....	100	....	116	163	258	....	....
Whole of France								
Underground and surface								
Francs	5.40	....	4.78	5.49	6.92	10.12	13.44	19.90
Index	....	100	89	102	128	187	249	369

APPENDIX XIV

AVERAGE DAILY WAGE IN SUGAR-FACTORIES

<i>Season</i>	<i>Men</i>		<i>Women</i>		<i>Children</i>	
	<i>Wage in francs</i>	<i>Index-number</i>	<i>Wage in francs</i>	<i>Index-number</i>	<i>Wage in francs</i>	<i>Index-number</i>
1912-1913	4.56	100	2.49	100	1.97	100
1915-1916	5.18	114	3.12	125	2.69	137
1916-1917	6.02	132	3.57	143	3.44	174
1917-1918	7.07	155	4.61	185	4.23	215
1918-1919	9.00	197	6.40	257	5.17	262
1919-1920	13.70	300	8.13	327	6.41	325
1920-1921	19.83	435	10.60	426	8.47	430

APPENDIX XV

INDEX-NUMBERS OF RETAIL PRICES IN VARIOUS
COUNTRIES (PRICES IN JULY 1914 = 100)

Number of commodities	<i>France</i> <i>Towns of</i> <i>10,000 inhabitants</i>	<i>Paris</i>	<i>Great Britain</i> <i>600 towns</i>	<i>Italy</i> <i>Milan</i>	<i>United States</i> <i>45 towns</i>
	13*	18*	21†	18†	15†
1914					
July	..	100	100	100	100
October	100	..	112	..	103
1915					
January	110	122	118	..	101
April	..	116	124	..	97
July	123	122	132	..	98
October	..	120	140	..	101
1916					
January	133	137	147	..	105
April	137	135	155	..	107
July	142	132	161	..	109
October	146	138	168	..	119
1917					
January	154	139	189	170	125
April	171	147	198	190	142
July	184	183	202	210	143
October	200	184	206	224	154
1918					
January	212	191	208	248	157
April	233	218	207	291	150
July	244	206	218	325	164
October	261	237	233	378	178
1919					
January	..	248	230	399	181
February	278	..	..	..	..
April	..	257	207	363	178
May	294	..	..	..	..
July	..	261	217	310	186
August	289	..	..	..	..
October	..	283	231	348	184
November	302	..	..	..	..
1920					
January	..	290	235	412	197
February	321	..	..	..	..
April	..	358	246	423	207
May	380	..	..	..	..
July	..	373	262	445	215
August	390	..	..	..	..
October	..	420	291	480	194
November	452	..	..	..	..

* Of which eleven were food-stuffs.

† All food-stuffs.

APPENDIX XVI

PURCHASING POWER OF WAGES IN VARIOUS INDUSTRIES
IN THE FIRST HALF OF 1921 AS
COMPARED WITH 1911

<i>Industries</i>	<i>1911</i>	<i>1921 (1st half-year)</i>
Coal-mining		
Underground workers	100*	106
Under and above ground workers	100*	116
Manufacture of metals		
Turners (Paris)	100	110
Turners (other towns)	100	106
Laborers	100†	127
Building		
Masons (Paris)	100	107
Masons (other towns)	100	113
Carpenters (Paris)	100	101
Carpenters (other towns)	100	110
Painters (Paris)	100	126
Painters (other towns)	100	112
Laborers	100	117
Textiles		
Weavers	100	119
Cotton-spinners (Roubaix)	100	116
Wool-spinners (Roubaix)	100	100
Wool-spinners (Fourmies)	100	133
Agriculture		
Male adults	100	117
Public Service employees (Paris)		
earning yearly salary of 8,000 francs and under	100	128
earning yearly salary of 8,000 to 6,000 francs	100	81
earning yearly salary of 6,000 to 12,000 francs	100	64
earning yearly salary of 12,000 to 25,000 francs	100	48
earning yearly salary of 25,000 francs and over	100	86

* 1st quarter of 1914.

† 1913.

APPENDIX XVII

VARIATION IN WHOLESALE PRICES OF THE CHIEF
INDUSTRIAL COMMODITIES

<i>Commodity</i>	<i>1914 francs</i>	<i>Maximum price Date</i>	<i>Price francs</i>	<i>1918 francs</i>
Coal	19	October 1918	160	160
Coke	84	October 1918	175	175
Cast iron	68	November 1917	820	810
Ordinary steel	145	November 1917	900	850
English tin	880	July 1918	1,320	1,160
Copper	170	February 1917	530	400
Ordinary zinc	175	February 1916	295	211
Lead	165	April 1917	200	150
Raw wool	300	October 1918	1,000	1,000
Cotton	170	September 1918	818	818
Jute, the ton	700	June 1918	1,800	600
Para rubber, the kilo	8	December 1915	11.50	9.75
Bicycles, each	200	1918	875	875
Turpentine	72	October 1918	325	325
Petrol	95	October 1918	250	250
Alcohol	43	October 1918	450	450
Linseed	60	July 1918	460	460
Copra	100	July 1917	470	420
Lard	70	July 1918	450	380
Soda	29.50	January 1918	120	120
Colza	75	July 1918	550	550
Ground-nuts	70	July 1918	460	460
Paraffin	26	December 1917	51	50
Waste paper	7.50	January 1918	110	80

APPENDIX XVIII

STATISTICS OF STEAM-POWER EMPLOYED

<i>Branch of Industry</i>	1919		1913		<i>Percentage increase + or decrease — between 1913 and 1919</i>
	<i>Number of establishments</i>	<i>Power in thousands of kilowatts</i>	<i>Number of establishments</i>	<i>Power in thousands of kilowatts</i>	
Electric power production	672	497	804	576	—14
Manufacture of metals	2,240	495	3,471	437	+10
Mines, quarries	2,413	356	2,993	423	—15
Textiles and clothing	4,479	331	5,983	396	—16
Building, etc.	8,816	194	9,896	176	+10
Food	8,228	163	10,735	173	—5.8
Agriculture	19,532	148	22,019	141	+5
Chemicals, tannery	2,961	105	3,635	106	—1
Paper, printing	697	81	821	79	+2.5
Government services	239	61	626	59	+3.4
Furniture, implements	1,538	34	2,110	36	—5.6
	51,815	2,465	63,093	2,602	—5.2

APPENDIX XIX

FRENCH FOREIGN AND COLONIAL TRADE
(EXCLUDING RE-EXPORTS)

<i>Years</i>	<i>Total weight including imports from colonies</i> <i>tons</i>	<i>Imports</i>		<i>Exports</i>	
		<i>Value</i>		<i>Value</i>	
		<i>Total</i> <i>millions of francs</i>	<i>From French colonies</i> <i>millions of francs</i>	<i>Total</i> <i>millions of francs</i>	<i>To French colonies</i> <i>millions of francs</i>
1890	22,706,420	4,436	....	6,740,417	8,753
1900	28,271,512	4,697	864	8,593,038	4,108
1910	85,718,354	7,173	922	15,512,702	6,233
1913	44,220,386	8,241	797	22,074,513	6,880
1914	33,434,590	6,402	750	17,663,824	4,868
1915	33,049,256	11,035	1,121	4,091,075	3,937
1916	40,090,616	20,640	1,259	3,730,015	6,214
1917	34,832,608	27,554	1,990	3,011,124	6,012
1918	29,351,651	22,306	1,476	8,718,152	4,722
1919	38,447,165	35,799	3,638	5,564,360	11,879
1920	50,537,926	49,904	3,528	12,855,238	26,894
1921	37,973,685	23,548	3,129	16,001,427	21,553

APPENDIX XX

FRENCH IMPORTS AND EXPORTS IN 1913

<i>Total</i>	<i>Imports</i> 8,421 million francs <i>per cent</i>		<i>Exports</i> 6,880 million francs <i>per cent</i>
Food-stuffs	18.4		10
Raw materials			
Wool	8	}	
Cotton	7		6
Silk	4.8		2
Flax	1.8		
Coal	7		
Oil and petrol	1.6		
Copper	2.2		
Mineral ore and other mineral products	8		
Oil-seeds	4.6		
Wood	2.4		
Rubber	1.4		
Hides	2.9		2.6
		Fuel	2.6
		Chemical products	3
Various	7.9		7
Total raw materials	53.6		23.2
Manufactured articles and various			
Machinery	3.8	Yarn	2.1
Textile fabrics	2	Silk fabrics	6
Paper	1.1	Cotton fabrics	6
Various	5.8	Woolen fabrics	3.2
		Clothing	3.6
		Paper	2.5
		Dressed skins	2.2
		Motor-cars	3.3
		Toys and fancy goods	2.9
		Machinery	1.8
		Metal work	1.7
		Parcel post	8
		Various	23.5
Total manufactured articles	12.2		66.8
Various goods	15.8		
	100		100

APPENDIX XXI

FRENCH IMPORTS AND EXPORTS; WEIGHT IN THOUSANDS OF QUINTALS,* VALUES IN MILLIONS OF FRANCS

<i>Category</i>	<i>Imports</i>									
	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921
Manufactured articles										
weight	13,457	15,478	9,445	9,918	17,117	21,567	15,377	18,280	24,649	15,588
value	1,614	1,658	1,081	3,068	5,829	8,692	6,596	10,842	12,873	4,945
Food-stuffs										
weight	46,609	55,119	52,246	62,807	79,229	67,078	49,153	69,814	61,952	40,664
value	1,803	1,818	1,873	3,315	5,058	6,985	5,645	10,704	11,875	6,206
Raw materials										
weight	837,889	871,607	272,655	257,768	304,560	259,681	228,987	296,377	418,778	824,485
value	4,813	4,946	3,508	4,653	9,753	11,876	10,066	14,753	25,157	12,398
Total										
weight	897,854	442,204	334,346	330,493	400,906	348,326	298,517	384,472	505,379	879,737
value	8,231	8,421	6,402	11,036	20,640	27,554	22,306	35,799	49,904	23,548
Manufactured articles										
weight	21,986	22,833	15,866	7,510	8,634	6,493	8,986	8,611	18,652	18,908
value	3,418	3,617	2,576	2,341	4,218	4,082	2,813	7,388	16,963	12,809

* A quintal is roughly equal to 220 lbs. To convert thousands of quintals roughly into thousands of tons, the figures should be divided by ten.

APPENDIX XXI (Continued)

Exports

Category	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921
Food-stuffs										
weight	18,689	14,567	9,738	8,896	5,624	4,018	2,680	5,299	12,576	12,271
value	850	839	646	649	589	499	420	1,190	2,618	1,082
Raw materials										
weight	167,828	182,992	100,815	24,890	22,884	19,445	80,853	41,564	97,091	128,585
value	1,945	1,858	1,299	768	1,085	1,095	998	2,444	6,114	5,559
Postal parcels containing										
Silk fabrics										
weight	5	4	8	1	1	2	1	1	1	1
value	37	43	24	7	9	18	9	21	46	22
Perfumery, etc.										
weight	809	849	216	115	157	157	161	166	232	249
value	463	523	824	172	813	819	483	837	1,158	1,231
Total										
weight	203,266	220,745	176,688	40,911	37,800	30,111	37,182	55,644	128,552	160,014
value	6,713	6,880	4,869	3,937	6,215	6,018	4,723	11,880	26,895	21,553

APPENDIX XXII

IMPORTS AND EXPORTS OF CERTAIN COMMODITIES BEFORE AND AFTER THE WAR

	<i>Imports</i>					<i>Exports</i>				
<i>Commodity</i>	<i>1912</i>	<i>1913</i>	<i>1920</i>	<i>1921</i>	<i>1922</i>	<i>1912</i>	<i>1913</i>	<i>1920</i>	<i>1921</i>	<i>1922</i>
Syrups and sweets, quintals*	15,648	15,601	16,369	5,601	9,908	82,739	85,974	44,554	41,784	34,612
Jam, quintals	7,494	12,663	25,150	12,216	14,469	13,003	11,320	85,752	39,073	31,703
Medicinal plants, quintals	182,856	139,661	131,103	84,290	91,112	56,508	78,422	79,745	52,623	52,417
Synthetic perfumery, quintals	990	1,153	1,082	410	798	519	147	1,815	1,736	1,677
Quinine, quintals	.....	.....	75	6	9	.....	.....	257	180	251
Santonin, kilos†	.....	.....	183	84	43	.....	.....	82	130	.....
Theobromin, quintals	.....	.....	4	4	6	.....	.....	95	82	11
Chloroform, quintals	.....	.....	241	.....	.....	64	71	256	119	58
Glycerine, quintals	5,216	5,271	11,423	603	1,647	33,103	34,560	36,398	29,694	32,978
Sulphuric acid, quintals	131,190	110,008	76,576	71,723	93,307	41,664	46,097	145,202	97,528	252,478
Aspirin, quintals	.....	.....	28	42	79	.....	.....	261	591	416
Manufactured dyes, cochineal, indigo, etc., quintals	33,552	33,632	4,623	13,661	22,343	33,394	31,314	55,143	23,914	30,441
Dyes derived from coal-tar, quintals	21,998	20,952	53,333	13,153	17,974	4,952	6,472	33,624	26,953	5,633
Photographic paper, quintals	1,668	2,240	1,424	1,527	1,927	1,263	1,027	5,115	3,276	2,919
Cinema films, quintals	2,435	2,133	2,059	1,530	1,291	2,263	3,955	4,713	5,535	5,393
Textile gloves										
cotton, quintals	360	354	33	22	7	25	7	933	376	456
wool, quintals	144	122	75	33	76	29	31	266	4,054	436
silk, quintals	28	23	154	213	70	2	1	2,072	2,060	705

* Quintal = 220 lbs. Quintals may be roughly converted into tons by dividing by ten.

† Kilo = 2.2 lbs.

APPENDIX XXII (Continued)

<i>Commodity</i>	<i>Imports</i>					<i>Exports</i>				
	1912	1913	1920	1921	1922	1912	1913	1920	1921	1922
Hair tissues (alpaca, etc.), quintals	5,062	4,614	5,029	1,826	8,596	597	2,086	7,818	7,027	2,471
Hats—felt, number	1,004,550	978,022	2,968,206	612,589	987,692	1,209,688	1,248,282	819,805	602,942	728,178
Hats—hair, leather, or fur, number	167,012	111,252	21,044	20,915	48,178	256,902	246,480	555,542	840,795	405,854
Boots and shoes, pairs	1,875,066	1,494,578	2,867,518	894,944	580,122	18,544	18,982	51,575	25,971	15,172
Toys, quintals	25,880	24,497	8,548	9,409	9,081	99,175	102,822	76,847	49,835	58,770
Iron and steel tools, quintals	47,827	47,985	68,140	80,087	27,715	64,612	65,942	92,078	129,018	80,827
Household implements, quintals	151,987	64,085	75,776	47,458	65,491	156,065	176,088	176,114	186,011	181,061
Other iron and steel articles, quintals	.....	86,989	166,594	97,658	61,157					
Scientific glass, quintals	192	287	874	826	110	244	296	1,875	1,782	451
Porcelain for electrical purposes, quintals	8,964	11,528	15,859	19,967	865	4,158	5,881	5,007	10,498	8,816
Imitation jewelry, quintals	8,896	8,808	1,040	1,118	1,515	1,515	2,817	5,615	8,791	4,512
Chronometers, number	18	10	23	56	25	27	6	794	5,080	458
Fireproof ware, quintals	1,282,806	1,245,185	1,406,988	1,085,662	984,764	159,079	161,129	154,526	180,661	126,750

APPENDIX XXIII

OUTPUT OF FRENCH METALLIFEROUS MINES (OTHER
THAN IRON) IN TONS

<i>Nature of ore</i>	1913	1914		1915	1916	1917	1918	1919	1920
		<i>First half</i>	<i>Second half</i>						
Gold	153,009	45,306	12,469	13,077	23,518	24,343	6,156	12,165	6,964
Lead and silver	17,081	21,887	12,839	23,778	34,295	88,125	25,087	24,297	23,508
Zinc	46,577								
Copper	521	70	40	95	1,057	1,377	811	88	553
Antimony	20,873	3,036	890	6,353	19,087	19,453	10,020	4,123	5,901
Manganese	7,732	4,523	1,870	10,324	10,807	11,589	9,871	7,016	10,302
Tungsten	273	6,657	6,061	6,062	7,289	8,548	7,414	11,526	3,745
Iron pyrites	811,167	147,905	51,421	196,606	219,371	230,797	260,310	118,273	140,375
Tin									18
Totals	557,232	229,384	85,080	256,295	315,374	364,232	319,668	177,436	191,053

APPENDIX XXIV

OUTPUT OF NATURAL ASPHALT, etc., AND OF MINERAL OIL AND ASPHALTIC PRODUCTS IN TONS

	1913	1914		1915	1916	1917	1918	1920
		<i>First half</i>	<i>Second half</i>					
Natural asphalt	41,000	28,269	7,280	11,707	14,381	12,068	10,104	25,000
Bituminous schist	208,000	90,121	40,465	55,124	84,099	104,611	94,130	69,000
Mineral oil	.....	6,924	3,126	4,026	5,891	6,879	6,979	.....
Asphaltic products	.....	15,676	6,494	10,179	17,559	12,964	11,961	.....

IMPORTS OF MINERAL OIL

	1913	1914	1915	1916	1917	1918	1919
Heavy oils and oil residues (tons)	144,598	101,170	106,633	169,994	172,960	157,772	152,878
Petroleum, crude (thousands of hectoliters)*	1,983	1,445	230	483	200	1	4
Petroleum, refined (thousands of hectoliters)*	2,612	2,280	2,730	3,089	2,639	2,661	3,333
Petrol (thousands of hectoliters)*	2,444	2,466	3,027	4,639	5,096	6,485	4,247

* A hectoliter is approximately 22 gallons.

APPENDIX XXV

FOOD INDUSTRIES

	1913	<i>Imports (in tons and hectoliters)</i>			1917
		1914	1915	1916	
Preserved meat in boxes	2,967	3,893	9,554	18,537	15,325
Pâtés de foie gras	45	25	0.4	0.2	0
Meat extracts	406	194	340	348	174
Cheese	23,526	20,648	21,203	10,950	5,464
Butter	5,912	6,194	776	284	337
Preserved fish	11,505	10,355	20,301	23,533	34,273
Ship biscuits and bread	4,904	3,906	1,415	711	136
Semolina and farinaceous pastes	1,092	1,624	11,836	1,882	9,497
Sugar, unrefined	113,972	169,490	277,488	343,150	221,093
Sugar, refined	894	4,295	261,420	225,850	319,189
Preserved fruit and jam	1,323	578	2,274	1,793	2,816
Condensed milk	1,287	6,617	3,972	6,157	10,941
Chocolate	900	557	2,238	3,035	2,568
Edible oil	45,407	35,673	53,478	82,385	115,268
Preserved vegetables	2,228	1,439	1,454	7,694	6,917
Beer (in tons)	15,843	9,741	13,813	58,695	21,727
Cider (in hectoliters)	941	512	684	4,847	2,485
Brandy (in hectoliters of pure alcohol)	180,432	179,511	445,930	1,263,020	1,399,611
Liqueurs (in hectoliters)	3,648	2,688	2,388	3,632	137

APPENDICES

429

APPENDIX XXV

(Continued)

<i>Imports (in tons and hectoliters)</i>		<i>Exports (in tons and hectoliters)</i>							
1918	1919	1913	1914	1915	1916	1917	1918	1919	
82,831	49,977	2,501	1,879	672	1,032	951	1,193	5,917	
0	0.8	233	167	264	376	213	248	272	
82	885	106	49	63	65	23	17	36	
5,073	6,912	14,245	10,126	6,188	5,309	3,358	2,009	2,794	
484	5,801	17,400	17,970	20,215	8,570	3,052	1,071	451	
18,616	82,723	7,332	5,605	4,618	4,596	1,872	501	4,738	
194	170	593	1,123	3,966	3,643	1,014	325	3,328	
3,519	12,980	1,355	1,748	3,241	1,958	1,039	115	717	
124,022	267,355	26,710	3,434	1,261	610	504	187	580	
65,352	359,745	163,274	101,143	97,382	91,317	83,073	61,267	77,071	
183	12,539	3,554	2,698	2,912	2,236	1,157	765	802	
5,415	17,747	1,760	1,367	2,224	758	172	45	577	
320	1,516	2,131	1,692	1,518	1,746	1,193	673	4,670	
35,637	115,021	57,796	46,002	48,218	28,246	14,175	3,169	6,833	
2,469	6,267	16,217	12,511	8,851	6,812	6,125	5,062	6,810	
879	12,665	13,626	11,285	16,376	28,891	24,113	10,779	3,913	
7,876	12,680	22,965	20,622	5,700	9,915	3,120	3,387	4,650	
633,683	639,390	81,307	219,462	149,329	126,249	67,638	3,351	142,008	
46	257	53,100	37,611	25,150	30,182	19,935	15,494	24,154	

APPENDIX XXVI

CHEMICAL INDUSTRIES

Production and consumption in 1913 (in tons)

	<i>Production</i>	<i>Imports</i>	<i>Exports</i>	<i>Consumption</i>
I. Principal Products				
Calcium carbide	32,000	3,700	7,964	27,736
Nitric acid	20,000	826	2,132	18,614
Hydrochloric acid	150,000	2,903	1,779	152,000
Sodium chloride	1,282,000	32,965	174,515	1,140,450
Sodium salts (sulphate, carbonate, caustic soda, etc.)	625,434	1,915	122,169	505,180
Chlorine	10,000	259	700	10,258
Chloride of lime	43,493	11	11,359	32,145
Sodium hypochlorite	6,362	....	....	6,362
Chlorates of sodium and potassium	6,894	8	1,735	5,167
Bromine	very small	80	....	80
Sulphuric acid (52° Baumé)	1,160,000	11,000	4,610	1,172,390
Sulphuric acid (66° Baumé)	58,000	....	....	58,000
Olein	6,000	....	....	6,000
II. Nitrogenous Fertilizers				
Nitrate of soda	nil	322,000*	5,000	317,000
Sulphate of ammonia, etc.	75,000	21,800	1,700	95,000
Crude ammonia	7,500	5,500	....	13,000
Cyanamide	7,500	500	....	8,000
Nitrate of lime	nil	9,500	....	9,500
Various (guanos, offal, etc.)	47,000	53,000	....	100,000
III. Potassic Fertilizers	18,000	138,000	4,700	151,300†
IV. Phosphatic Fertilizers				
Phosphates‡ (France)	800,000	940,790	21,142	1,219,648
(Algeria)	465,000§	....	....	....
(Tunisia)	2,000,000§	....	....	....
Superphosphates	1,965,000	100,000	145,000	1,920,000
Basic slag	735,000	58,000	400,000	400,000
Bone superphosphates	100,000	....	....	100,000
Ground phosphates	100,000	....	....	100,000

* Of which 290,000 were for agricultural purposes.

† Of which 112,000 were for agricultural purposes.

‡ Natural, not industrial, products.

§ Of the Algerian and Tunisian output, 786,226 tons were imported into France, and are included in the figure of 940,790.

APPENDIX XXVII

CHEMICAL INDUSTRIES, IMPORTS AND EXPORTS, IN TONS

	1913	1914	Imports 1915	1916	1917
Bromine	77	74	38	0.9	0.4
Iodine	23	45	86	63	17
Hydrochloric acid	2,903	2,305	1,553	1,154	780
Nitric acid	827	459	364	183	24
Sulphuric acid	9,901	5,562	23,167	63,337	50,165
Tannic acid and tannin	59,577	35,656	45,050	52,195	57,700
Tannic extracts	994	778	357	173	37
Potash, vegetable ash, etc.	11,251	4,445	1,189	674	480
Kelp, caustic soda, etc.	2,422	6,273	20,597	16,632	24,896
Sea-salt and rock-salt	32,966	33,680	32,996	60,578	23,213
Ammonia salts	21,827	9,016	29,544	64,139	94,649
Calcium carbide	3,700	3,384	1,897	16,145	25,181
Chlorate of potash, of soda, etc.	9	124	8,914	28,502	25,642
Chloride of potassium	46,133	30,352	699	357	1,424
Cyanamide and nitrate of lime	10,010	3,309	2,458	7,986	9,233
Other nitrates (of potassium, soda, etc.)	322,188	297,481	254,036	543,696	456,306
Superphosphate of lime	100,822	58,155	14,038	4,122	1,884
Chemical fertilizers	223,217	104,956	15,068	7,928	2,139
Chemical products of coal-tar	90,048	58,393	35,026	65,421	134,377
Dye-stuffs derived from coal-tar	2,095	1,360	1,072	4,216	24,388
Pencils and various leads	302	159	100	176	343
Ochers	1,790	907	196	446	198
Perfumes and soaps	1,560	493	1,153	473	677
Other soaps	1,753	1,932	6,417	7,835	25,232
Waxes and candles	58	20	721	1,651	1,985
Composite drugs					
Distilled water					
Alcoholic (hectoliters)*	5	7	5	2	3
Without alcohol (quintals)†	236	150	239	123	67
Undefined					
(Quintals)	693	562	6,732	1,547	345
(Value in francs)	43,894	70,967	82,539	96,842	50,936
Chloroform (quintals)	2	42	455	352	579
Photographic papers and films (quintals)	2,240	1,315	2,201	2,007	1,350
Cinematograph films (quintals)	2,133	1,585	652	1,080	729

* Hectoliter = 22 gallons.

† Quintal = 220 lbs.

APPENDICES

433

APPENDIX XXVII

(Continued)

<i>Imports</i>		<i>Exports</i>						
1918	1919	1913	1914	1915	1916	1917	1918	1919
178	71	0.4	0.1	0.1	7	63	25	36
45	84	4	1	7	4	6	2	1
75	1,085	1,779	1,101	504	931	1,037	704	293
	89	2,133	1,388	18	1,032	1,052	8	367
918	1,552	4,149	2,193	610	1,484	1,945	1,577	3,539
72,200	135,200	139	18	8	11	8	7	31
90	1,224	93,945	63,419	17,910	13,245	18,655	15,212	13,788
161	956	5,231	4,268	411	179	175	73	792
26,053	13,549	100,235	63,173	13,091	34,433	28,291	21,570	88,138
20,927	44,924	174,515	108,421	25,618	27,795	15,982	5,916	32,204
54,965	27,682	1,733	2,030	7,725	13,406	6,078	429	396
33,094	15,969	6,770	5,895	3,966	1,480	650	1,388	1,598
12,968	1,321	1,735	1,315	8,848	22,118	19,482	12,389	3,777
1,285	1,048	127	75	302	17	413	222	2,821
8,592	6,389	839	373	64	5,511	6,395	....	8
258,755	168,958	5,993	2,593	2,267	11,820	7,329	472	478
6,170	12,002	145,226	117,231	59,823	12,363	3,851	2,684	6,209
1,724	6,448	403,296	247,621	7,833	7,179	3,892	629	180,552
79,813	28,830	8,197	4,554	577	966	1,091	1,585	3,085
27,678	2,575	422	385	155	165	346	129	159
298	234	84	47	48	66	52	39	68
166	335	34,721	30,625	14,233	14,327	11,961	6,606	8,610
276	712	5,555	4,132	3,900	4,716	3,951	2,662	6,383
6,187	14,188	35,185	33,233	27,238	24,251	13,436	10,645	16,614
151	1,111	8,246	3,058	2,673	2,695	2,134	1,085	2,213
....	....	3,702	6,116	1,022	1,255	1,149	1,112	1,532
88	389	6,214	4,606	3,537	5,038	3,049	1,952	2,143
165	955	quintals						
97,000	196,000	62,533	46,025	40,595	44,036	40,912	36,870	60,294
233	197	60	35	110	61	33	50	270
1,066	1,158	1,027	691	701	1,736	2,406	1,085	2,163
2,190	1,993	3,480	3,888	1,668	1,837	3,091	1,392	1,376

APPENDIX XXVIII

RUBBER, PAPER, CARDBOARD

	1913	1914	Imports (tons) 1915	1916	1917
<i>Rubber</i>					
Raw rubber and gutta-percha	15,348	10,178	11,702	15,526	19,889
Rubber sheets, vulcanized or not	813	187	251	393	1,079
Elastic tissues	148	111	135	273	534
Clothing and accessories	62	41	68	163	204
Rubber shoes	154	75	988	344	1,706
Tires (shoes and inner tubes)	1,310	796	359	1,850	1,929
Straps, tubes, valves, etc.	1,314	810	711	1,203	1,603
<i>Paper</i>					
Rags					
Waste paper	46,967	31,725	26,377	10,595	2,810
Woolen rags	10,447	6,826	2,309	1,873	1,043
Other rags	19,890	11,502	6,320	5,875	5,179
Pulp					
Mechanical	259,449	207,551	169,470	213,209	88,701
Chemical	205,500	111,164	113,402	149,503	71,608
Fancy and other papers	15,922	9,357	52,180	110,679	86,192
Wall-paper	1,738	1,000	80	23	31
Paper for reproduction and photography	260	157	237	246	210
<i>Cardboard</i>					
Cardboard in sheets, molded, shaped, etc.	2,098	1,559	2,650	15,773	31,963
Cardboard boxes or tubes	2,770	1,516	2,317	3,834	3,470
Decorated cardboard	843	203	127	129	126
Cardboard or pulp articles	325	175	41	81	65

APPENDICES

485

APPENDIX XXVIII

(Continued)

<i>Imports (tons)</i>		<i>Exports (tons)</i>						
1918	1919	1913	1914	1915	1916	1917	1918	1919
16,697	27,047	9,405	5,731	2,055	2,537	3,009	2,256	9,077
842	1,206	....	....	....	33	87	18	117
617	1,025	153	149	173	77	137	74	188
120	857	71	45	84	76	64	525	218
2,625	612	86	89	32	51	81	62	98
845	8,055	4,244	3,911	3,373	3,908	3,722	2,409	7,237
1,377	2,068	1,334	1,022	541	649	567	433	1,562
885	4,851	828	1,027	563	229	1,059	27	374
985	1,522	37,944	23,386	25,318	13,621	15,965	8,381	22,504
3,187	7,469	68,490	43,233	23,849	12,599	16,884	5,751	27,444
148,609	167,303	59	120	23	6	32	3	15
105,292	108,063	595	205	156	117	194	2	25
44,724	70,050	42,946	35,455	27,828	30,932	24,246	20,959	20,436
28	543	1,532	1,099	286	313	203	118	606
187	228	730	502	249	230	250	122	364
3,228	3,102	3,085	2,505	1,217	1,285	1,320	310	1,127
1,991	3,248	731	587	453	335	306	210	320
64	150	285	163	120	256	179	101	161
77	229	65	93	54	65	82	33	115

APPENDIX XXIX

PRINTING AND BINDING

	<i>Imports (tons)</i>						
	1913	1914	1915	1916	1917	1918	1919
Books, in French and other languages	2,165	1,464	613	691	705	887	1,127
Newspapers and periodicals	2,331	1,667	1,948	2,624	2,425	1,558	1,521
Engravings and photographs	682	895	182	188	228	179	286
Cinematograph films	213	159	65	108	73	49	199
Labels and various printed papers	842	507	263	293	268	157	295
Engraved or printed music	235	146	16	18	25	20	27

	<i>Exports (tons)</i>						
	1913	1914	1915	1916	1917	1918	1919
Books, in French and other languages	4,355	3,150	1,729	2,146	1,962	1,382	2,328
Newspapers and periodicals	5,200	3,229	752	1,294	1,501	1,215	3,584
Engravings and photographs	477	828	166	258	183	72	835
Cinematograph films	848	389	167	184	309	139	138
Labels and various printed papers	3,551	2,792	1,784	1,605	1,739	770	1,216
Engraved or printed music	77	41	25	29	28	30	32

APPENDIX XXX

PRINTING AND BINDING INDUSTRY

	<i>Pre-war</i>	<i>1914</i>	<i>1914</i>	<i>1915</i>	<i>1915</i>	<i>1916</i>
		<i>Aug.</i>	<i>Oct.</i>	<i>Jan.</i>	<i>July</i>	<i>Jan.</i>
Wages of typographers in Paris	100	100	100	100	100	111
Printing	100	100	100	100	100	100
Cost of paper						
Average printing	100	100	100	100	100	150
Ordinary	100	110	120	130	150	200
Cost of binding						
Cloth	100	105	110	120	140	150
Paper boards	100	100	100	100	100	100
Sale price						
of the 3 fr. 50 novel						
absolute price	3 fr. 50	3 fr. 50	3 fr. 50	3 fr. 50	3 fr. 50	3 fr. 50
increase	100	100	100	100	100	100
of classical works	100	100	100	100	100	110
Contract price of supplies to public						
offices	100	100	100	100	110	110
Returns of labor inspectors						
Personnel employed	100	83	84	42	47	49
Establishments at work	100	52	61	67	76	80

APPENDICES

439

APPENDIX XXX

(Continued)

<i>1916</i>	<i>1917</i>		<i>1918</i>		<i>1919</i>			<i>1920</i>	
<i>July</i>	<i>Jan.</i>	<i>July</i>	<i>Jan.</i>	<i>July</i>	<i>Jan.</i>	<i>July</i>	<i>Jan.</i>	<i>July</i>	<i>Aug.</i>
111	122	133	144	155	166	277	277	322	355
100	100	130	140	140	150	200	250	400	..
200	200	250	400	500	380	350	400	1,030	..
800	275	350	500	650	600	400	700	1,400	..
175	200	230	400	450	600	650	800	950	..
120	150	175	300	310	320	350	400	530	..
1 fr. 50	3 fr. 50	3 fr. 50	4 fr. ..	4 fr. 50	4 fr. 50	4 fr. 50	5 fr. ..	6 fr. ..	7 fr. ..
100	100	100	114	129	129	129	143	171	200
120	120	120	170	170	200	200	270	378	..
110	129	142	170	180	180	280	316	396	..
53	56	55	56	56	60	60	66	66	..
82	83	86	86	89	89	89	97	97	..

APPENDIX XXXI

TEXTILE INDUSTRIES

	1913	1914	Imports (tons) 1915	1916	1917
<i>I. Textile materials</i>					
Wool in bulk, combed and carded wool, waste	285,570	214,568	68,100	85,181	66,281
Silk					
in cocoons	465	852	190	175	169
raw	7,169	4,942	4,525	4,208	4,940
other (floss, waste, etc.)	11,190	9,007	4,162	8,191	6,782
Cotton, raw and waste	829,136	205,673	228,159	255,479	273,290
Flax (including raw stalks at $\frac{1}{10}$ their weight)	112,195	75,269	2,175	12,689	7,240
Hemp	29,625	18,773	8,141	28,675	13,844
Jute	112,231	61,396	75,360	77,795	67,239
Ramie	905	198	833	1,023	823
<i>II. Yarns and fabrics</i>					
Wool					
yarn	956	670	4,643	6,896	6,955
fabric	4,817	4,126	82,836	42,889	23,805
Silk					
yarn	277	123	95	288	741
fabric	871	542	884	559	575
Cotton					
yarn	8,128	1,929	22,350	84,037	26,428
fabric	4,759	4,920	60,830	87,277	23,358
Flax, hemp and ramie					
yarn	646	449	1,337	4,044	9,142
fabric	5,106	3,393	2,248	8,019	6,729
Jute					
yarn	27	159	114	82	1,091
fabric	28,470	24,291	56,188	56,668	68,569
Totals (yarn and fabric)	48,556	40,602	181,024	185,810	167,892

APPENDICES

441

APPENDIX XXXI

(Continued)

<i>Imports (tons)</i>		<i>Exports (tons)</i>						
1918	1919	1913	1914	1915	1916	1917	1918	1919
44,408	165,940	80,665	62,871	5,201	10,579	4,786	842	10,916
155	178	70	57	40	17	22	8	33
5,359	5,769	2,315	2,005	2,369	1,640	1,496	1,248	1,171
8,508	7,528	6,208	8,687	2,741	8,053	3,169	2,630	3,156
142,290	218,547	57,840	43,125	8,327	28,968	18,406	5,898	16,910
7,084	2,648	17,018	11,905	8,451	8,748	8,352	250	4,858
15,678	29,404	1,171	665	485	290	179	86	769
8,948	107,709	1,487	2,990	233	558	68	116	2,107
1,141	798	118	41	28	105	146	87	229
6,088	6,831	13,359	6,643	50	106	51	20	1,616
15,685	22,602	18,280	12,203	1,165	1,419	1,797	1,011	4,396
928	655	1,384	949	872	899	489	266	648
458	656	6,175	5,051	5,346	5,859	4,124	2,932	6,012
84,406	80,089	7,642	8,047	940	1,221	935	511	4,841
40,718	23,967	50,702	37,460	18,082	21,737	14,188	9,411	32,253
2,635	6,663	11,415	6,562	750	405	162	128	386
6,512	6,275	4,707	3,308	800	740	599	270	558
785	2,095	6,738	2,449	5,387	5,221	915	450	468
49,562	57,021	18,738	11,601	9,592	14,302	9,384	6,483	9,617
157,716	156,873	189,189	89,273	43,484	51,908	32,644	21,482	60,792

APPENDIX XXXII

MAKING OF TEXTILE GOODS AND CLOTHING; STRAW,
FEATHERS, AND HAIR INDUSTRY

	1913	1914	Imports 1915	1916	1917
Sewn linen goods, tons	79	182	1,552	654	782
Ready-made clothing, men's					
Silk, kilos	456	803	23	83	208
Other fabrics, kilos	203,919	141,131	2,009,271	189,021	95,660
Ready-made clothing, women's					
Silk, kilos	8,204	6,418	7,194	11,683	10,847
Other fabrics, kilos	98,624	49,426	39,655	41,156	34,379
Silk and other cravats, kilos	4,958	2,848	915	1,105	1,485
Sacks other than jute, tons	77	120	2,274	3,349	2,047
Miscellaneous ready-made articles, tons	237	474	4,587	1,693	291
Furs, worked and ready-made, tons	1,529	1,143	645	803	675
Felt for linings, pianos, papering, etc., tons	204	110	42	97	570
Hats (felt, hair, and fur), number	1,084,274	593,576	234,857	419,569	1,624,753
Corsets, number	79,886	47,856	8,757	17,643	17,395
Millinery,* tons	4	8	0.1	0.2	0.2
Value in francs	96,000	72,000	2,400	8,000	10,000
Artificial flowers,* tons	16	9	0.2	..	..
Value in francs	571,000	366,000	20,500	..	..
Umbrellas, number	63,920	26,376	13,181	31,764	16,049
Hair, tons	1,922	1,254	518	371	448
Feathers for trimming, kilos	810,202	541,728	203,961	197,530	152,688

* Statistics of exports and imports of millinery and artificial flowers are not available in respect to several years.

APPENDICES

443

APPENDIX XXXII

(Continued)

<i>Imports</i>					<i>Exports</i>			
1918	1919	1913	1914	1915	1916	1917	1918	1919
1,093	1,045	1,365	946	590	555	592	809	518
648	1,000	6,055	5,848	8,799	4,495	6,570	7,232	20,400
84,295	198,600	1,540,205	1,315,664	268,864	262,012	450,954	215,609	547,680
4,577	8,916	59,132	40,335	59,557	66,045	61,384	83,321	283,342
24,542	89,979	1,165,392	815,674	566,178	522,851	346,000	168,084	285,972
1,229	2,533	4,747	2,628	8,418	3,014	8,690	4,182	11,848
1,728	1,960	87	50	19	62	89	14	55
824	434	1,319	796	585	439	909	580	693
630	999	1,673	1,225	842	1,127	905	1,230	1,442
225	212	422	294	210	373	264	187	330
1,606,646	2,115,712	1,494,712	1,087,366	652,108	678,272	698,557	748,931	835,823
573	19,356	209,250	118,313	104,394	132,648	71,769	96,176	179,325
0.1	0.3	1,753	989	..	328	..	..	..
5,500	86,000	56,646,357	38,208,168	3,678,972	5,522,428	6,989,129	6,262,730	11,393,000
..	1	1,651	1,221	..	1,742	..	..	..
..	51,500	19,102,388	16,201,219	23,163,132	25,022,140	13,323,287	12,200,600	21,293,000
8,592	10,255	1,065,936	742,433	312,843	274,640	226,398	165,799	139,171
810	982	426	335	226	223	250	38	174
27,910	250,704	1,075,475	675,004	510,505	440,315	340,100	200,075	240,245

APPENDIX XXXIII

LEATHER AND SKINS

	1913	1914	Imports 1915	1916	1917
Raw hides					
Heavy, tons	59,129	89,205	19,844	27,847	44,887
Light, tons	14,820	12,320	8,502	7,504	8,648
Raw pelts, tons	1,819	1,309	822	745	599
Dressed hides, tons	8,840	5,231	14,224	17,954	15,531
Artificial leather, tons	2	83	11	21	25
Leather articles, boot-soles and boot-legs, tons	22	15	223	444	307
Boots and shoes, pairs	1,502,973	1,012,925	4,142,838	8,710,455	2,567,051
Gloves, dozens of pairs	50,997	42,660	82,307	28,128	26,788
Saddlery					
Saddles, number	532	723	73,436	10,107	624
Other articles, tons	5	24	1,764	225	2
Harness, tons	7	137	1,669	1,129	82
Belts (for driving machinery), tons	287	160	292	530	656
Leather trunks, fancy leather goods, etc., tons	495	284	2,452	2,842	578
Peltry, dressed and manufactured, tons	1,529	1,143	645	803	675

APPENDICES

445

APPENDIX XXXIII

(Continued)

<i>Imports</i>					<i>Exports</i>			
1918	1919	1913	1914	1915	1916	1917	1918	1919
14,880	51,448	86,775	27,676	13,655	6,881	6,116	1,920	19,113
5,423	17,188	26,499	15,751	6,281	4,472	3,098	66	5,275
542	1,872	8,932	2,209	1,501	2,423	2,840	1,567	2,769
8,948	20,531	14,372	9,955	4,261	4,868	3,045	2,299	3,759
87	57	256	185	60	58	7	24	204
188	827	88	89	22	13	44	35	38
1,220,434	3,637,130	tons 909*	709	299	505	585	341	1,293
27,673	81,670	tons 488	432	483	436	508	326	307
858	144 }							
8	3 }	tons 139	83	13	16	12	49	27
0.7	18	185	67	16	109	827†	22	74
402	672	411	272	94	85	103	105	320
114	432	1,147	896	690	570	611	343	376
630	999	1,678	1,225	842	1,127	905	1,230	1,442

* As regards boots and shoes, gloves and saddles, the Customs statistics give Imports in pairs, dozens of pairs, and numbers respectively; but the Exports in tons.

† This figure is surprising, but the Customs returns show that, in 1917, 724 tons of saddlery were exported to Russia, and 87 to Roumania, doubtless in connection with military equipments.

APPENDIX XXXIV

WOOD-WORKING INDUSTRIES (TONS, EXCEPT
WHERE OTHERWISE STATED)

	1913	1914	Imports 1915	1916	1917
<i>Common woods</i>					
Constructional timber of all kinds	1,562,179	821,220	374,268	975,163	557,421
Wood pavement	18	11	..	..	..
Barrel staves	78,957	51,840	26,075	17,574	16,275
Split wood, laths, and poles	153,014	120,169	17,884	7,208	3,238
Cork, raw, rasped, and sheets	12,318	7,048	5,794	8,496	4,422
Resinous woods	201,728	100,500	17,277	3,790	9,210
Wood-wool	1,610	833	201	335	338
Other common woods	80	29	26	22	..
Total common woods*	2,009,904	1,101,650	441,525	1,012,568	590,904
<i>Exotic woods</i>					
Fine woods of all kinds	80,171	58,208	14,228	8,888	7,579
Scented woods and dye-woods	85,011	75,163	98,825	75,379	57,867
<i>Furniture</i>					
Of bent wood	1,476	883	46	222	177
Of other wood, and upholstered furniture	5,199	2,835	349	498	484
Wooden frames	526	162	18	106	29
Tables	6,537	4,857	4,409	3,914	3,312
Chairs	438	307	832	806	179
Enter's and wheelwright's work	2,180	2,120	1,397	2,714	4,352
Leather shoes	9	6	38	125	148
Net	1,867	1,075	713	3,761	6,610
Shutters and windows	998	522	63	1,405	1,937
Handles of implements	1,045	748	201	482	367
Wheels, grand and upright (number)	1,549	903	42	126	19
Wheels for roads, including motors	2,745	2,714	41,186	32,551	40,685
Vehicles for rails and tramways	20,356	6,912	5,657	54,677	170,875
Aeroplanes and sea-planes	..	0.4	..	..	25
Wooden boats (tons of capacity)	2,249	5,517	596	1,744	10,535
Hulls of ships (tons of capacity)	15	6	97	14	243
Hulls of river-vessels (tons of capacity)	3,598	1,673	581	1,455	216
Cork, worked, and corks	1,379	1,144	749	882	999
Toys and games	2,450	1,073	283	369	287

* Firewood is not included.

† This figure is missing from the Customs returns.

APPENDICES

447

APPENDIX XXXIV

(Continued)

<i>Imports</i>		<i>Exports</i>						
1918	1919	1913	1914	1915	1916	1917	1918	1919
808,802	720,055	337,756	221,508	50,021	31,145	28,495	25,630	52,894
..	53	1,251	730	285	166	2	..	39
6,668	83,199	5,942	5,445	5,641	6,903	5,555	1,848	3,991
1,793	81,228	921,191	809,283	644,591	639,154	668,045	535,758	524,707
3,849	9,348	12,131	7,506	3,469	6,029	3,344	1,456	4,001
5,695	7,668	185	91	26	3	19	2	45
721	853	260	214	625	426	390	213	447
19	92	1,599	473	23	175	161	98	689
822,547	802,451	1,280,315	1,045,250	704,631	684,001	706,001	565,005	586,813
12,686	27,417	10,057	7,751	8,267	8,224	2,363	1,282	3,013
12,701	20,917	547	261	298	739	159	15	800
146	255	1,515	1,074	236	200	140	75	190
263	1,095	8,600	5,363	1,640	1,627	..†	644	1,282
8	453	287	188	61	77	65	35	150
2,467	11,403	85,821	74,043	115,649	84,484	81,534	28,677	6,879
580	1,281	587	521	290	309	272	178	291
2,160	8,530	4,426	1,988	944	1,547	820	772	2,934
9	169	259	144	64	33	56	83	89
7,195	16,119	1,755	1,047	333	347	325	164	275
10,459	14,282	1,536	1,221	235	300	1,379	812	866
402	761	1,073	907	496	279	191	132	371
15	153	4,421	2,730	2,069	2,430	1,611	773	1,499
21,687	25,239	26,895	15,317	6,331	6,569	2,674	601	6,346
97,498	256,350	5,613	6,113	513	758	342	188	5,289
261	29	142	132	292	305	610	1,746	357
24,417	49,960	2,339	1,165	553	96	217	359	271
6	75	8	10	..	3	1	1	..
297	739	223	113	165	473	47	6	322
555	2,210	1,047	750	330	422	343	291	1,059
145	445	3,226	5,342	4,450	4,282	3,304	2,428	2,338

APPENDIX XXXV

METALLURGY

	1913	1914	Imports 1915	1916	1917
Motors, stationary and marine, steam pumps, etc., tons	12,261	7,734	2,482	5,930	8,585
Railway locomotives, tons	5,807	4,432	2,288	8,324	18,707
Road locomotives, tons	1,164	443	825	3,399	5,010
Spinning and weaving machinery, tons	23,444	14,346	8,575	7,281	4,877
Printing machinery, tons	2,565	1,095	306	811	599
Agricultural machinery, tons	84,827	87,877	8,221	19,591	15,882
Sewing-machines, tons	8,555	4,961	1,736	2,421	3,250
Dynamos, tons	4,929	2,819	2,226	5,745	4,362
Machine-tools, tons	23,735	14,685	28,287	45,640	53,216
Machinery for flour-mills, etc., tons	14,901	8,744	4,388	18,658	24,337
Boilers, tons	3,442	1,817	1,269	2,899	3,560
Machinery for sugar manufacture, tons	60	41	41	45	8
Arc lamps, tons	16	7	0.5	1	8
Mechanics' tools* and other tools, tons	1,937	3,333	3,086	4,744	5,781
Needles for looms, kilos	13,677	7,686	2,468	7,624	8,315
Cutlery, tons	90	50	21	30	38
Constructional ironwork, tons	753	447	67	180	166
Household implements, tons	15,102	9,497	12,657	46,863	82,882
Body-work for motor and other vehicles, tons	2,745	2,721	41,186	32,551	40,685
Chassis and wheels for motors and other vehicles, tons	534	265	538	1,107	2,624
Motor-cycles and bicycles, tons	963	675	249	623	1,463

* To obtain the exact figures of imports of mechanics' tools the following quantities, assessed in values, should be added, francs

4,826,681 2,761,616 3,771,012 9,427,568 16,159,767

APPENDICES

449

APPENDIX XXXV

(Continued)

<i>Imports</i>					<i>Exports</i>			
1918	1919	1913	1914	1915	1916	1917	1918	1919
6,615	9,561	2,043	1,486	665	2,668	1,123	338	761
26,559	22,266	1,261	2,715	439	4,956	1,278	521	14,563
7,381	13,205							
5,346	17,808	2,052	1,408	398	447	344	401	977
58	1,090	811	810	90	127	71	115	301
16,158	52,237	12,311	7,719	1,677	1,364	900	1,084	2,495
3,159	4,392	391	262	65	88	62	37	201
4,080	4,979	1,646	1,155	336	339	657	393	696
27,169	33,505	4,583	2,717	903	1,692	1,326	695	2,654
19,790	29,196	6,863	6,140	1,325	1,347	1,086	921	6,359
2,850	3,621	1,486	1,016	305	238	157	295	322
4	59	583	678	123	109	266	117	162
8	3	41	25	14	7	3	0.9	4
2,962	5,782	6,594	5,163	1,480	2,028	1,565	982	2,711
9,391	9,366	639	19	860	2,529	2,892	1,705	1,232
80	52	937	608	343	364	264	192	299
82	326	2,342	1,667	650	683	438	285	463
32,166	13,361	17,604	12,172	6,790	11,617	9,931	3,814	4,885
21,687	25,239	26,895	15,317	6,331	6,569	2,674	601	6,846
591	3,024	456	597	385	334	285	105	327
1,031	979	934	674	345	365	217	87	426

15,719,000 23,421,000

APPENDIX XXXVI

PRECIOUS METALS AND PRECIOUS STONES

	1913	1914	Imports 1915	1916	1917
Gold					
Ore, quintals*	10	99	14	..	..
Beaten, rolled, and wire, kilos	8,420	1,454	157	131	94
Bullion, kilos	98,307	130,768	12,977	20,730	23,559
Platinum					
Ore, quintals	1	5	..	..	1
Bullion, kilos	5,029	2,908	360	576	478
Beaten, rolled, and wire, kilos	87	13	..	2	..
Silver					
Ore, quintals	210	16	..	7	..
Beaten, rolled, and wire, kilos	2,053	7,016	501	1,674	606
Bullion, kilos	651,221	378,735	719,051	750,831	652,735
Goldsmiths' and silversmiths' work					
Gold, kilos	116	112	126	51	..
Platinum, kilos	17	17	..	4	1
Silver and silver gilt, kilos	8,420	4,164	3,343	903	707
Jewelry					
Gold, kilos	6,204	2,982	1,753	1,998	757
Platinum, kilos	68	15	2	7	2
Silver and silver gilt, kilos	8,155	4,004	1,681	4,713	2,745
Gilt or silvered, rolled and plated goods,					
kilos	135,266	65,959	14,740	24,562	13,765
Imitation jewelry, of all metals, quintals	8,803	2,242	475	618	354
Precious stones, hectograms†	153,326	97,454	29,411	137,588	66,982
Agate and rock-crystal, kilos	141,643	57,230	4,230	13,149	61,231

* Quintal = 220 lbs.

† Hectogram = 8.2 ozs., troy.

APPENDICES

451

APPENDIX XXXVI

(Continued)

<i>Imports</i>					<i>Exports</i>			
1918	1919	1913	1914	1915	1916	1917	1918	1919
..	1	2	5	90	..	..	..	1
210	842	894	811	780	718	878	1,050	849
4,843	18,451	8,569	4,713	578	172	31	6	932
..	..	8	5	3	..	..	..	..
83	217	1,077	1,088	600	324	233	1	142
8	2	585	326	288	133	75	57	108
..	133	202	..	..	..	225	1,737	1
409	970	23,524	85,015	6,298	27,745	20,397	23,158	12,736
287,988	289,691	128,095	98,105	127,839	98,424	114,870	16,708	32,361
3	16	604	253	190	527	130	25	36
..	2	125	33	..	4	48	5	1
795	2,874	32,497	15,562	7,695	7,857	5,239	7,912	11,279
137	856	1,998	523	256	690	292	235	563
..	2	208	203	6	14	24	24	28
421	4,084	13,034	5,347	3,484	4,016	2,456	2,750	2,775
10,138	42,772	240,751	144,859	90,802	186,372	168,110	151,119	297,076
287	433	1,622	1,538	1,554	1,403	1,343	1,817	2,764
13,835	51,923	..	..	..	..	9,514	2,701	32,093
8,225	41,494	47,333	55,868	8,820	12,720	34,933	20,061	67,780

APPENDIX XXXVII

BUILDING AND PUBLIC WORKS

	1913	1914	<i>Imports</i> 1915	1916	1917
Statuary and other marble, and alabaster, tons	59,630	40,154	3,666	8,570	9,204
Stone, worked, cut, or sawn, tons	64,120	35,416	584	3,236	347
Sculptured stone, chimney-pieces, funeral monuments, tons	4,010	2,099	151	459	188
Millstones, number	606	2,045	82	26	8
Grindstones, tons	5,578	1,875	69	71	38
Stones and earths used in industry and art, tons	1,483,751	1,000,209	375,834	391,873	231,969
Slates, tons	2,705	1,208	213	239	220
Bricks, tons	77,290	29,953	1,450	6,363	10,746
Tiles, ordinary, tons	781	679	83	72	80
Tiles, machine made, tons	8,973	4,143	178	746	6,113
Constructional stone, tons	89,836	46,669	3,369	2,093	3,134
Paving-stones and road-metal, tons	981,552	664,388	1,335	1,643	643
Plaster,* tons	8,247	3,432	71	176	567
Cement pipes and slabs, etc., tons	717,008	369,331	4,271	3,131	1,370
Bitumen and asphalt, tons	58,215	38,470	25,596	24,381	12,343

* For lime and cement see Appendix XXXVIII.

APPENDICES

453

APPENDIX XXXVII

(Continued)

<i>Imports</i>					<i>Exports</i>			
1918	1919	1913	1914	1915	1916	1917	1918	1919
7,138	25,119	11,075	6,501	1,514	2,009	1,880	1,592	5,934
210	10,905	19,685	8,888	2,375	1,676	775	1,265	1,300
110	908	2,051	1,193	235	650	256	1,870	352
770	50	21,692	14,016	3,169	5,033	2,869	2,075	6,166
55	166	3,970	1,982	1,086	1,872	755	392	1,389
819,955	652,190	549,023	394,678	223,030	268,061	219,442	144,637	148,914
869	3,042	88,061	20,902	2,975	986	596	103	2,153
3,268	34,259	70,663	43,142	20,456	7,461	5,680	1,895	4,793
229	3,136	169,102	110,095	23,424	18,443	17,166	6,771	16,582
847	33,687	39,263	22,551	7,748	9,180	6,129	4,827	7,139
2,982	4,524	165,901	80,082	13,228	13,047	6,889	1,478	12,448
288	98,663	44,746	28,652	38,730	3,725	1,361	845	14,085
499	3,759	172,574	89,163	16,376	8,537	4,545	1,163	20,315
927	93,777	128,541	103,167	52,178	24,557	21,226	25,322	36,000
4,850	13,258	20,417	14,492	9,784	4,829	2,189	879	2,555

APPENDIX XXXVIII

LIME, CEMENT, POTTERY, AND GLASS

	1913	1915	Imports 1916	1917	1919	1913	1915	Exports 1916	1917	1919
Lime and cement										
Ordinary lime, tons	215,999	502	462	221	67,047	130,892	8,379	8,082	2,901	21,050
Hydraulic lime, tons	262,597	885	865	280	121,967	262,313	82,789	57,052	22,891	23,596
Slow-setting cement, tons	112,200	27,494	108,255	133,608	118,217	898,240	141,602	117,711	64,376	73,331
Quick-setting cement, tons	8,240	881	938	211	2,013					
Graphite, tons	8,796	5,089	13,690	17,627	5,051	751	3,139	5,508	4,997	1,236
Pottery										
Crucibles and retorts, tons	6,033	837	946	1,082	1,944	16,113	6,070	7,956	7,081	5,295
Fire clay bricks and pottery, tons	63,512	2,818	9,326	6,704	30,370					
Silica and alumina bricks, tons	52,879	10,685	23,694	22,006	13,181					
Graphite and plumbago crucibles, tons	2,095	1,863	4,939	5,090	1,859					
Flowerpots, tons	589	23	..	..	117	378	27	14	8	20
Other pottery, tons	985	226	238	208	555	4,267	1,356	1,341	613	1,129
Stone-ware, tons	1,660	1,251	4,260	1,559	2,080	2,281	803	638	332	469
Paving tiles, tons	8,201	212	68	83	2,752	52,624	13,586	10,843	5,484	10,522
Earthenware, tons	6,453	812	511	759	3,323	11,780	1,897	1,961	1,149	1,551
Porcelain, tons	4,699	898	535	230	689	8,023	3,897	4,122	2,678	2,400
Glass										
Mirrors, less than ½ meter square, tons	544	14	70	44	431	322	280	268	88	74
All other sizes, sq. meters	114,035	7,056	9,202	4,506	119,598	..	..	..	..	..
Mirrors of all sizes, value in francs	2,319,716	203,635	408,739	343,320	13,707,362	3,515,413	2,149,093	1,732,315	615,370	1,480,840
Unpolished glass, tons	599	1,217	4,907	3,033	15,203	5,911	849	135	43	51
Table glass, tons	5,849	152	187	85	1,053	11,371	2,736	2,192	1,684	1,997
Glass for illumination, tons	3,684	352	1,356	890	710	235	61	73	688	187
Window-glass, tons	3,639	6,761	9,989	7,153	39,990	6,116	632	549	581	490
Watch and clock glasses, tons	84	8	11	12	113	27	14	14	9	151
Optical glass, tons	63	4	26	11	8	184	127	93	43	87
Bottles and phials, tons	8,919	11,722	23,802	17,255	23,919	115,817	55,251	55,737	30,695	53,754
Electric bulbs, tons	115	21	1,233	146	246	112	75	61	60	46

APPENDIX XXXIX

COMMERCIAL RAILWAY TRAFFIC

Line	By passenger train		Goods thousands of tons	By goods train	
	Number of passengers			All distances thousands of tons	Per kilometer millions of kilometer-tons
	All distances in thousands	Per kilometer in millions			
1913					
Etat	136,824	3,943	833	26,042	3,179
Nord	115,002	3,135	549*	52,558	5,408
Est	92,299	2,720	641	45,874	5,069
Paris-Orleans	59,078	3,044	656	20,703	4,077
P.L.M.	93,961	4,889	896	37,680	7,448
Midi	28,587	1,468	304	13,545	1,764
Totals	525,751	19,199	..	196,402	26,945
1914					
Etat	111,371	3,242	694	20,093	2,455
Nord	76,222	2,062	847*	31,798	3,339
Est	..	..	..	..	..
P.O.	45,565	2,496	566	16,631	..
P.L.M.	..	..	..	..	..
Midi	22,742	1,118	263	11,165	1,483
1915					
Etat	89,856	3,098	676	21,341	2,547
Nord	80,014	839	205	17,615	3,045
Est	40,915	1,092	847	9,928	1,510
P.O.	40,607	2,509	568	17,023	..
P.L.M.	..	..	..	..	..
Midi	22,324	1,173	254	11,338	1,538
1916					
Etat	108,799	3,489	874	22,691	2,706
Nord	37,856	949	809*	19,218	3,254
Est	45,985	1,191	478	12,495	2,121
P.O.	51,270	2,953	752	18,689	..
P.L.M.	..	..	..	..	..
Midi	29,974	1,320	355	10,717	1,486
1917					
Etat	115,101	3,327	747	22,015	2,738
Nord	43,323	1,070	282	19,980	3,575
Est	49,854	1,241	896	15,690	2,328
P.O.	57,477	2,878	728	19,454	..
P.L.M.	..	..	..	..	..
Midi	32,166	1,303	304	11,688	1,635
1918					
Etat	125,319	3,713	809	19,588	2,270
Nord	41,889	1,035	237	13,674	2,229
Est	51,020	1,264	845	10,711	1,506
P.O.	63,310	3,392	798	16,389	..
P.L.M.	..	..	..	..	..
Midi	32,531	1,287	343	10,345	1,497
1919					
Etat	143,060	4,448	953	23,550	3,091
Nord	79,355	3,222	198*	23,856	3,029
Est	79,245	2,741	523	17,881	2,631
P.O.	63,489	3,833	851	18,197	3,681
P.L.M.	31,436	4,513	822	27,077	7,871
Midi	30,687	1,492	379	10,584	1,453
Totals	477,272	20,249	..	121,145	21,756

* Excluding tonnage of cattle conveyed.

APPENDIX XL

MOVEMENT OF COMMERCIAL SHIPPING AT THE PRINCIPAL
PORTS (TOTAL OF VESSELS ENTERING
AND LEAVING, 1913-1919)

	1913		1914		1915	
	Number of vessels	Tonnage (thousands of tons)	Number of vessels	Tonnage (thousands of tons)	Number of vessels	Tonnage (thousands of tons)
Marseilles	17,568	21,254	16,289	17,628	12,365	14,431
Havre	13,407	11,109	11,914	..	12,676	6,811
Bordeaux	19,980	6,647	15,638	..	11,381	5,677
St. Nazaire	4,414	2,229	3,049	1,964	3,705	3,641
Rouen	8,793	5,262	7,892	4,706	12,680	7,437
Dunkirk	4,581	5,140	3,283	3,892	2,540	1,535
Boulogne	6,839	7,222	4,780	5,542	3,267	1,529
Calais	4,686	2,543	3,360	1,937	2,071	1,241
Dieppe	3,401	1,214	2,679	1,160	2,213	916
Other ports (Cette, Brest, La Rochelle, etc.)	..	..	..	..	..	..
Total of all French ports	210,670	95,460	171,518	78,272	146,126	64,700

APPENDIX XL

(Continued)

1916		1917		1918		1919	
<i>Number of vessels</i>	<i>Tonnage (thousands of tons)</i>	<i>Number of vessels</i>	<i>Tonnage (thousands of tons)</i>	<i>Number of vessels</i>	<i>Tonnage (thousands of tons)</i>	<i>Number of vessels</i>	<i>Tonnage (thousands of tons)</i>
11,703	12,890	8,352	8,389	8,209	6,143	10,121	10,558
16,788	8,078	15,217	6,960	22,076	7,739	16,825	8,458
11,211	6,860	9,213	4,696	8,787	4,668	9,611	4,358
4,193	8,372	8,838	2,430	3,564	1,952	3,440	1,939
18,113	8,948	17,897	8,069	25,461	9,346	19,784	8,301
4,802	8,027	2,612	1,681	845	544	3,805	3,063
3,149	1,257	4,264	1,410	4,465	1,585	5,249	2,581
2,644	1,030	2,966	718	3,608	719	4,562	1,106
2,132	848	2,251	703	2,725	643	2,465	809
..
161,971	69,362	152,125	53,572	170,695	51,351	166,845	58,397

INDEX

- Academy of Medicine, 54.
 Accidents, measure of industrial activity, 891.
 Acetic acid, 145, 150, 163.
 Aftalion, M., 191, 192, 196, 199, 200.
 Agricultural Labor Service, 39.
 Agriculture, Ministry of, 244, 800; Labor Service, 39, 41.
 Agriculture, number engaged in, 6, 7; lost by invasion, 8, 9; motive power, 12, 14, 15; effect of mobilization, 22, 28, 29, 299; military exemptions, 27, 82, 83; casualties, 29-31, 47; refugees, 87; labor, 88; schools for disabled, 48; prisoners of war, 50-52; wages, 66, 69; mechanical development, 73; implements and machinery, 90, 109, 259, 260, 261, 286, 290, 291, 294, 295, 299, 300; motor traction, 293; windmills, 300; *see also* Fertilizers; Lime shortage.
 Air Service, 51, 52, 147, 156, 345; *see also* Aviation.
 Alsne, the, 7, 10, 13, 14, 890; beet sugar, 129; optical glass, 849.
 Alais, biscuits, 121.
 Albi, the, lime, 837.
 Alcohol, 8, 17, 21, 114, 117, 118, 131-133, 138, 150, 164, 222, 257; effect of invasion, 114; requisition, 118, 132, 138, 145; regulation concerning manufacture, 132, 133; perfumes, 160, 161; output, 114.
 Alkaloids, 140.
 Alloys, development during the war, footnote, 99.
 Alpes-Maritimes, perfumes, 145.
 Alpine region, motive power, 96, 276, 279, 828; saw-mills, 253; coal briquettes, 164; motor car service, 866.
 Alsace-Lorraine, refugee relief, 37; French increase of industrial wealth, textile industry, iron- and coal-mines, 99; potash, 99, 137, 161; chemical development, 137; factories, 168; reinstatement French language, book trade, 184, 189; embroidery, 216; ironworks, 284; metallurgy, 294.
 Alum factories, 149.
 Aluminium, 82, 162, 285, 292, 294, 303; alumina, 146.
 America, trade competition, 130, 162, 165, 193; *exports* to, 393; diet bread, 124; printed novelties, 189; perfumes, 160, 167; soap, 155; candied and preserved fruit, 120, 128, 130; cardboard boxes, 188; wine, 118, 132, 290; tartaric acid, 146; photographic paper, 151; clothing, 212, 213, 214; linen goods, 216; hats and trimmings, 219, 222, 223; gloves, 223, 224, 241, 242; fancy leather goods, 240; dressed skins, 234; furniture, 257-258; cork, 265; steelyards, 291; mineral water, 328; imitation jewelry, 313; *imports* from, condensed milk, 135; semolina, 115; starch, 225; skins, 230, 240, 243; umbrella fittings, 224; machine-tools, 290; wood-work, 252, 257; *see also* United States.
 American Army, front held by, 28; transport, 89; wood-work, 259; artillery, 282; labor, 302; housing, 328; railway construction, 361; commissariat, 126, 134, 302.
 American stocks in France, liquidation, 217, 357.
 Amidophenol, one French factory, 150.
 Ammonia, 135, 149, 162; salts, 137, 138, 142, 149, 154, 155; output, 142.
 Amortization, 96.
 Andelys, musical instruments, 267.
 Angers, umbrellas, 224.
 Anglo-French agreement, 77; *see also* Exchange.
 Angoulême, paper, 173.
 Aniche, glass, 848.
 Anjou, wine, 117.
 Annonay, taweries, 235.
 Antimony, 82, 148; output, 285; antimony pentasulphide, 98, 147.
 Antiseptics, 158.
 Arabia, kidskins, 243.
 Ardèche, the, artificial silk, 153; paper, 175; jewelry, 813, 815.
 Ardennes, the, 7, 10, 266; entirely occupied by the enemy, 389.
 Area, total, of France, 5, 18; invaded territory, 5, 18, 19.
 Argentina, 75, 76, 77; *exports* to, basketry, 227; implements, 290; ceramics,

- 343; *imports* from, skins and furs, 236, 245.
- Ariège, cheese, 135; paper, 138; calcium carbide, 139; combs, 263; electro-metallurgy, 291.
- Armaments, scientific industrial development, 93.
- Armistice, front held by allied armies, 28; war prisoners employed at, 52; number of strikes after the, 65; situation of franc, 78; fall in freight rates, 79; industrial relaxation, 89; adaptation of war industries, 293-295; railways, 356.
- Armies, allied, hotels in occupied areas, 377; front held by each during the war and at Armistice, 28.
- Army, French, industries essential to needs lost by invasion, 19; priority of transport, 23, 81; women's labor, 46; imports, 85, 137, 231; liquidation of stock, 233; *supplies*, food, 23, 123, 125, 130, 131; clothing, 203, 206, 215; head-gear, 218; shoes, 238, 262; laundries, 225; optical glass, 349; sulphuric acid, 139; chemical and pharmaceutical preparations, 150; cooperage, 265; rubber, 172; earthenware and porcelain, 343, 345; leather and hides, 143, 231, 232, 234, 235; felt, 221; wood-work, 250-255; tools, 261; motor cars, 298; books, 184, 186; pipes, 262; lime, cement, etc., 336; fire-clay articles, 339.
- Arsenic, 285.
- Artificial limbs, 262, 304.
- Artillery Service, 251.
- Artillery, manufacture of, 281, 282, 286.
- Asphalt, 108, 321, 427.
- Aspirin, 96, 97, 99, 137.
- Association of Provincial Banks, 372.
- Aube, 7.
- Aubusson, tapestry, 394.
- Aude, wine, 118; chicory, 122; explosives, 176; hats, 218; electro-metallurgy, 291.
- Augé-Laribé, M., 369.
- Australia, skins, 230, 240; gold, 310; sapphires, 318.
- Austria, pre-war market, 23, 74, 76, 77, 234, 264, 355; trade competition, 98, 179, 203, 219, 266, 305, 318; sugar production, 113.
- Auvergne, jam, 130; cutlery, 304.
- Aviation, 61, 97, 98; standardization, 94; engines, 290, 292; fittings, 172, 345, 373; silk, 198; varnish, 147; petrol, 159; wood-work, 250, 252, 255, 258; factories, 255, 256, 258; landing grounds, 328; *see also* Air Service.
- Baccarat, cut-glass, 348.
- Bailleul, lace, 215.
- Bakeries, 115, 120, 121, 124, 125; women's labor, 46; labor-saving machinery, 95, 97, 125, 290, 300; making and sale of bread and pastry controlled, 122, 125.
- Balkans, the, loss of market, 23; diet bread, 124; leather, 234.
- Banks, 93, 198, 214, 330, 369, 371-373, 400; immobilized deposits, 23; securities, 71; *see also* Loans; Credit; Mortgages.
- Barium, sulphate, deposits, 146; carbonate, 149.
- Barometers, aneroid, 308, 309.
- Baryta, 146, 149.
- Basket-work, 8, 226, 227.
- Bassens, port, 360, 361.
- Basses-Pyrénées, tannic extracts, 157; sandals, 220; hotels, 375.
- Baudin scheme, ports, 359.
- Baumé scale, sulphuric acid, 139, 146.
- Bauxite, scarcity, 146.
- Beaded embroidery, 216.
- Beads, 354, 355.
- Belfort, 7.
- Belgium, 75-77; front held by, 28; refugee relief, 37; labor, 40, 41, 251, 353; military exemptions, 339; chicory, 131; diamond competition, 319; *exports* to, tires, 173; printing and engraving, 178; pipes, 263.
- Benzene, 139, 146, 225, 305, 352.
- Benzol, 139, 145, 146.
- Berry porcelain, 344, 346, 347.
- Besançon, watches, 307; horological school, 309.
- Biarritz, spas, 376.
- Binoculars, 307.
- Birth-rate, 40, 91, 215.
- Biscuits, 120, 121, 126.
- Bismuth, 82.
- Bituminous schist, 108, 148, 161, 427; *see also* Petroleum refineries.
- Bleaching stuffs, 149.
- Boiler-making, 12, 305, 389.
- Bolivia, hats, 219.
- Book industry, 178-183; sewing, 189; booksellers, 178; *see also* Printing and Binding.

- Boot and shoe trade, 97-98, 214, 229, 231, 233, 236-239; 'national boots,' 233, 238, 239, 287; boot-trees, 266; *see also* Shoes.
 Boots, rubber, 172, 173.
 Borax, 151.
 Bordeaux, 55, 58, 90, 99, 323, 359-363, 380, 397; sugar, 116; meat, 119; card-board, 174, 176; lithography, 188, 189; dressmaking, 210, 212; cooperage, 265; gold-leaf, 317; earthenware, 342; hotels, 378.
 Bottles, *see* Glass.
 Bottle stoppers, metal, porcelain and rubber, 265, 345; *see* Cork.
 Bottle-straws, wicker bottle covers, 226, 227.
 Bouches-du-Rhône, 7; coal-mines, 106.
 Boulogne, 361; salt herring industry, 128; pencils, 144; pens, 296.
 Boulogne-sur-Mer, fishing, 119.
 Box factories, metal, 302.
 Braid, gold and silver, 316.
 Brandy, export prohibited, 265.
 Brazil, 76, 77; linen goods, 215; hides, 233; bricks and tiles, 338; pharmaceutical preparations, 151.
 Brest, 361, 362.
 Breweries, 117, 134, 291; output, 117; lost by invasion, 117, 135; beer, 8, 17, 117, 122, 134; banks, 371.
 Brick works, 6, 8, 19, 20, 25, 61, 320, 333-355, 398.
 Bridges, 51-52; destruction, 388.
 Briey, iron-mines, 107, 371.
 British Army, 117, 134, 135; front held by, 28; railway construction, 361.
 British Army Services, printing presses, 185; laundries, 225.
 Brittany, biscuits, 126; canned vegetables, 128; chicory, 131; explosives, 132, 158; dairy products, 135; flax, 195; wood-work, 253, 258; dockyards, 260.
 Bromine, 149.
 Bronze work, 99, 306.
 Broom factories, 226, 266.
 Bruges, lace makers, 215.
 Brush factories, 266.
 Brussels Convention, 112; *see also* Sugar industry.
 Budget, 93.
 Buenos Aires, hides, 232; cutlery, 304.
 Building trade, and materials, 60, 61, 62, 73, 90, 109, 250, 252, 256, 320-332, 333, 335; motive power, 14, 15, 21; raw materials, 320; loss by invasion, 19, 20, 21; effect of mobilization, 34; casualties, 47, 49; strikes, 65, 397; securities, 71; liberated regions, 253-254; by districts, 390, 398, 399, 401; imports and exports, 452.
 Buildings, private, value, 320-322; post-war stagnation, 329.
 Bureau Véritas, 94.
 Burgundy, hops, 134.
 Butter, *see* Dairy products.
 Butter factories, nut, 156, 164.
 Button factories, 266, 354, 401.
 Cabinet-making, 248, 251, 256, 257, 258.
 Caen, blast-furnaces, 276; munitions and metals, 396.
 Caffeine, 140.
 Calais, 55, 58, 325, 387; biscuits, 120; chicory, 122; margarine, 135; soap, 141; dressmaking, 210; saddles, 244; steel-works, 287; earthenware, 342; transport, 361-363, 367; windmills, 388.
 Calcium carbide, 137, 139, 145, 147, 162, 294.
 Calvados, cast iron, 283.
 Camargue, 175.
 Canada, *exports* to, hats, 219-220; gloves, 242; ceramics, 343; *imports* from, furs, 214.
 Canals, 325, 327, 330, 358, 365, 368; destruction, canal locks, 388.
 Candle factories, 155-157, 165.
 Cannes, dressmaking, 212.
 Cantal, the, umbrellas, 224, gloves, 241.
 Cantharidin, 140.
 Cap factories, 220; *see also* Hats.
 Capital, working, 23, 93, 371.
 Carbolic acid, 138, 146, 147, 150, 154.
 Carbonic acid, 146.
 Cardboard, 6, 12, 19, 169-176; imports and exports, 434.
 Cardiff, 79.
 Carmaux, glass-works, 348.
 Carpentry, 248, 251, 255, 260.
 Carriage and wagon builders, 248, 259-260.
 Cash registers, 308.
 Casualties, 26-30, 91; by industries, 29; *see also* Disabled men.
 Cattle, breeding, 8; dearth, 127; fodder, 129, 141; reduction and requisition of milch cows for slaughter, 118, 135; *see also* Slaughter.

- Caussade, the, hats, 218.
 Celluloid, 171, 173.
 Cellulose, 147, 172, 174, 175, 188.
 Cement, 321, 326, 334, 335, 336, 337, 341; exports and imports, 454.
 Census, pre-war, 3; *see also* Population.
 Central America, 76.
 Central Service for Foreign Labor, 39, 40-42.
 Central Wood Office, 252, 253, 254.
 Ceramics, 343.
 Cette, 265, 363, 365, 367.
 Châlon-sur-Saône, sugar, 116.
 Charcoal, 145, 153, 163.
 Charentes, cooperage, 265.
 Charpenay Bank, 372.
 Chazelles-sur-Lyon, hats, 218.
 Cheddite, 149.
 Cheese, *see* Dairy products.
 Chemical industry, 6; 42, 60, 61, 62, 97-98, 136-168, 402; motive power, 12, 13, 14, 15, 17, 21, 73; loss by invasion, 19, 20; effect of mobilization, 25, 138; casualties, 49; exemptions, 139, 145, 148; labor, 44, (prisoners of war) 148; strikes, 65, 397; securities, 71; colonies, 88; progress, 96, 145, 328; production and consumption, 1913, 430; imports and exports, 432.
 Cher, porcelain, 344.
 Cherbourg, 323.
 Chicory, 121, 122, 131.
 Chile, nitrates, 142, 167; hats, 219; basket-work, 227.
 China, 76; hats, 219; umbrellas, 224, 305; labor, 41, 163.
 Chlorates factories, 162.
 Chlorine factories, liquid, 145, 147, 161, 163.
 Chocolate factories, 115, 120, 122, 130.
 Chromolithography, *see* Lithography.
 Cider-factories, 8, 132, 133, 134.
 Cigarette paper, 171.
 Cinchona, 133; *see also* Quinine.
 Cinema, 97, 98, 100, 164, 330, 373; *see also* Entertainment businesses.
 Clémenceau, M., 84.
 Clémentel, M., 369.
 Clock- and watch-making, 99, 307, 308, 309; *see also* Horological schools.
 Clog-makers, 238-239, 261.
 Clothing, 60, 61, 73, 85, 202-228, 401; motive power, 14, 15; loss by invasion, 19, 20, 21; effect of mobilization, 25, 206; casualties, 49; output, 203; rubber clothing, 172, 173.
 Cluses, horological school, 308.
 Coal, 16, 18, 40, 59, 70, 84, 89, 95-96, 97, 99, 103-107; lost by invasion, 11, 16, 19, 21, 23, 59, 60, 77, 103, 109, 387; devastation, 109; effect of mobilization, 105; labor, 105, (prisoners of war) 105; percentage of personnel by periods, 411; coal freight rates, 79; English coal, 91, 103, 174, 354; coal briquettes, 159, 164; distillation, 96, 142, 340; output, 59, 104, 106; securities, 71; priority of transport, 81; *see also* Fuel, substitute; Mines and Quarries; Extractive Industries.
 Cocoa, 122, 131.
 Cognac, lithography, 188; glass-works, 348.
 Coke, 16, 103, 106, 107, 145, 154, 163, 225; output, 106, 107; metallurgical coke, 154, 274, 295; coke-oven device, 290; German coke, 137.
 Col system, building, 252.
 Colonial Labor Services, 39-41.
 Colonies, trade, 74, 75-77, 85-88; *imports* from, value, 86-88; fertilizers, 137, 157; phosphates, 143, 163, 166; ground-nuts 156; sheep- and goatskins, 236; *exports* to, hats, 219-220; flowers and feathers, 222; umbrellas, 224; ironmongery, 290; porcelain, 344; *resources*, wood, 346-348; cork, 348; rubber, 169; *see also* Commerce; Labor.
 Comb factories, 171, 263-264.
 Comité des Forges, 269, 283.
 Commerce, 18, 31, 74, 75, 78, 92; foreign and colonial trade, 420; *see also* Imports and exports; Colonies; Markets; Shipping.
 Commerce, Ministry of, *Report on French Industry, present and prospective* (1919), 16.
 Commercial undertakings, number engaged, 6, 7, 9, 28-29; motive power, 12; loss by invasion, 19, 20; effect of mobilization, 22, 23, 25; casualties, 31, 49.
 Committee on Female Labor, 53-54.
 Compagnie Nationale des matières colorantes et produits chimiques, 168.
 Concrete, reinforced, 327, 330, 331, 336.
 Condition of workers, 64; women, 53-54; post-Armistice, 295-296; *see also* Hours of Labor; Wages; Health.

- Confectioners, 120, 130.
 Congrès National du Livre, 179.
 Consumption: coal, 59, 103; coke, 107; alcohol, 114; chemicals, 136, 430 (1913); nitrate of soda, 142; superphosphates, 143; dyes, 168; rubber, 169-170; paper, 170; wool, 193; cotton, 193, 194; linen and hempen yarn and fabrics, 197; jute, yarn and fabric, 197-198; leather and skins, 231; timber, 247; cast iron (*see* footnote, 274), 277, 285; steel, 282, 285; metals other than iron, 285.
 Containers, *lack of*, tins, 119, 120, 121, 127; casks, 133, 264, 265; bottles, 117, 122, 132, 133, 135, 160, 161, 878; cardboard boxes, 142, 161; cylinders for oxygen, 149; barrels, 152, 157, 264; *supply of*, tins, 127 (imported), 286, 302; stone-ware bottles, 341, 345; boxes, 176, 188, 302, 345; for explosives, 336, 340.
 Cooperage, 248, 264.
 Co-operative benevolent funds, 35.
 Copper, 17, 21, 80, 82, 88, 158-159, 257, 291, 295; output, 285; sulphate of copper, 158, 162.
 Copra, 156, 164.
 Cork industry, 98, 248, 265; output, 248.
 Cornély embroidery machine, 217.
 Corréze, 174, 328.
 Corset industry, 98, 204, 217.
 Corsica, cork, 248.
 Cost of living, 64, 68-69, 391; effect of mobilization, 65; post-Armistice, 397.
 Côtes-du-Nord, 13.
 Cotton, 17, 70, 82, 88, 97, 193, 194, 222; cotton goods, output, 194; loss of machinery by invasion, 191.
 Cotton-bleaching, explosives, 138, 139, 145, 146, 161, 176.
 Cotton-spinning, 67, 389, 401.
 Crèches, 54.
 Credit, 23, 381.
 Crédit Foncier, 371.
 Creil, forges and rolling-mills, 287.
 Creuse, the, water-power, 328, 395.
 Creusot Works, 286, 396.
 Crucibles, 333, 335, 339, 340, 341.
 Curriers, 234.
 Cutlery, 291, 304.
 Cyanamide, 97, 137, 138, 147, 149, 161, 162, 291.
 Cycles, 173, 298, 299.
 Cyprus, umbrellas, 224.
 Czecho-Slovakia, labor, 42; sugar, 113.
 Dairies, 135; *products*, milk, 122, 135; condensed milk, 122, 135; cheese, 118, 122, 135; butter, 118, 135; *see also* Margarine; Nut Butter.
 Dalbiez law, 27, 32, 395; *see also* Exemptions.
 Dauphiné, hydro-electric power, 175; banks, 372, 373.
 Decauville railways, 233.
 Defense, contribution by industry to, 26.
 Demobilization, 90, 165; *see also* Armistice.
 Denmark, sugar, 113; hats, 219.
 Devastated regions, 388, 391; power stations, 73; mines, 109; factories, 73, 131, 162, 166, 167; removal of machinery, 5, 109, 134, 135, 187, 189; tanning equipment, 234; forests, 247; steel-works, 275; water-ways, 359; *reconstruction*, loans, 92, 93; machinery, saw-mills, 254; *see also* Invaded regions; Liberated regions.
 Diamond cutting, 318, 319.
 Dieppe, 362.
 Diesel motors, 95.
 Dijon, 55, 57, 58, 90, 380, 395; biscuits, 121; mustard factories, 122; chocolate, 130; phosphates, 163; wood distilleries, 144; clothing, 211; tanneries, 232; shoes, 237; leather, 240; needles, 306; earthenware, 342; glass, 348-355.
 Dinitronaphthalene, 147.
 Disabled men, 47-50; functional education, 24, 47-48, 263, 267, 308, 316; employment, 49, 262, 289, 304, 315, 316, 318, 337, 342, 365, 396; *see also* Casualties.
 Distillation of volatile products, furnace gases, 96, 142, 340.
 Distilleries, *see* Coal; Tar; Liqueur; Alcohol.
 Dividends, 71, 93, 390.
 Dockyards, 251, 260, 261, 296.
 Dolls, 98, 99, 248, 267, 343, 345, 347.
 Domestic implements, 303.
 Domestic service, 6, 7, 9, 28-29, 88, 99.
 Dordogne, 227, 328.
 Doubs, the, forests, 251; watch escape-ments, 307.
 Dressmaking, 209-214, 400; transfer of one establishment to America, 213.
 Drôme, the, wood-work, 257; stone-ware, 340.

- Drugs, 23, 139-140, 150, 151, 163, 164.
Dunkirk, 323, 359-360, 361, 363, 367, 387;
breweries, 117; chicory, 121; jute, 197.
Durance, the, 331.
Dutch Indies, perfumery, 167.
Dyes, 96, 97, 98, 100, 137, 144, 149, 153,
161, 162, 165, 166, 168, 218, 219, 221,
222, 225, 227, 236, 241; German dye
factories in France at outbreak of war,
144; aniline, 137, 152, 163, 166, 225;
leather, 152, 235; natural colors, 144,
152, 163; synthetic, 144; indigo, 166;
dye-works, 225, 226; output by coun-
tries, 168; present value of factories,
168.
Dynamite factories, 162, 163.
- Earth-work, 6; loss by invasion, 19, 20;
effect of mobilization, 25; prisoners of
war, 50; *see also* Roads; Railway em-
bankments.
Earthenware, 342.
Ebonite works, 171, 172.
Economic index-number, 66, 92, *et pas-
sim*.
Egypt, flour, 115; printed novelties, 189;
basket-work, 227; combs, 263; cutlery,
304, 305; jewelry, 314; ceramics, 343.
Eight-hour day, 90, 91, 97, 180, 390, 391,
394, 397, 400; *see also* Hours of labor;
Six-day week.
Electric industries, 96, 371.
Electric power, 13, 14, 21, 34, 96, 135, 149,
163, 172, 325, 328, 396, 401; banks, 373.
Electrical apparatus, 99, 306, 345, 347,
350, 351.
Electrification of industry, 96, 98, 294,
368, 390, 393.
Electro-chemistry, 32, 147, 149, 162, 167,
328; banks, 372-373.
Electro-metallurgy, 98, 175, 276, 291, 295,
325, 372; banks, 372, 373.
Embroidery, 215, 216, 217; machine-
made, 217.
Employment agencies, 24, 34, 38-42, 48-
49, 91.
Enameling, 8.
Engineering, 269, 286, 389; products, 17;
women employed, 45, 394; war prison-
ers, 51-52; wages, 68; securities, 71;
structures destroyed, 109; construc-
tional, 296; marine, 296; post-Armi-
stice, 297; banks, 371-372.
Engineer Service, Military, supplies, 251,
252, 253, 255, 261, 264, 326, 338, 351.
- Engraving, 178.
Entertainment businesses, 6, 9, 373, 375;
see also Cinemas.
Épernay, wine, 117, 118.
Épinal, 185.
Esparto grass, 186, 227.
Establishments, total number pre-war, 9,
19; invaded area, 10, 20; loss by inva-
sion, 19, 405; effect of mobilization, 25;
number employed pre-war to July 1917,
45; adapted to war needs, 139, 145,
154, 173, 259, 286, 288, 331, 350, 373,
388; transformation after Armistice,
132, 133, 162, 168, 173, 292, 293, 294,
393; *by industries*, food, 111, 112;
chemicals, 136, 137; rubber, paper and
cardboard, 169; printing and binding,
177; textile industries, 192; textile
goods, clothing, straw, feathers, and
hair, 205; leather and shoes, 230, 231;
wood-working, 249, 250; metallurgy,
269, 270, 288; precious metals and
stones, 311, 312; building and public
works, 324; brick, pottery and glass,
333; transport, 361, 362; miscellaneous
trades, 374, 375.
Exchange, rate of, 75, 77-78, 80, 91, 92,
190, 206, 225, 243, 301.
Exemptions, provisional military, 24, 26,
27, 31-34, 39, 396, 397, 399; withdrawal
of exemptions, 292; Belgian exemp-
tions, 339; *by industries*, coal, 103, 105;
flour-mills, 115; chemicals, 139, 145,
148; cardboard industries, 176; print-
ing, 186; textile industry, 191; ship re-
pair, 260; metallurgy, 269, 271, 274,
293; gold-leaf, 317; fire-clay goods,
339; ports, 359; wheelwrights and
smiths, 365; *see also* Dalbiez law;
Furloughs.
Explosives, 32, 42, 58, 62, 73, 94, 132, 136,
138, 139, 142, 144, 145, 146, 147, 175,
176, 225, 350, 373; factories, 168, 225,
302, 327; German factories in France
requisitioned, 144; alcohol, 132, 133,
138; sulphuric acid, 138, 139, 142, 148,
149, 160, 162; nitrate of soda, 143;
nitric acid, 160, 162; containers, 336,
340; *see also* National Explosives Fac-
tories; Explosives Services; Munitions,
Gun-cotton; Cotton-bleaching.
Explosives Services, 132, 139, 141, 148,
154, 158, 251, 264, 336.
Exports and imports, 18, 74-77, 80-88,
99; army needs, imports, 137; total,

- 1913, 860, 421; 1912-1921, 422; through ports by country of origin or destination, 861; of certain commodities, 1912-1922, 424; *by groups*, food, 428; chemicals, 430; rubber, paper and cardboard, 434; printing and binding, 436; textile industries, 440; textile goods, 442; leather and skins, 444; wood-working, 446; metallurgy, 448; precious metals and precious stones, 450; building and public works, 452; lime, cement, pottery and glass, 454; *by individual industries*, alcohol, 114; ammonia salts, 142; building materials, 320, 324; boots and shoes, 229; chemicals, 136; chicory, 122; cinema films, 373; clothing, 202, 203, 208, 209-210; coal, 103, 104; coke, 107; cooperage, 248, 264; cork, 248, 265; corsets, 204, 218; cotton goods, 194, 195; dressmakers' products, 211-212; firewood, 246, 247; flax and tow, 196; food, 112, 124; furniture, 247; gloves, 229, 242; hats and millinery, 204, 218, 219, 223; hemp and tow, 196; hides, pre-war, 229; iron, cast (*see* footnote, 274), 277, 284; iron, wrought, 284; jute and ramie, 197, 198; linen goods, 202; liqueurs, 133; meat, refrigerated, 135; metals other than iron, 285; milk, condensed, 135; music, printed and engraved, 190; oil-cake, 141; paper, 170; perfumes, 144, 167; pharmaceutical preparations, 140; precious stones and metals (jewelry), 812; printing and binding, 177, 178, 179; printing paper, 187; rubber, 169-170; ships, wooden, 261; silk, 198-200; skins, raw and worked, 230, 231; soap, 155; steel, 282, 284; superphosphates, 143; textile industry, 191; timber, 246, 249; toys, 267, 301; umbrellas and parasols, 205, 224; waters, mineral and aerated, 370; wine, 133; wood, 173; woolen goods, 193.
- Extractive industries, 9, 12, 103; *see also* Mines and Quarries.
- Factories, exemptions, 33; war prisoners, 51-52; reports, 55; motive power, 72; equipment, post-war, 297; building, 827, 828; state factories, post-war use, 167; remodeling of plant, 94-95, 130, 139, 293, 890; *see also* Establishments; Labor Inspectors; Reports.
- Farinaceous pastes, 115, 123, 124.
- Fashion papers, German and Austrian origin, 179.
- Fats, 135, 138, 165; *see also* Oils; Olein; Stearine; Tallow.
- Feathers, boa trade, 223; *see also* Straw, feathers and hair; Flowers and feathers.
- Fécamp, salt herring industry, 128.
- Felt, 221.
- Ferro-silicon, 139, 162, 276, 292.
- Fertilizers, 136-139, 141-143, 145, 157, 158, 163, 166, 167; organic manure, 158; employment of war prisoners, 51-52.
- File-factory, 305.
- Finance, number engaged in, 6, 9; loss by invasion, 19, 20.
- Finland, wood, 172.
- Fire-clay goods, graphite crucibles and stone-ware, 339.
- Fireworks industry, military rockets, 139, 146, 161.
- Fish, preserved, 118-119, 127, 128.
- Fishermen, 7.
- Fisheries, 6, 8, 9, 128.
- Flax, 8, 82, 133, 195, 196; loss of machinery by invasion, 191.
- Flemish lace industry, 215.
- Flour, 12, 34, 115, 122, 123, 124, 388.
- Flowers and feathers, 222; *see also* Straw, feathers and hair.
- Fois gras, 119, 127.
- Fonte, *see* footnote, 274.
- Food and drink, 6, 8, 17, 23, 38, 42, 60, 61, 73, 81, 97, 98, 111-135, 389, 397, 398, 401, 402; motive power, 12, 14, 15, 21; loss by invasion, 19, 20; effect of mobilization, 25, 120, 121, 122; casualties, 49; employment of war prisoners, 52; securities, 71; priority of transport, 81; imports from colonies, 87; export and import, 428.
- Food Administration, 123, 124, 131, 134, 174.
- Foreign Labor Service, 40-42; *see also* Labor, foreign and colonial.
- Forests, 6, 8, 9; war prisoners, 51-52; area, 174, 246; judicious use, 247; over-cutting, 254; devastation, 247.
- Forging, 12, 286, 287.
- Formic acid, 145, 163.
- Formol, 144, 147.
- Fouché condenser for drying leather, 234.
- Fougères, leather, 237.

- Foundries, 281, 288, 295, 389.
 Franc, diminishing power, 71, 77-78, 91, 92.
 Free zone, 308, 309.
 Freight rates, 74, 78-80, 92, 120, 131, 155, 220.
 French army, front held by, 28; *see also* Army.
 Freycinet scheme, ports, 359.
 Fruit, preserved, 97, 118, 126, 128; jams, 120, 128, 130; candied, 120, 130.
 Fuel, substitute, 95, 96, 157, 219, 227, 337, 343, 346, 349, 355, 390, 395, 398.
 Funeral wreaths and emblems, 227, 345.
 Fur industry, 214, 245; *see also* Leather and Skins.
 Furloughs, 24, 26, 31-34, 39; *see also* Exemptions.
 Furniture, 73, 90, 98, 247-248, 251, 255, 256, 258, 390, 398; motive power, 14, 15, 21.
 Gaines, 290.
 Galvanized ware, 303.
 Gard, mines, 106.
 Gas, poison and asphyxiating, 145, 146, 147, 158; masks, 172.
 Gas-works, 34, 142, 153-154, 161, 164; restriction, 142, 164, 390.
 Gelatine, 160.
 Germany, 23, 74, 75-77, 137; railways, 356; toy output, Nuremberg, 248; German dye factories in France outbreak of war, 144; pre-war trade, Franco-German, 23, 74, 75-77, 137; *imports* from, motors, 95; brewing, 117; dyes, 137, 166, 235; gloves, 223, 242; music, 190; fashion papers, 179; perfumes, 145; *imports* to, lavender, 145; tires, 173; skins, 234; pre-war competition and supplanted markets, 98, 99, 120, 122, 124, 130, 140, 145, 147-153, 157, 160-162, 167, 172, 173, 176-179, 188-190, 203, 222, 224, 235, 238, 240-242, 245, 258, 263, 266-267, 290, 294, 296, 299, 305, 308, 313, 314, 318, 340, 343-346, 349-351, 353-355, 393, 395, 401; post-Armistice trade competition, 295, 301, 347, 353.
 Gironde, blast-furnaces, 276; metal novelties, 301.
 Glass-works, 6, 8, 11, 17, 34, 49, 60, 61, 62, 97, 98, 142, 320, 331, 333-355, 394, 398; loss by invasion, 19, 20, 21, 117, 335, 348; effect of mobilization, 25; adapted to war needs, 289, 290, 352; output, 334; imports and exports, 38, 454; consumption nitrate of soda, 142; bottles, 17, 117, 335, 343, 349, 351; lamp-chimneys, 23; mirrors, 17, 335, 352; cut glass, 348.
 Gloves, 100, 223, 224, 229, 235, 241-244, 393.
 Glucose, 120.
 Glucosides, 140.
 Glue-factories, 141, 160.
 Glycerine, 141, 142, 155, 156; glycerophosphates, 150.
 Goatskins, 236.
 Gold, purchasing power, 92.
 Gold, 310-317; *see also* Precious metals.
 Gold-leaf manufacture, 316, 317.
 Goldsmith's trade, 311, 313, 314.
 Golfe Juan, perfumes, 160.
 Grain, 115, 123, 132, 134, 164.
 Graphite, lack, 153.
 Grasse, perfumes, 160.
 Graulhet, taweries, 234-235.
 Great Britain, 75-77, 153, 160, 162, 174, 393; exchange, 77, 78; freights, 79-80; trade competition, 156, 162, 164, 189, 319; *imports* from, coal, 91, 103, 116, 274, 354; tin-plate, 303; umbrella fabric, 224; cloth, 208, 209; felt, 221; paper, 186; *exports* to, wine, 118; preserved fruit, 128; diet bread, 124; oil-cake, 141; tartaric acid, 146; borax and boracic acid, 151; perfumes, 167; tanning and tannic extracts, 157, 234; sheepskins, 234; printing and engraving, 178; lithography, 190; clothing, 212, 213; linen goods, 216; hats, 218-220; fancy leather, 240; gloves, 223, 242; cork, 265; buttons, 266; earthenware, 342, 343; porcelain, 345; mineral water, 378; timber, 249; wood-work, 252; pipes, 262, 263; cutlery, 304; ironmongery, 305.
 Greece, labor, 40-41; arms, 281; ironmongery, 305.
 Grenades, 286, 290, 302.
 Grenoble, leather and gloves, 229, 241, 242, 243; silk-mills, 372; banks, 372.
 Ground-nuts, 87, 156, 164.
 Gun-cotton, 139, 173, 264.
 Guns, 282; *see also* Machine-guns; Artillery; Ordnance.
 Halluin, 198.
 Handkerchiefs, 217.

Harbors, 323, 328; employment war prisoners, 52; *see also* Ports.
 Harness-making, 229, 231, 244.
 Hats, 218-220.
 Haute-Garonne, the, calcium carbide, 139; zinc, 291.
 Haute-Marne, the, timber, 251.
 Haute-Saône, the, timber, 251.
 Haute-Savoie, wood, 254; clock-work, 307, 308.
 Haute-Vienne, 174.
 Hautes-Pyrénées, cement, 337.
 Havre, 331, 359, 361, 396.
 Headquarter Staff, employment war prisoners, 52.
 Health Department, 152, 262, 304, 349, 350, 351, 376.
 Health of workers, 45, 53-54; *see also* Condition of workers.
 Hemp, 8, 82, 195-197.
 Hempen cloth, 8.
 Hérault, 339; wine, 118; chicory, 122; meat, 127.
 Hides, 68, 143, 233, 234; pre-war imports and exports, 229; imports, 231; export prohibited, 234.
 Horological schools, 308, 309.
 Horses and mules, requisitioned, 253, 362.
 Hosiery, 81, 98, 216, 306, 379, 390, 391.
 Hospitals, 326, 328, 375; laundries, 225; furniture, 257, 258.
 Hotels and restaurants, 369, 375-378, 394; value of French hotels, 369; securities, 71.
 Hours of labor, 53-54; *see also* Eight-hour day; Six-day week.
 Housing, 254, 288, 295, 326, 327, 329, 330, 391.
 Hydraulic power, 12-14, 73, 337; banks, 372; *see also* Power.
 Hydrochloric acid, 145, 149, 163, 308.
 Hydro-electric power, 95-96, 175, 279, 326, 327, 328, 400, 401; *see also* Power.
 Hydrogen, 147, 156; peroxide, 149.

Ice factories, *see* Refrigeration.
 Immigration, organization of, 91.
 Imports, *see* Exports and Imports.
 India, 220, 354, 355.
 Indre, the, linen factories, 394.
 Industrial activity, analysis by districts, 410; by groups, 418; development as result of war, 197-198; *see also* Accidents.

Industrial Reconstruction, Ministry of, 254.

Industries, pre-war, 8-21; motive power, 11; effect of mobilization, 22-54; casualties, 29, 30, 47 (*see also* Disabled men, functional education); prisoners of war, 50-52; employment, 7, 18; numbers employed and variations, 55-63; fluctuations, 80-85; scientific development, 93; summary of activities, 1914-1921, 89-91; conditions by districts, 387; loss by invasion, 405; *see also* Establishments; Factories.

Industry, Report on French, present and prospective, Ministry of Commerce, 16.
 Insurance, 369.

Interior, Ministry of, 37.

International Exhibitions, 99; *see also* Lyons Fair; Leipzig Fair.

International Labor Bureau, 69; Washington Conference 1919, 91.

Invaded regions, loss of area, 5, 18, 23, 388, 389; population, 4, 5, 19; output, 16; exports and imports, 18; industrial groups, 8-9, 17, 19; plans for rebuilding, 327, 338; *see also* Liberated regions; Devastation; Mines; Coal; Iron and steel; Breweries; Machinery.

Iodine, 137, 150, 151.

Iron and steel, 8, 16, 17, 40, 82, 99, 269-309, 350, 371; priority of transport, 81; output iron-mines, 104, 107, 108, 378; output iron and steel by areas, 273, 275; effect of invasion, 11, 19, 21, 74, 77, 270, 271, 275, 276, 279, 281, *see also* Mines; ironworks, 270-284, 287, 294; crude metal output, 273; pig-iron, 16; cast iron (*see* footnote, p. 274), 270-277, 283, 285, 371; cast iron output, 271-274, 277, 284, 285; wrought iron, 283-285; sheet iron, 8, 286; steel-works, 270-274, 279-280, 286, 287; blast-furnaces, 270, 272, 274, 276-277, 283, 286, 287, 294, 332, 336, output, 277; crude steel, 285; steel output, 271, 273, 274, 278, 283, 284; by regions, 279; weld steel, 283-285; steel scrap, *see* Projectiles; steel alloys, 276, 294; cast steel, output, 285; sheet steel, 303; *processes*, open hearth, 271, 272, 279, 283, 293; Martin furnace, 271, 272, 278-280; crucible, 271, 272, 278, 279-280, 283, 293; Thomas, 272, 274, 278-280, 283; Electric furnace, 271, 272, 275, 276-280, 283, 289, output, 276; Bessemer (*see* foot-

- note, 272), 283; *castings*, hematite iron, 275; synthetic, 275, 276, 291, 292, 872, output, 275; with wood fuel, 276; finished products, 271, 281, 282; banks, 871-872; *see also* Mines and quarries; Rolling mills; Metallurgy; Metals.
- Ironmasters, Committee of, 89.
- Ironmongery, 294, 805, 880.
- Isère, 18, 14, 229, 829, 401.
- Italy, exchange, 77-78; sugar yield, 183; embargo Italian exports, 116, 248; trade competition, 175, 263; French exports and imports, 76-77, 160, 190, 257, 893; *imports* from, pyrites, 148; sulphur, 159; cooperage, 264; umbrella fittings, 224; *exports* to, diet bread, 124; tannic acid, 157; shoes, 238; gloves, 242; machinery, 800; watches, 807; surgical apparatus, 804; ironmongery, 805; goldsmiths' work, 818; jewelry, 814; porcelain, 845; *see also* Labor, foreign and colonial.
- Jam, *see* Fruit.
- Japan, 76, 219; French chartering of Japanese ships, 80; trade competition, 153, 178, 228, 224, 267, 805, 817.
- Jeumont, plate glass, 848.
- Jewelers, Chamber of, 818.
- Jewelry, 99, 811-819; *see also* Precious metals; Precious stones.
- Joffre, General, 26.
- Joiners, 251, 255.
- Jura, the, rubber, 172; wood, 251; saw-mills, 258; metals, 805; optical goods, 807; imitation stones, 818; motive power, 828.
- Jute, 8, 82, 195-198, 207, 222; output, 198.
- Labor, effect of invasion, 8; loss of workers by invasion, 408; regulation, 58-54; Labor Services, foreign and colonial, 89, 40-42, 62, 90, 91, 116, 183, 141, 155, 158, 159, 168, 172, 189, 221, 244, 261, 269, 274, 289, 293, 826, 827, 836, 838, 839, 848, 849, 868, 865, 892, 896, 897, 898, 400, 401; *see also* Refugees; Personnel; Furloughs; Exemptions, Dalbiez law; Women's labor; Foreign Labor Service; Employment agencies; Prisoners of War; Machinery, labor-saving.
- Labor Department, 288.
- Labor Exchanges, 207.
- Labor Inspectors, reports, 22, 24, 42, 48, 48, 58-54, 55, 56; food, 112, 128; chemicals, 187; publishers, 184; textile industries, 191; clothing, 206, 208, 212; gloves, 243; wood-working, 255; wheelwrights, 259; metallurgy, 269, 287, 293; bricks, pottery, glass, 833; fire clay goods, 840; porcelain, 846; retail trades, 869; entertainment businesses, 874; by district, 887, 891, 894.
- Labor, Ministry of, 53, 56, 64; motive power, 12; employment January 1915, 26; Foreign Labor Service, 41; disabled men, 48; prisoners of war, 50.
- Laboratories, scientific and industrial research, 93; German, 187.
- Lace, 215, 216.
- Land drainage, war prisoners, 52.
- Landes, the, 148, 160, 248, 253.
- Laundries, 225-226.
- Lavelanet, 263.
- Laydernier Bank, 872.
- Lead, 17, 82, 88; output, 285, 828; red lead and litharge, 162.
- Leather and skins, 6, 49, 60, 61, 82, 97, 98, 229-245, 401, 402; loss by invasion, 8, 19, 20; effect of mobilization, 25; dyes, 152, 235; Spanish leather, 221; skins and furs, 230; chammois leather, 242; dressed leather and skins, imports and exports, 229; imports and exports, 444; *see also* Hides.
- Leather goods, fancy, 229, 240.
- Leclerc, M. Max, publisher, 179.
- Leipzig, 178, 179; printed music, 190; Leipzig Fair, 99.
- Liberated regions, 44, 52, 90; factories, 59; loans, 92-95; books, 184, 189; meat, 127; shoes, 239; clothing, 209; restoration, buildings, furniture, etc., 50, 90, 91, 253, 254, 255, 256, 257, 258, 826, 829, 830, 854; wages, 256, 391; glass manufacture, 353; agricultural implements, 259; motors, 294; machinery recovered, 294; lime, plaster and cement, 837; bricks, 839; *see also* Alsace-Lorraine; Invaded regions.
- Lighting restricted, 142, 164, 890.
- Lille, 55, 57, 58, 90; jute, 198; clothing, 208; metallurgy, 287; leather and tanneries, 231, 237; *see also* parenthetical note, 887.
- Lime, 6, 8, 98, 820, 826, 834, 835, 836, 839; loss by invasion, 19-20; effect of mobilization, 25; output, 834; shortage,

- 837; exports and imports, 454; lime-kilns, 836; phosphate, 143; chloride, 147, 161, 174, 175; nitrate, 187, 167.
- Limoges, 55, 58, 894, 896; flour-mills, 123; cider, 133; breweries, 134; rubber, 172; leather and shoe industries, 235, 238; jewelers, 813, 814; porcelain, 843-847; spas, 875.
- Limousin, the, porcelain, 846, 848.
- Linen, 8, 17, 197, 202, 215, 217; output, 197; goods, 202, 208, 215, 217, 891.
- Liqueur, 118, 132-133.
- Lithography, 178, 188, 189.
- Loans, 92, 93; *see also* Banks.
- Locomotives, 294; *see also* Railways.
- Loire, 7, 13, 14; coal, 66, 106; iron, 279, 283; glass, 852; mineral water, 878.
- Lorraine, *see* Alsace-Lorraine.
- Lot-et-Garonne, 268.
- Luchon, the, 831, 875.
- Luxeuil, embroidered linen, 216.
- Luxemburg, labor, 40; clothing, 209.
- Luxury, trades, 84, 89, 210, 881; articles, 85, 171, 190, 206, 231, 298, 299.
- Lyons, 13, 55, 58, 90, 401; printing, 67, 187; sugar, 129; jam and syrups, 130; chocolate, 130; beer, 134; chemicals, 168; hydrogen, 147; dyes, 153, 166; phosphates, 163; candles, 165; celluloid, 173; paper, 174; silk, 198, 199, 872; corsets, 204; clothing, 209, 211, 213, 217; gloves, 241; wood-working, 258; metallurgy, 287; building, 826, 827; porcelain, 847; banks, 872; Lyons Fair, 99, 187, 256.
- Machine-guns, 281, 282.
- Machinery, automatic, 93-94, 133; labor-saving, 97-98, 120, 121, 125, 174, 232, 235, 239, 260, 262, 263, 265, 266, 289, 290, 801, 804, 815, 839, 840, 890; improvements and renewals, 95, 96, 97, 125, 131, 145, 157, 161, 165, 173, 207, 226, 290, 291, 800, 808, 809; standardization, 94; special machinery, 281; lack of special machinery, 166, 173, 191; need of repair or renewals, 116, 155, 164, 174, 185, 208, 216, 888; rise in price, 187; replaced by American, 223; port machinery, 860; devastation, 109, 187, 189, 191, 294; effect of war in improved plant, 395.
- Mâcon, 227.
- Madagascar, 219, 840.
- Magnesium, 148, 149, 151.
- Magnetos, 95, 292.
- Malines, lacemakers, 215.
- Malt, 117, 134.
- Manganese, 60, 285.
- Mantes, linen embroiderers, 215.
- Marble industry, 821-832.
- Margarine, 8, 135.
- Markets, 64, 74-78, 84; *see by country*, exports and imports; Commerce.
- Marne, 7, 10; lithographic industry, 188; porcelain, 844; closing of factories, German advance, 890.
- Marne, Battle of the, 18, 27, 93, 826, 872.
- Marseilles, 58, 79, 80, 330, 400; port, 823, 825-827, 859-863; flour, 115, 123; sugar, 115, 129; chemicals, 139; oil and soap, 141-142, 155; 'Marseilles soap,' 157; gas-works, 154; transport, 153, 253, 366; sulphate of copper, 158; sulphur, 159; red lead and litharge, 162; rubber, 171; lithography, 190; clothing, 208, 210, 211; furs, 214; laundries, 225; ship-building, 297; jewelers, 813; building, 339.
- Masons, 46, 66; *see also* Stone Construction.
- Mazamet, leather and skins, 234, 235, 236.
- Meat, 115; preserved, 118-120, 127; refrigerated meat, 135; extract, 120.
- Meatless days, 127, 390.
- Mentone, dressmaking, 212.
- Mercantile Marine, 45, 52, 92, 360; tonnage, 1913-1919, 360; *see also* Navigation; Shipping; Transport; Messageries Maritimes.
- Mercury, 285.
- Messageries Maritimes, 80.
- Metallurgy, 6, 11, 14, 61, 62, 84, 98, 269-309, 339, 871; motive power, 12-15; loss by invasion, 8, 19-21; effect of mobilization, 25, 270, 296, 299, 301; exemptions, 32; women's labor, 43-44; prisoners of war, 269, 274, 293; strikes, 897; Lorraine, 99; factory buildings, 255, 326, 337; by districts, 894, 897, 402; imports and exports, 448; post-Armistice changes, 293; *see also* Metals; Mines; Iron and steel.
- Metals, 6, 8, 11, 17, 42, 49, 73-89, 889, 896; motive power, 12-13; loss by invasion, 19-20; effect of mobilization, 25; labor, 87, 40, 43-44; testing, 94; strikes, 65; wages, 68; securities, 71; imports, 81-85 (*see graphs*); sheet-metal and metal boxes, 302; output of

- metals other than iron or steel, 285;
see also Metallurgy; Mines.
- Meurthe, the, metallurgy, 287.
- Meurthe-et-Moselle, 7, 10, 13, 14; iron-mines and metal works, 40; chicory, 121; salt, 144; steel-works, 275, 283.
- Meuse, 10, 38; wood, 266; watchworks, 307.
- Mexico, 310.
- Migration of workers, 66.
- Military instruments and weapons, export, 85.
- Milk, *see* Dairy products.
- Millau, gloves, 229, 241.
- Millinery, 202-204, 209, 211, 213, 214;
see also Hats; Straw, feathers and hair.
- Milling industry, 115, 123; *see* Flour; Grain.
- Mine-owners, Committee of, 39.
- Mineral oil, *see* Petroleum.
- Mines and quarries, 4, 6, 8, 11, 28-29, 60, 88, 103-110; output, 104, 106; effect of invasion, 8, 9, 16, 19-21; devastation, 73, 109; motive power, 12, 13, 14, 15; labor, 37, 40, 45, 51-52, 55, 58, 59, 105; casualties, 28-31; exemptions, 32, 33, 105; strikes, 65; wages, 65-66, 416; machinery and equipment, 97, 293, 297; metalliferous mines other than iron, 426; *see also* Coal; Iron and steel; Extractive industries.
- Mirecourt, musical instruments, 267.
- Mobilization, 22-54; number of men, 22, 24-34; effect on cost of living, 65; *see also* individual industries.
- Montataire, 355.
- Montluçon, sulphuric acid, 139.
- Moratoria, 23.
- Morez, the, optical goods, 307.
- Moselle, mines, 60; coal, 103-106; iron, 107-282; metallurgy, 287.
- Mother-of-pearl articles, 266, 267.
- Motor cars and lorries, 97, 173, 253, 254, 259, 260, 293, 298, 299, 356-357; number of military vehicles, 357; transport, 254, 357, 364, 366-368; amount carried, 1914-1918, 357.
- Motors, 94, 96, 98, 261, 293, 307.
- Municipal Councils, 66.
- Municipal Relief Funds, *see*, Relief Funds.
- Munitions, 27, 82, 89, 92, 95, 143, 147, 156, 186, 255, 259, 271, 292, 298, 396; exemptions, 27; invasion, loss of essential industries, 19; labor, 24, 38, 225, 227; war prisoners, 51-52; women, 39, 42, 45, 46, 54, 127, 207, 208, 212, 213, 221, 224, 240, 265; factories, 93, 94, 326, 328, 338; establishments adapted to war needs, 139, 145, 154, 286, 288, 296, 307, 331, 373; steel, 278, 281; motive power, 326; effect of Armistice, 390, 393; *see also* Soda, reserve; Explosives; Shells; Guns; Ordnance, Creusot Works.
- Munitions Service, 251.
- Munitions, Ministry of, Foreign Labor Service, 40; disabled, employment, 49; regulation of labor, 53-54; strikes, 64; Allied countries, *re* standardization, 94; new machinery, 96; metallurgy, 269; agriculture, 300.
- Music, printed and engraved, 190.
- Musical instruments, 98, 267, 391.
- Mustard-factories, 122.
- Nancy, 387, 389; domestic labor, 36; labor, 44, 55, 57, 58, 90; chocolate, 120; gas-works, 154; clothing, 211; embroidery, 216; sugar, 129; hats, 218, 219; slipper factories, 220; laundries, 225; tanneries, 232; furniture, 257; foundries, 288; files, 305; building, 326; electric power, 328; fire clay goods, 339; earthenware, 342; glass, 348, 349, 354.
- Nantes, 55, 58, 380, 397; munitions, 133; soap-works, 141; gas-works, 153; paper, 171; lithography, 188; clothing, 211; hats, 219; building, 325; slate, 331; port, 361, 363, 365, 367.
- Nantes-Saint-Nazaire, 323.
- Naphthalene, 150.
- Narcotics, 140.
- National Explosives Factories, 138.
- National Federation for the Help of the Disabled, 48.
- National Office for the Disabled and Discharged, 48.
- Navigation, exemptions, 32-33; war prisoners, 51-52; number of sailors, pre-war, 7; *see also*, Shipping, Mercantile Marine, Transport.
- Navy, French, life-saving rafts, 260; dockyards, 251; steel-works, 287.
- Needles, 23, 98, 306.
- Netherlands, 76; exchange, 78; sugar yield, 113; *trade competition*, paper, 175; diamonds, 319; *imports* from, pa-

- per, 185; *exports to*, tires, 173; pipes, 263; machinery, 800; clock-works, 807; basket-work, 226.
- Newspapers, 178, 184-185; printing, 187; *see also* Printing Presses.
- Nickel, 82, 285.
- Nimes, biscuits, 121; shoes, 237.
- Niort, gloves, 223.
- Nitrates, 138, 158, 167; from the air, 96, 97; of soda, 137, 142, 143, 150.
- Nitric acid, 96, 97, 142, 145, 150, 160, 162, 163, 171, 805.
- Nitrogen, 147, 167.
- Nord, 7, 10, 13, 14, 55, 60; power, 72; chicory, 121, 131; devastation, 73, 131, 135, 187; gas-works, air-raids, 142; mines and quarries, 103-106, 109, 274, 331, 387; glass, 353.
- Normandy, chicory, 131; cider-factories, 133; dairies and cheese, 135; saw-mills, 254; combs, 264; brushes, 267; bricks, 339; glass, 353; port, 367.
- Norway, trade competition, 167; *exports to*, perfumes, 160; hats, 219; *imports from*, printing paper, 187.
- Nuremberg, toy output, 248.
- Ochre factories, 144, 152, 153, 166.
- Oil, mineral, *see* Petroleum; seed mills, 141, 155-156, 164-165; oil-cake, 141, 155-156; palm-oil, 88, 155, 156; soap oil, 141, 155-156; essential oils (perfumes), 145; lubricating, 155, 156; wool-oil, 157, 165; olive oil, 156, 164; colza-oil, 156; *see also* Olein; Oleic acid; Glycerine; Fats; Palm-kernels.
- Oilcloth and linoleum, 197.
- Oise, 7, 10, 14; beet sugar industry, 129.
- Oissel, dyes, 168.
- Oleic acid, 156.
- Olein, 142, 155.
- Opium, 140.
- Optical industry, 94, 98, 99, 307, 309, 335, 349, 351, 352, 353, 354, 390.
- Ordnance, factories, employment of women, 42; war prisoners, 51; supplied to Allies, 281; heavy, manufacture, 281-282.
- Ordnance, Under Secretary of State for, Labor Bureau, 89.
- Orthopaedic articles, 262.
- Output, total pre-war and invaded territory, 16, 17; scientific organization to increase, 93, 94; diminished, post-Armistice, 90, 394; *see also* individual industries.
- Outreau, steel-works, 287.
- Oxalic acid, 147, 150, 163.
- Oxygen factories, 146, 147, 149.
- Oyonnax, 171, 263, 264.
- Packing-cases, 254-255.
- Paint trade, 325-326, 329, 331; boat-paint, 152; grinders, 153.
- Palm-kernels, 87, 164.
- Paper, 6, 11, 17, 49, 61, 84, 98, 169-176, 293, 373, 388, 401, 402; motive power, 12, 13, 14, 15; loss by invasion, 19, 20, 21; effect of mobilization, 25, 171; works, bleaching gun-cotton, 138-139; shortage for photography, 152; note-paper, 171-173, 175; cigarette paper, 173, 175; waste paper, 173; rise in price, publishers and booksellers, 178; syndicate, 187; exports and imports, 434; *see also* Rags; Wood Pulp.
- Paris, 13, 22, 34, 35, 36, 39, 55, 57, 58, 66, 69, 90, 209, 288, 391; Chamber of Commerce, 99; chocolate, 120; gluten bread, 125; chicory, 122; sugar, 129; distilleries, 132; cinchona, 133; gas-works, 142; dyes, 166; perfumes, 167; paper, 173; artistic works, 178; fashion papers, 179; book-sewers, 189; post-cards, 185, 190; music center, 190; newspapers, 184, 187; millinery, 203; corsets, 204; clothing, 208, 210-212, 214; embroidery and linen, 216, 217; laundries, 225; gloves, 229; tanning, 233; furniture, 248, 256; building, 250, 327, 339; aeroplanes, 256, 258; brushes, 267; munitions, 286; metallurgy, 287; motor cars, 299; lapidaries, 310; jewelers and goldsmiths, 310, 313; diamond cutters, 318; glass, 349; water transport, 366.
- Parquetry, 248.
- Pas-de-Calais, 7, 10, 13, 14, 55, 66, 73, 387; coal, 103-106, 109, 274; chicory, 121, 131; blast-furnaces, 283; quarries, 331.
- Pasteur Institute, 351.
- Pastry, making, forbidden, 125; cooks, 125, 126.
- Peace Treaty, 41, 90, 91, 99, 388, 397.
- Peat, 107, 394.
- Pencil factories, 97, 144, 153.
- Penhoët works, 94.
- Pens, 173, 296.

- Pensions, 47.
- Perfumes, 144-145, 167; works, 160-161; adaptation to war chemicals, 189; synthetic, 99, 145, 160, 167; essence of lavender, 145.
- Permanent Commission on Standardization, 94.
- Perry, 183.
- Personnel, 8-9; of invaded regions, 10; effect of mobilization, 24-26; index-numbers are found on same tables with establishments, which *see*; percentages employed, by dates, 407; by industries, 412; proportions employed by districts, 408; coal-mines, 411; proportion by dates in industries, 414.
- Peschaud, M., 856.
- Petroleum-refineries, 108, 144, 159, 165, 427.
- Peuchot, 848.
- Pharmaceutical preparations, 130, 137, 139, 140, 150, 161, 163; laboratory, 151; enlarged plant, 828; output, 140.
- Philippines, linen goods, 216.
- Phosgene, 146.
- Phosphates and superphosphates, 88, 138, 139, 143, 148, 149, 157, 158, 162, 163, 166; output, 143.
- Phosphorus, 149.
- Photographic materials, 76, 97, 99, 137, 150, 151, 160, 161, 164, 350, 351.
- Picrates, 150.
- Pipes, 172, 262, 305.
- Plaster works, 821, 836, 837.
- Platinum, 810.
- Poland, Foreign Labor Service, 40, 42, 91.
- Poor tax, 873, 874.
- Population, pre-war, 8-9, 18; regional distribution, 4; invaded territory, 4, 5; percentage lost to industry, 8-11, 19, 20, 21.
- Porcelain, 843-848, 895; exemptions, 82; women's labor, 214; chemical and electrical porcelain, 844, 845.
- Ports, 823, 859-867, 896; berthing capacity, 825; river ports, 358; prisoners of war, 50, 862-865.
- Portugal, Foreign Labor Service, 40-42, 91.
- Postal tariff, 189.
- Postcards, 178, 185, 189-190.
- Potash, and compounds, 99, 137, 138, 142, 146, 147, 148, 149, 155, 158, 161, 232.
- Potatoes, starch, 131.
- Pottery, 6, 8, 11, 17, 820, 833-855, output, 834; loss by invasion, 19, 20, 834; effect of mobilization, 25; exemptions, 84; casualties, 49, 60, 61, 62, 97, 98, 99; discovery of German process, 842; imports and exports, 454.
- Powder-works, 897.
- Power, motive, 11-16, 64, 72-74, 191, 326, 328-329, 392, 393; geographical distribution, 13; lost by invasion, 14, 15, 72, 191; shortage, 185, 186; banks, 371, 372; *see also* Steam-power; Water-power; Hydraulic power; Electric power; Steam-engines.
- Precious metals, 6, 8, 60, 61, 62, 98, 99, 810-819, 401; effect of mobilization, 25; imports and exports, 450.
- Precious stones, 6, 8, 61, 810-819; effect of mobilization, 25; cutting and manufacture, 817; imports and exports, 450; semi-precious stones, 810, 813; imitation stones, 810-818.
- Press syndicates, dearth of paper, 187; of cellulose, 188.
- Presses, cutting out, and stamping, 294.
- Prices (and profits), 90-92; wholesale, 64, 69-71; index-number of prices by countries, 70; average price per quintal 1917-1920, 81-82; raw materials, 93; variation in chief industrial commodities, 419; retail, in various countries, 417.
- Printing, binding, etc., 6, 49, 60, 61, 62, 177-190, 398, 399, 401; motive power, 14, 15, 21; loss by invasion, 19, 20; effect of mobilization, 25, 177; devastation, 187; wages, 67-68; securities, 71; imports and exports, 436; costs and prices, 438; *see also* Press syndicates.
- Printing-presses, 42, 185, 187, 294; British Army Services, 185.
- Prints, 178.
- Priority of transport, 81, 95, 123, 158, 366.
- Prisoners of war, 24, 41, 50-52, 397; repatriation, 41, 356; *see also* individual industries.
- Prisoners of War Commission, 50.
- Production, *see* Output.
- Professions, number engaged in liberal and clerical, 6; liberal and public administration, 7; liberal, 9; effect of mobilization, 28-29; casualties, 30-31.

- Profits, 69-71; reduced by taxation, 93;
see also Prices.
- Projectiles, use of steel scrap, 275, 289.
- Provence, candied fruit, 130; metallurgy, 297.
- Public health service, women employed, 45.
- Public Instruction, Minister of, 182.
- Public service and public works, 4, 6, 9, 12, 28-29, 320, 323, 326, 332; motive power, 12, 13, 14, 15; casualties, 29, 31; exemptions, 33; prisoners of war, 51-52, 325, 326; securities, 71; imports and exports, 452; *see* Roads; Railways; Water-ways; Harbors; Motive Power; Gas-works.
- Publishers, 178.
- Pty-de-Dôme, 13.
- Pyrenees, the, motive power, 96, 175, 328; jute, 198; shoes, 222; metallurgy, 260; jewelers, 315; marble, 321; spas, 375.
- Pyrénées-Orientales, 128.
- Pyrites, 146, 147, 148, 153, 158, 162, 166.
- Pyrometers, 94.
- Quarries, 4, 6, 28-29, 103-110; motive power, 12, 14, 15; loss by invasion, 19, 120; war prisoners, 51; output, 109; *see also* Mines and quarries; Extractive Industries.
- Quinine, 150; *see also* Cinchona.
- Radio, 96, 172.
- Rags, 170, 171, 173, 175, 369, 373, 379, 380.
- Railways, 13, 23, 39, 356, 357, 366, 401; loss by invasion, 356; devastation, 109, 356-357, 388; repairs and construction, 323, 325, 330, 356, 361; rolling-stock, repair and renewal, 90, 254, 259, 260, 292, 294; workshops, 13, 328; embankments, 328; labor, 45, (prisoners of war) 51-52; exemptions, 31-33; securities, 71; congestion, 39, 155, 253, 300, 356; shortage of trucks, 363; Paris-Strasbourg, 390.
- Railway traffic, commercial, 455.
- Railway Commission, 94.
- Ramie, 195-198.
- Raw materials, 23, 64, 74, 85; lost by invasion, 77; imports (graphs), 82, 83; by colonies, 86, 87; shortage, 89; prices, 93; requisition, 153.
- Refrigeration, 8, 97, 127, 135, 232; lack, 119.
- Refugees, employment and relief, 4, 24, 34, 37-38, 90, 115, 141, 191, 206, 207, 210, 213, 215, 235, 251, 295, 348, 375, 399.
- Relief funds, 34-37, 399; work-rooms, 206, 207, 215, 216.
- Rent restriction laws, 69, 256.
- Reparations, 91, 92.
- Requisitions, transport, 23; cows, 135; sheep, 118; sheepskins, 242; alcohol, 118, 132, 138, 145; sugar, 132; distillery plants, 159-160; transport material, 23; horses and mules, 253, 362; ships, 23; flour, 126; hides, 232-233.
- Resinous products, 159-160.
- Restaurants, 375; *see also* Hotels.
- Retail trades, 380-386.
- Revue Industrielle*, 168.
- Rheims, biscuits, 126; bottles, 349.
- Rhine basin, hydraulic power, 73.
- Rhineland, exports of cloth, 209.
- Rhône, 7, 13; drugs, 151; silk, 198; aero-engines, 292.
- Rifles, 281, 282.
- Ripault explosives-factory, 94.
- Rivers, *see* Transport; Shipping.
- Riviera, 210, 214, 369, 370, 375, 378, 387.
- Roads, 323; repair, 325, 328; war prisoners, 51-52; materials, 109, 321, 331; road bridges destroyed, 388.
- Roads and Bridges Administration, 260.
- Rolling-mills, 270, 287.
- Romans, 218, 237.
- Romilly-sur-Audelle, 348.
- Rope industry, 197.
- Roquefort, cheese, 118, 135.
- Roubaix, 198.
- Roubaix-Tourcoing, 67.
- Rouen, 55, 58, 90, 320, 358, 360, 396; wine, 118; chicory, 122; flax, 123; sugar, 129; fertilizers, 158, 163; paper, 174; printing, 187; clothing, 211; combs, 263; metallurgy, 276; transport, 363-364.
- Rouen-Le-Havre, 323.
- Roumania, wheat, 115; ochre, 166; arms, 282.
- Rove tunnel, 327; *see also* Canals.
- Rubber, 6, 49, 82, 88, 98, 147, 169-176; loss by invasion, 19, 20; effect of mobilization, 25, 171; output, 169; imports and exports, 434.
- Russia, platinum, 310; gold, 310; railways, 356; flax production, 195-196; markets, 23, 74, 75-77, 393; *exports to*,

- perfumes, 160; dyes, 166; cardboard boxes, 188; clothing, 212; arms, 281; cutlery, 304; watches, 308; *imports* from, wood, 172, 175, 264; furs and skins, 214, 230, 245; wheat, 115.
- Saar, coal, 390.
- Saccharine, 135.
- Saddlery, 231, 244, 250, 259.
- Saint-Antoine, faubourg, furniture, 256, 257.
- Saint-Chamond, naval steel-works, 287.
- Saint-Claude, rubber, 71, 172; paper, 262, 263, 305; lapidaries, 310, 319.
- Saint-Étienne, 42; silk, 198.
- Saint Gall, embroidery, 217.
- Saint-Gobain, 348.
- Saint-Médard, powder-works, 397.
- Saint-Nazaire, 359, 360.
- Saint-Omer, linen, 215, 216.
- Saint-Quentin, embroidery, 217.
- Saint-Saëns, tanneries, 232.
- Salonica, food exports to army, 121.
- Salt, 108, 137, 144, 165; prisoners of war, 160.
- Salt-peter, 142.
- Sand and gravel, 320.
- Saône-et-Loire, 14, 106, 283.
- Sarthe, marble, 331.
- Savoy, 157, 254; banks, 372.
- Saw-mills, 248, 251-254.
- Saxony, pre-war imports from, 235.
- Scandinavia, oil-cake, 414; *see also* Norway, Sweden.
- Schools, technical, for disabled, 47.
- Securities, 71.
- Seine, 7, 13, 14, 22, 34, 37, 53, 65.
- Seine-et-Marne, 14.
- Seine-et-Oise, 7, 13, 14, 53.
- Seine-Inférieure, 7, 14, 359.
- Semolina, 115, 123, 124.
- Serbian army, equipment supplied by France, 281.
- Shanghai, 79.
- Sheep, requisition, 118; restrictions on slaughter of lambs, 135, 235; sheepskins, 157, 234, 242.
- Shells, 95, 119, 139, 275, 282, 286, 288, 290, 291, 292, 300, 305, 331, 373; output, 282, 289; *see* Projectiles.
- Ship-building, securities, 71; wooden ships, 260, 261; motor boats, 261; iron ships, 297; anti-submarine, 297; merchant ships, 297; river boats, 260-261, 358, 365-366; canal boats, 260, 358; shipyards, 297; ships launched 1913-1921, 298.
- Shipping, 78-79, 89, 92, 149, 155, 357-361, 393; weight of goods carried 1913, 324; Japanese ships chartered, 81; commercial shipping 1913-1919, 456; *see also* Ship-building; Commerce; Navigation; Mercantile Marine; Maritime transport.
- Shirt factories, 216, 217.
- Shoe industry, 176; cloth and felt shoes, sandals, 220, 222; slippers, 220, 222, 238, 239; wooden shoes, 261, 262; *see also* Boots and shoes.
- Siberia, skins, 230.
- Silk, 82, 153, 198-201; effect of invasion, 198; loss of machinery, 191; silk garments, 211, 212; milliners' silk and ribbon, 213; embroidery on silk, 216; Lyons silks, 401, 402; artificial silk, 96, 97, 153, 199; output of silk fabrics, 199-200.
- Silver, 310-316.
- Six-day week, 213, 226, 239, 267; *see also* Hours of labor.
- Skins, *see* Leather and skins.
- Slaughter, limitation, 127, 232; slaughterhouses, 127; *see also* Cattle; Sheep.
- Soap-works, 141, 142, 155-157, 158, 165, 225.
- Soda-works, 144, 146, 147, 148, 156, 162, 225; soda compounds, 139, 146, 147, 148, 149, 150, 155, 161, 232; French soda reserved for munitions, 156; soda imports, 156; *see also* Nitrate of soda.
- Somme, 7, 10, 14, 357; beet sugar industry, 129; jute, 197-198.
- South Africa, phosphate of lime, 143; gold, 310.
- South America, 76; *exports* to, wine, 133; dyes, 152; books, 179; clothing, 212; hats, 219, 220; flowers and feathers, 222; fancy leather goods, 240; saddlery, 259; combs, 263; cork, 265; buttons, 266; cutlery, 304; ironmongery, 305; goldsmiths' work, 313, 314; tiles, 338; earthenware, 343; glass, 351; *imports* from, wood, 165.
- Spain, Foreign Labor Service, 40, 41, 91, 116, 155, 326; exchange, 77, 190; commerce, 76; trade competition, 153, 266; *exports* to, perfumes, 167; tires, 173; cardboard boxes, 188; printed novel-ties, 189; clothing, 213; feather boas, 223; gloves, 224, 242; umbrellas, 224;

- watches, 307; esparto, 227; jewelry, 314; leather goods, 240; cabinet-making, 257; ironmongery, 290, 305; *imports* from, pyrites, 166; sheepskins and goatskins, 236, 243.
- Spas and health resorts, 370, 375-378; German spas, 370.
- Spinning and weaving, 192; mills, 11; women's labor, 214; buildings, 326; porcelain fittings, 345; looms, 295.
- Standardization in factories, 94.
- Starch, 8, 131, 225.
- Steam-engines and boilers, 12, 13, 14, 15, 72, 73, 95, 135, 191; *see also* Motive power.
- Steam-power, 12-16, 21, 72-73, 95, 135, 420; *see also* Motive power.
- Stearine industry, 141, 142, 155, 156, 157, 165.
- Steel, *see* Iron and steel.
- Stone construction, 6, 328; *see also* Masons.
- Stone-cutting, 6, 49, 331; loss by invasion, 19, 20; effect of mobilization, 25.
- Stone-ware, 339.
- Straw, feathers and hair, 6, 8, 202, 213, 220; effect of mobilization, 25.
- Straw-board, 174, 176.
- Strikes, 64, 65, 391, 397, 415.
- Submarine campaign, 23, 32, 74, 78, 81, 85, 89, 92, 96, 111, 128, 179, 253, 269, 274, 297, 360, 367, 394.
- Sugar, 8, 17, 21, 34, 66, 112-113, 116, 117, 120, 121, 122, 128, 129-131, 133, 135, 151, 164; wages, 66, 416; effect of invasion, 116, 129; restrictions, 131, 390; requisition, 132; machinery, 294; output, 112-113.
- Sulphur, 138, 140, 159, 165.
- Sulphuric acid, 62, 96, 97, 99, 137, 138, 142, 143, 145, 146, 148, 149, 150, 158, 162, 163, 166, 174; loss by invasion, 139; requisitioned, 141.
- Superphosphates, *see* Phosphates.
- Surgical instruments, 172, 173, 304.
- Sweden, 78, 113; perfumes, 160; printing paper, 187; cellulose, 188; hats, 219.
- Switzerland, 75-77, 220, 221, 348; exchange, 78; trade competition, 217; *imports* from, dye-stuffs, 144; glass, 151; *exports* to, oil-cake, 141; synthetic perfumes, 145; clothing, 213; skins, 234; leather goods, 240; pipes, 263; metal products, 305; clock- and watch-making, 290, 307, 308; earthenware, 343.
- Table ware, 303, 304.
- Tallow, 155, 156, 165; *see also* Stearine; Oils; Fats.
- Tanks, 282, 292, 298.
- Tannic extracts, 137, 143, 157, 165, 232.
- Tanning, 97, 162, 231-234, 388; motive power, 14, 15, 21; tanning expedients, 235, 236.
- Tapestry works, 394.
- Tar-board, 176.
- Tar distillation, 96, 150, 154.
- Tarbes, leather, 244; hotels, 376.
- Tarn, the, wine, 117; bakeries, 121; laboratory, 151; leather, 234, 235, 259; glass, 348, 353.
- Tarn-et-Garonne, the, 286.
- Tartaric acid, 146.
- Taweries, 231-236.
- Taxation, 70, 93.
- Taxi-cabs, 365.
- Taylor system, 94, 289.
- Telegraph and telephone, 172, 344, 345.
- Telegraph, wireless, *see* Radio.
- Textiles, industries, 6, 17, 60, 61, 62, 97, 98, 191-201; motive power, 12-13, 14, 15; loss by invasion, 8, 19, 20, 21, 203; devastation, 73; effect of mobilization, 25; casualties, 49; strikes, 65, 397; wages, 67; securities, 71; raw materials imported (graph), 83-84; imports and exports, 440; by district, 393, 397, 401, 402; Alsace, 99.
- Textile goods, 202-228; imports and exports, 442; *see also* Silk; Linen; Wool; Ramie; Jute.
- Theaters, 373; *see also* Entertainment businesses.
- Thermometers, manufacture by German prisoners, 50, 99, 354; *see* Barometers.
- Thiers, cutlery, 304.
- Thomas Steel Works, 275, 278.
- Thread, invaded districts, 23.
- Tiles, *see* Bricks and tiles.
- Tin, 60, 82, 147, 285, 291.
- Tin-plate, 281, 286, 302, 303.
- Tinware, 303.
- Tires, rubber, 172, 173.
- Toluene, 139, 146.
- Tools, 261, 290; machine, 74, 95, 98, 153, 252, 289, 291, 293; motor-driven tools, 307; scarcity, 260, 391.

- Toulouse, 55, 57, 58, 90, 398; food, 119, 121, 127, 295; printing, 185; liqueurs, 132; breweries, 134; sulphuric acid, 139; sulphur, 159; soap-works, 155-157; paper, 174; clothing, 206, 207, 210; shoes, 222; umbrellas, 224; wood-working, 255; metallurgy, 287-288; munitions, 286; bricks and tiles, 338.
- Toys, 98, 248, 256, 267, 301, 393.
- Trade, foreign, *see* Commerce.
- Trade Councils, 66.
- Tradesmen, casualties, 47.
- Trades-unions, benevolent funds, 35.
- Tramways, 13, 367; women's labor, 46, 365.
- Transport, 4, 9; effect of mobilization, 23, 25, 28, 29, 362; loss by invasion, 19, 20, 97, 98; casualties, 30-31; exemptions, 30-33; prisoners of war, 50-52, 366; labor, 42, 44, 45, 49, 55, 58-62; strikes, 65; factories for transport materials, 260, 293; requisition of transport material, 23; inland water transport, 356-358, 365, 366-368; maritime transport, 23, 86-87; post-Armistice, 90; *see also* Motor cars and lorries; Railways; Shipping; Commerce; Canals; Water-ways; Priority of transport.
- Troyes, 67.
- Tubing, weldless, 98, 261, 298, 299.
- Turkey, 23, 76, 77.
- Turneries, 252.
- Tyne, 79.
- Ultramarine, 144, 153.
- Umbrellas, sunshades and parasols, 205, 224, 261; umbrella frames, 305; fittings, 224.
- Unemployment, 22-26, 34-40, 60, 89, 90.
- United States, 75-77, 89, 92, 159; exchange, 77-78; gold, 810; silver, 810; trade competition, 153, 189; exports to, linen goods, 215; watches, 308.
- Valenciennes, coal, 103.
- Vallauris, perfumes, 160.
- Var, the, cork, 248.
- Vauclose, the, canned vegetables, 128; beet sugar, 129; ochre, 153.
- Vegetables, preserved, 97, 118-119, 129.
- Velvet, 98, 208.
- Verdun, 27, 120, 857.
- Vermouth, 133.
- Vienne, 67, 847.
- Vigneux, 358.
- Villeneuve-le-Roi, 358.
- Viticulture, 82, 34, 158, 159, 212, 300; *see also* Wine.
- Vosges, the, 7, 10, 14, 139; paper, 171, 174; fabric, 224; tableware, 303.
- Vulcanite articles, 172.
- Wages, 64, 65-69, 90-93; women, 68, 206; coal miners, 105, 416; printing and binding, 187; sugar-factories, 130, 416; purchasing power in various industries—a comparison, 418; purchasing power in various industries, 1911 and half year 1921, 418.
- Walking-sticks, 261.
- War Department, employ of war prisoners, 51; shoe factories, 237; building, 325; insulators, 344.
- War Industries, effect of mobilization, 89; adaptation at Armistice, 293-295.
- War, Ministry of, Colonial Labor Service, 41, 139, 244, 282.
- Watches, *see* Clock- and watch-making.
- Water, mineral and aerated, 8, 135, 369, 370, 378.
- Water-power, 18, 149, 276, 290, 327, 328, 372, 395, 402; *see* Motive power.
- Waterfalls, 14, 327, 328, 331, 372.
- Water-ways, 297, 358, 359; extent, 323; quantity of goods shipped 1913-1918, 358, 359; destruction, 359.
- Weavers, 67.
- Welding, 146, 147.
- West Indies, soap, 155; sugar, 116.
- Wheat, 79, 123, 124, 125; prohibited use for pastry, 125.
- Wheelwrights, 46, 248, 251, 259-260, 365.
- White lead, 142, 153.
- Wine industry, 117-118, 133, 158, 290, 300, 331, 349, 363; *see* Viticulture.
- Wire, work, 227; gold and silver, 316.
- Women (and children) in industry, 22, 24, 39, 42-46, 62, 66, 91, 94; regulation of labor, 53-54; mines and quarries, 105; food, 115, 116, 118-123, 129; oil refineries, 144, 159; soap-works, 155; chemical industries, 139, 140, 149, 150, 164; pencils, 153; pens, 296; tannic acid, 143, 157; silk, 153, 242; gas-works, 154; perfumes, 161; rubber and paper, 171-176; newspapers, 184; books and binding, 180, 185, 186; clothing, 206-210, 213, 214; lace, 215; hats, 219; esparto and baskets, 227; boots and

INDEX

477

- shoes, 221, 237, 239, 262; skins and furs, 230; gloves, 223, 241, 242; umbrellas, 224; tanning, 232, 233; tawerles, 236; saw-mills, 251; wood-working, 252-254; aviation, 256; furniture, 257; wheelwrights, 46, 260; pipes, 263; cooperage, 265; musical instruments, 267-268; metallurgy, 269, 288, 293, 302, 303; precious metals, 315; cutlery, 304; electrical apparatus, 306; watches and clocks, 309; cement works, 336; fire clay products, 339; earthenware, 342; porcelain, 345, 347; glass, 348-350; beads, 355; transport, 364-367; shipping, 365, 366; munitions, 119, 127, 139, 207, 208, 213, 228, 265, 287; by district, 389, 394-402; labor variation, 406; demobilization, protests against employment, 398.
- Wood, cutters, 31, 51, 52; pulp, 84, 98, 170-175, 246, 247; timber, 246-254; dis-
- tillation, 96, 144, 145, 147, 148, 150, 154, 160, 163; firewood, 246-247; *see also* Forests; Central Wood Office.
- Wood-pulp, 84, 98, 170, 172-175, 247.
- Wood-working, 6, 60, 61, 98, 246-248; motive power, 12, 13; loss by invasion, 8, 19, 20; effect of mobilization, 25, 255, 256, 259, 264; casualties, 49; wood-carving, 257; imports and exports, 446; *see also* Saw-mills.
- Wool, 8, 17, 23, 70, 82, 88, 192-195, 210, 328, 373; output, 194; machinery lost by invasion, 191; wool-spinners, 67; *see also*, Oil, wool.
- Yeast production, 133.
- Ypres, lace makers, 215.
- Yser, 27.
- Zinc, 17, 21, 82, 98, 291; output, 285.

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As indicated in the Editor's Preface, the Economic and Social History of the World War consists of monographs written by those who could speak with authority upon the various subjects which are covered in the survey. In the list of authors below are to be found over thirty names of those who have held Cabinet office or its equivalent in terms of war-time government. Others have either held important offices or have been so placed as to observe at first-hand the action of war-time forces in the special fields of their interests. A fuller descriptive list of both authors and monographs is given in the annual reports of the Director of the Division of Economics and History of the Carnegie Endowment, which will be sent upon application to either the publisher or the office of the Division at 405 West 117th Street, New York.

This list which follows includes only those numbers which have been published and are in course of preparation; it is subject to change from time to time. The monographs fall into two main classes, those which may be said to constitute full numbers in the series, volumes of from 300 to 500 pages; and partial numbers or special studies of approximately 100 pages or less, which may ultimately be incorporated in a full volume along with others dealing with cognate subjects. Titles have been grouped to indicate the proposed volume arrangement, but this grouping cannot be regarded as final in the larger and more complicated series.

Monographs already published are indicated by an asterisk, partial numbers by a double asterisk.

TRANSLATED AND ABRIDGED SERIES

- *The History of French Industry during the War, by M. Arthur Fontaine.
- Agriculture and Food Supply in France during the War, by M. Michel Augé-Laribé and M. P. Pinot.
- War Costs and War-Time Finances, by Professor Gaston Jèze and M. Henri Truchy.
- Effect of the War upon the Civil Government of France, by Professor Pierre Renouvin.
- The Organization of Labor in the Invaded Territories, by M. Pierre Boulin.

"Mittel-Europa": The Preparation of a New Joint Economy, by Dr. Gustav Gratz and Dr. Richard Schüller.
War Government in Austria, by Dr. Joseph Redlich.
(Other volumes to follow.)

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War History of American Railways and War Transportation Policies, by Mr. Walker D. Hines.
Financial History of the War: Revenue Aspects of the Problem, War Taxation, etc., by Professor Thomas Sewall Adams.
War Controls in the United States, by Professor Edwin F. Gay.
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BRITISH SERIES

***Bibliographical Survey, by Miss M. E. Bulkley.**
***Manual of Archive Administration, by Mr. Hilary Jenkinson.**
***British Archives in Peace and War, by Dr. Hubert Hall.**
War Government of Great Britain and Ireland (with special reference to its economic aspects), by Professor W. G. S. Adams, C.B.
***War Government of the British Dominions, by Professor A. B. Keith, D.C.L.**
***Prices and Wages in the United Kingdom, 1914-1920, by Professor A. L. Bowley.**
***British War Budgets and Financial Policy, by Mr. F. W. Hirst and Mr. J. E. Allen.**
Taxation and War-Time Incomes, by Sir Josiah C. Stamp, K.B.E.
Taxation during the War.
War-Time Profits and Their Distribution.
The War and Insurance. A series of studies: Life Insurance, by Mr. S. G. Warner; Fire Insurance, by Mr. A. E. Sich and Mr. S. Preston; Shipping Insurance, by Sir Norman Hill; Friendly Societies and Health Insurance, by Sir Alfred Watson; Unemployment Insurance, by Sir William Beveridge; with an additional section on the National Savings Movement, by Sir William Schooling.

- Experiments in State Control at the War Office and the Ministry of Food, by Mr. E. M. H. Lloyd.
- British Food Control, by Sir William Beveridge, K.C.B., and Sir Edward C. K. Gonner, K.B.E.
- Food Production in War, by Sir Thomas Middleton, K.B.E.
- The Cotton Control Board, by Mr. H. D. Henderson.
- Allied Shipping Control; an Experiment in International Administration, by Sir Arthur Salter, K.C.B.
- General History of British Shipping during the War, by Mr. C. Ernest Fayle.
- The British Coal Industry during the War, by Sir Richard Redmayne, K.C.B.
- The British Iron and Steel Industry during the War, by Mr. W. T. Layton, C.H., C.B.E.
- British Labour Unions and the War, by Mr. G. D. H. Cole:
 - Trade Unionism and Munitions.
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- Labour Supply and Regulation, by Mr. Humbert Wolfe, C.B.E.
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 - Public Health Conditions in England during the War, by Dr. A. W. J. Macfadden, C.B.
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