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ECONOMIC AND FINANCIAL SECTION

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MEMORANDUM

ON

PRODUCTION AND TRADE

1913 AND 1923-27

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## PREFACE.

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The first *Memorandum on Production and Trade* was published in October 1926 as one of the preparatory documents for the World Economic Conference. That Conference expressed a wish that the work then undertaken should be continued and a second edition was published in the spring of 1928. This third volume, which has been delayed owing largely to the work involved for those responsible for its preparation by the recent Conference relating to Economic Statistics, brings the indices up to the end of 1927. However, in view of the date of publication, preliminary information for 1928 is also furnished.

In last year's Memorandum a chapter was added containing a first investigation into the problem of the relative price movements in recent years of raw products and manufactured articles. The enquiry which was then begun has been continued in the last chapter of this edition.

The detailed figures on which the production and population indices are computed will be published simultaneously with this volume in the *International Statistical Year-book, 1928*. The detailed statistics relating to trade have already appeared in the *Memorandum on International Trade and Balances of Payments, 1913-27*, Vol. I.

A summary of the main conclusions that may be drawn from the present study will be found in the introductory study with which this Memorandum opens.

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Economic and Financial Section,  
League of Nations.

Geneva, April 1929.

## MEMORANDUM ON PRODUCTION AND TRADE 1913 and 1923-27.

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### INTRODUCTORY.

The first chapter of this Memorandum deals with the growth of the population of the world between 1913-1927, the second chapter with the production of raw materials and foodstuffs, the third with the growth of world trade. In the last chapter, an analysis is made of the relative changes which have taken place in the prices of crude products and manufactured articles.

Most of the detailed calculations refer to 1913 (or the quinquennium 1909-1913) and the years 1923-1927, but preliminary results concerning the production of raw materials and foodstuffs in the year 1928 are included.

In many countries, estimates of the natural increase of population are of doubtful accuracy and in others they are not made at regular intervals. In consequence, the figures given in Chapter I relate only to the years 1913 and 1927.

The general character of the results obtained may with advantage be indicated at once. The processes by which these results are reached are explained and certain of the qualifications to which they are subject are recorded in the more detailed analysis which follows.

In Table I below, the most important indices relating to population, the production of raw materials and foodstuffs and the quantum of trade are set out in parallel columns. The indices for both production and trade are quantitative, changes in value having been eliminated by processes of analysis described later. The world has been divided into seven continental groups and Europe into four sub-groups.

TABLE I.

Continental Groups	Popu- lation 1927	Production of Raw Materials and Foodstuffs <sup>1</sup>					Quantum of Trade			
		1923	1924	1925	1926	1927	1924	1925	1926	1927
	As percentage of that in 1913									
(a) Eastern and Central Europe : Excluding the U.S.S.R. <sup>2</sup>	105	78/9	84/6	99/00	94/6	103/5	73	84	85	106
Including the U.S.S.R. <sup>2</sup>	107	77	83/4	101/2	100/2	108/10	64	75	76	93
(b) Rest of Europe . . .	106	98	103	108/9	98/9	115/6	97	100	100	110
Europe, excluding the U.S.S.R. <sup>2</sup> . . . . .	106	88	93/4	103/4	96/8	109/10	90	95	96	108
Europe, including the U.S.S.R. <sup>2</sup> . . . . .	107	85	90/1	103/4	100/1	110/2	85	91	91	103
North America . . . . .	123	127	118	126/7	130/1	128/9	127	139	150	155
Caribbean <sup>3</sup> . . . . .	105	152/3	169/71	162/3	154	148	133	133	134	137
South America . . . . .	141	128/30	121	130/1	135/6	140/1	91	103	106	118
Africa . . . . .	111	125	135/6	142/3	142/3	148/9	97	108	111	119
Asia, excluding Asiatic Russia . . . . .	107	110/5	117/22	121/7	122/30	123/32	124	144	151	152
Oceania . . . . .	123	107	122/3	117/8	128/9	121/3	119	132	135	142
World . . . . .	109	{ A 106/7 B 103/4 C 110/3	{ 108/10 102/3 116/9	{ 116/9 111/2 125/30	{ 117/20 109/10 129/35	{ 121/4 <sup>4</sup> 113 <sup>4</sup> 135/41 <sup>4</sup>	99	107	110	120

A = Foodstuffs + Raw materials ; B = Foodstuffs ; C = Raw materials.

The evidence afforded by the table and later analysis points to the following general conclusions, certain of which will require subsequent interpretation and qualification.

(a) By 1927, world production of basic raw materials and foodstuffs was over 21 per cent greater than before the war, world trade was about 20 per cent greater and world population 9 per cent greater. Production continued to increase in 1928, for which the preliminary index is as high as 125.

<sup>1</sup> The double figures given for production indicate the different results obtained by using pre-war and post-war values respectively as weights.

<sup>2</sup> Union of Socialist Soviet Republics, *i.e.*, including Asiatic Russia.

<sup>3</sup> Central America, Mexico and all islands in the Caribbean Sea.

<sup>4</sup> The provisional index figures for 1928 are : A = 125/8 ; B = 116 ; C = 139/45.

(b) The production of foodstuffs has not grown so rapidly as that of industrial raw materials. In 1927, the foodstuffs index was 113 and the raw materials index over 135. The preliminary figures for 1928 are 116 and 139 respectively.

(c) From 1923 to 1928, the world output of raw materials increased by 26 per cent, that of foodstuffs by 12 per cent and that of raw materials and foodstuffs together by 18 per cent.

(d) World trade — the quantity of goods exchanged internationally — was in 1927 9 per cent greater than in 1926. As a consequence, the discrepancy between the growth of world trade and the increase in the production which has characterised recent years appreciably diminished. It remains to be seen whether this tendency towards the restoration of the old balance will prove to be permanent or not.

(e) The recovery in European production and trade in 1927 was striking. The quantum of European trade exceeded that of 1913 for the first time.

The trade index for Europe, excluding the Soviet Union, was 108 and was higher than the population index (106) and not far short of the production index (110).

(f) Production in North America fell in 1927 compared with 1926 on account of a contraction in the raw material output ; but the foreign trade of this continent continued to increase.

In 1927, North America's population was not far from one-fourth, its production of foodstuffs and raw materials over one-fourth (in 1928 probably about one-third) and its foreign trade over one-half greater than in 1913.

(g) The population of South America has grown more rapidly than that of any other part of the world — by some 40 per cent. Its production of foodstuffs and raw materials has just kept pace with the population growth, but its international trade has increased by less than 20 per cent.

(h) The group of Caribbean Countries present a remarkable contrast, for their population has only increased by some 5 per cent, while foreign trade is over one-third and production about one-half greater than in 1913.

(i) The growth of production in Africa is of the same order of magnitude as that of the Caribbean Countries (about one-half) and the increase in its foreign trade equals that of South America (about one-fifth) ; its population has grown by some 11 per cent.

(j) The international trade of Asia has developed at about the same rate as that of North America (over 50 per cent) ; its production has grown by roughly one-fourth<sup>1</sup> and its population by only about 7 per cent.

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<sup>1</sup> This is exclusive of the foodstuffs production of China.

(k) The growth of population in Oceania is equal to that in North America, the increase in its production coincides with the world average and the increase in its foreign trade is twice as high.

(l) By 1927, the population of Africa, America, Asia and Oceania together had increased by 10 per cent, the production of foodstuffs and raw materials by 29 to 32 per cent and the international trade by 43 per cent.

(m) Although the change in the ratio as compared with 1913 between the prices of crude products and manufactured articles — at any rate in Europe — still remains a factor of material importance in world economy, not less important is the fact that there has during recent years been a distinct tendency towards the re-establishment of the old equilibrium.

(n) Compared with 1913, the prices of manufactured articles taken as a group (excluding those produced by new industries or industries which have enjoyed a very marked and exceptional development in post-war years) appear to have remained in 1927 relatively higher than those of raw materials and foodstuffs.

(o) The prices of the products of the extractive industries appear to rule substantially lower than those of agricultural produce.

\* \* \*

From the foregoing brief survey it is clear that, though the progress made in 1927 was greater in Europe than in any other continent, the development since 1913 has been much more rapid in the rest of the world. This has resulted in important changes in the relative shares contributed by the different continental groups to the world totals, more especially with regard to trade. Thus, by 1927, Europe's share in the international trade of the world had fallen since 1913 by 14 per cent (from 58.4 per cent to 50.4 per cent of the total); the share of North America had risen by 28 per cent, that of Asia by 27 per cent and that of Oceania by 15 per cent. The share of South America had dropped slightly and that of Africa remained practically unchanged.

The changes in the contributions of the various continents to the total production of the goods here considered are less marked. The share of Europe had shrunk by 9 per cent and that of Oceania remained unchanged; those of Asia and North America had increased by 2 and 5 per cent respectively, the joint share of Central<sup>1</sup> and South America by 18 and that of Africa by 20 per cent.

From the preliminary information available, it would appear that both the output of crude products and the international trade of Europe continued to develop in 1928. The expansion in the rest of the world was, however, greater and in consequence there was a slight reversal of the tendency which characterised the preceding year.

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<sup>1</sup> Including Mexico.

The changes that have taken place in the distribution of the population of the world as a whole are negligible.

Such are the broad general results to which the analysis of available data on population, production and trade has led. They are based on statistics that are in some cases of doubtful comparability and seldom so comprehensive or so exact as to render it possible to draw conclusions of mathematical accuracy or incontrovertible finality from any single series of figures. For this reason, importance should be attached not so much to the absolute magnitude of this or that figure as to the direction towards which the whole mass of accumulated data tends to point.

The general production index quoted above, which is very much influenced by the foodstuffs included therein, must not be presumed to measure industrial progress. This is better illustrated by the index for the production of basic raw materials alone, which in 1928 stood at about 140. But there can be no doubt that, with the improvements in the methods of treating raw materials, greater services are now rendered available from a given supply of raw materials than was possible fourteen to fifteen years ago. Thus the development of industry has been more rapid than the growth in the production of raw materials.

In the United States of America, the net value added by manufacture, in terms of pre-war prices, was approximately 70 per cent greater in 1925 than in 1914 and since 1925 further progress has been made. In Canada, it was over 60 per cent greater in 1926 than in 1910 ; in South Africa, it was 125 per cent greater in 1925-26 than in 1915-16 ; in Australia, it was over 40 per cent greater in the same financial year than in 1913 ; and in New Zealand in 1926-27 it was over 80 per cent greater than in 1911.

Corrections in the figures for the most recent years and occasionally for the base period as well as certain additions to the production index and the fact that 1927 values have been substituted for those previously used as weights account for such minor discrepancies as exist between the indices in the present and those which were published in the preceding edition of this Memorandum.

In a study covering so wide a field as this, it is not possible or desirable to indicate on each occasion the limitations to the exactitude, completeness or comparability of the statistics. Allusion is, however, made to certain of the more important qualifications that have to be borne in mind, and further information with reference thereto will be found in the various other Memoranda published by the League of Nations.

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I. POPULATION.

It is not necessary to consider in any great detail the demographic statistics of the world. They are important in this connection in order to compare the growth of population with the indices of raw materials and foodstuffs and of international trade.

TABLE II.

CHANGES IN THE POPULATION OF THE WORLD IN THE 14-YEAR PERIOD 1913-27.

Continental Groups	Population (000,000's)		Percentage movement		Percentage distribution	
	1913	1927	1913	1927	1913	1927
(a) Central and Eastern Europe :						
Excluding Russia (U.S.S.R.)	165.6	173.3	100	104.5	9.3	8.9
Including Russia (U.S.S.R.)	303.7	323.8	100	106.6	17.0	16.6
(b) Rest of Europe .....	184.5	196.1	100	103.3	10.3	10.1
Europe, excluding Russia (U.S.S.R.) .....	350.1	369.4	100	105.6	19.6	19.0
Europe, including Russia (U.S.S.R.) .....	488.2	519.9	100	106.5	27.3	26.7
America :						
North .....	105.0	129.2	100	123.1	5.9	6.6
Caribbean .....	30.1	31.7	100	105.3	1.7	1.6
South .....	55.9	78.7	100	140.9	3.1	4.0
Africa .....	130.7	145.1	100	111.0	7.3	7.5
Asia, excluding Asiatic Russia..	968.6	1,033.9	100	106.7	54.3	53.1
Oceania .....	7.6	9.4	100	123.0	0.4	0.5
WORLD .....	1,786.1	1,947.9	100	109.0	100	100

The group of Central and Eastern European countries here and elsewhere in this Memorandum consists of Albania, Austria, Bulgaria, Czechoslovakia, Estonia, Germany, Greece, Hungary, Latvia, Lithuania, Poland, Roumania, U.S.S.R., the Kingdom of the Serbs, Croats and Slovenes and European Turkey in recent years and of Austria-Hungary, Bulgaria, Germany, Greece, Roumania, Russia, Serbia and European Turkey in 1913.

The whole of the present Union of Socialist Soviet Republics is incorporated in Europe in all the calculations. The absolute figures from which the various indices have been calculated, therefore, are all somewhat too low in the case of Asia and too high in the case of Europe. The procedure adopted was unavoidable, as under the new administrative system the old line of division between Asiatic and European Russia has been abolished and all production figures available refer to the whole Union, including the territories in Asia. The population to-day of what used to be considered as Asiatic Russia is probably about 30 million persons.

The Caribbean group comprises the continental States from Mexico in the north to Panama in the south and all the islands in the Gulf; the North American group is composed of Alaska, Canada, Labrador, Newfoundland and the United States.

The figures on which the calculations are based are frequently open to doubt. In many Asiatic and certain other countries no regular census of population is taken, and even the census figures of the native population in Africa, South America and other parts of the world are often conjectural in character. Moreover, censuses are mostly taken at long intervals and in different years in the various countries, so that the majority of the figures are official or unofficial intercensal estimates. The shifting of European populations resulting from the territorial changes following upon the war and the refugee movement have caused considerable difficulty in the framing of estimates of the pre-war population within present-day frontiers. It is reckoned that the 1913 population in European territories that became detached after 1918 from the sovereign States of which they had previously formed a part amounted to nearly 73 millions.

The table shows that world population has grown by approximately 9 per cent in fourteen years. The rate of growth has, however, varied very widely in different parts of the world. In the continents of North and South America and in Oceania, the growth has been rapid. The population of the U.S.S.R. was greatly reduced in the early post-war years by famine and disease. The estimates of the 1913 population vary by some 10 per cent. In the previous editions of this Memorandum the official pre-war estimate was employed. This estimate is, however, considered by the Soviet authorities to have been excessive and in the present edition their lower figure has been substituted for it. The exact size of the pre-war population within present frontiers is, of course, not ascertainable; but, on the basis of these more recent data, the present-day population would appear to exceed that of 1913 by some 12 million persons. The population of Europe excluding the U.S.S.R. has increased by 5½ per cent, but, if that country be included, the increase is 6½ per cent. The population of Asia excluding Asiatic Russia would appear to have grown by approximately the same percentage, that of Africa by 11 per cent and that of the Caribbean group by a little over 5 per cent. Despite the restrictions imposed on immigration, the population movement tends to be directed to those quarters of the world where money can most rapidly be made. The direction of the streams of emigration has

been modified and some of those streams have dried up, but the current has been sufficiently strong during the last fourteen years to account in large measure for the contrast between the growth of the population in the American continent as a whole by one-fourth, and in Oceania by 23 per cent, and the modest change which has taken place in Europe.

The figures upon which these population indices are based are, of course, in many cases rather rough approximations. The present Caribbean population may be somewhat under-estimated ; but it is known that, as a consequence of the last land reform, there has been and is an emigration from Mexico, so considerable that the Mexican population in recent years has probably been somewhat smaller than it was in 1913. The Caribbean population, excluding that of Mexico, increased by almost 15 per cent during the period under review.

Lack of exact information concerning the movement of the population in China necessarily renders the calculations for Asia open to doubt. It has, in point of fact, been assumed that the generally accepted view that the Chinese population is increasing at a very slow rate is correct. The Asiatic index for 1927, excluding China and Asiatic Russia, is 109. As the population of China represents 44 per cent of that of Asia and the population of the U.S.S.R. 29 per cent of that of Europe plus Asiatic Russia, these two countries have a predominant influence on the continental indices.

The demographic statistics in certain South American countries are confessedly imperfect, and it is almost certain that the very large apparent increase in the population of that continent — almost 41 per cent by 1927 — is due in some measure to improved censal administration in recent years. The 1913 population was under-estimated. Exactly what deduction should be made from the index on this account it is impossible to guess. But, in any case, the error involved cannot affect to any appreciable extent the general index for the world as a whole, as the population of all the States of South America together constitutes only 4 per cent of that of the world. There is, indeed, no reason to doubt that the estimate of the population of the world at the end of 1927 as being about 9 per cent greater than in 1913 is of the right order of magnitude. Judging from the data available, world population would appear now to be increasing at the rate of roughly one per cent, or by some 20 millions, per annum.

It will be observed that, owing to the relative smallness of the population of America, Africa and Oceania, changes in the continental distribution, despite very considerable variations in the rates of increase, are slight, the share of Europe and Asia together in the world population having decreased from 81.6 per cent in 1913 to 79.8 per cent in 1927.

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## II. PRODUCTION.

Very few countries publish regular information concerning the output of industry, and it is impossible from the fragmentary evidence available to obtain any accurate conception of the changes which have taken place in world industrial capacity or productivity. It is therefore necessary to approach the question indirectly and consider the figures of the production of raw materials and foodstuffs in order to form an estimate of industrial activity. Changes in the volume of raw materials produced, however, are not necessarily coincident with changes in the volume of industrial output. The science of industrial production is concerned largely with the discovery of means by which equal services may be rendered with a smaller consumption of crude products. Moreover, there remained after the war and after the slump of 1921 very large accumulations of certain metals and other raw materials, which have been gradually absorbed by industry, so that actual consumption, in the earlier post-war years covered by the index, may have been slightly greater than is indicated by the production tables given below.

Owing to the multiplicity and variety of goods that it is necessary to consider in order to arrive at a satisfactory measure of the changes in the production of the world as a whole and of its main divisions, the indices based on weight or volume statistics must be rendered comparable by expressing them in terms of some common denominator. The purchasing power of gold and of all forms of money has undergone too radical a change to render a comparison of the pre- and post-war values of much significance. It has been necessary, therefore, to calculate a quantitative index. For this purpose, the relative values of the various commodities, calculated on the basis of representative price quotations in a defined period, have been utilised as constant weights.

In view of the changes that have taken place in relative values, it has been considered desirable to make double calculations, using as coefficients both the prices ruling in 1913 — the base year — and those of 1927, the last post-war year considered. The conclusions to which the two methods of procedure lead are not in any serious antagonism. It is sufficient, therefore, to consider here the results obtained by employing 1927 values as weights. But in one or two of the smaller groups of commodities, composed of articles whose relative prices have been radically modified, more important discrepancies occur, and for this reason complete comparative figures are given in the appendices.

The prices employed are annual averages of actual quotations for medium qualities of the various articles in leading producing countries and may be considered fairly representative of relative values on the world market. The index is calculated by the aggregative system; a further explanation of the procedure adopted will be found in Annex II, which should be consulted.

The following sixty-six commodities are taken into consideration :

LIST OF COMMODITIES INCLUDED IN THE PRODUCTION INDEX.

Wheat	Soya beans	Petroleum
Rye	Ground-nuts	Pig-iron and ferro-alloys
Barley	Copra	Steel (ingots and castings)
Oats	Palm and palm-kernel oil (raw)	Copper
Maize	Olive oil (raw)	Lead
Rice	Cotton	Zinc
Potatoes	Flax	Tin
Beet-sugar	Hemp	Aluminium
Cane-sugar	Manila hemp	Nickel
Beef and veal	Jute	Silver
Pork	Wool	Natural phosphates
Mutton and lamb	Raw silk	Potash
Coffee	Artificial silk	Sulphur
Cocoa	Cattle hides and calf skins	Natural guano
Tea	Goat skins	Chilian nitrate of soda
Hops	Sheep and lamb skins	Norwegian nitrate of lime
Tobacco	Raw rubber	Ammoniated nitrate of lime
Cotton-seed	Mechanical pulp	Cyanamide of calcium
Linseed	Chemical pulp	Sulphate of ammonia
Rape-seed	Cement	Superphosphates of lime
Hemp-seed	Coal	Basic slag
Sesame-seed	Lignite	Sulphate of copper.

Sub-indices have been calculated for the following groups of products : (1) Cereals ; (2) Cereals and other vegetable foodstuffs ; (3) Meat ; (4) Colonial produce ; (5) Vegetable oil materials ; (6) Textile materials ; (7) Hides and skins ; (8) Rubber ; (9) Wood pulp ; (10) Cement ; (11) Fuels ; (12) Metals ; (13) Chemicals (fertilisers). The second group includes the same cereals as the first and also rice, raw sugar and potatoes.

Owing to the absence of complete or sufficiently representative data, certain classes of products have had to be omitted, the most important being dairy produce and timber. In the metal group, gold has been omitted, as the greater part of the production is used for monetary purposes. The production of certain other metals likewise excluded is too unimportant to have any noticeable effect upon the index. For China, no comprehensive statistics of the production of cereals and other foodstuffs exist.

Table III below shows the general index weighted by 1927 values for the world as a whole and each of the territorial divisions employed in Table I above, and the two main group indices, foodstuffs and industrial raw materials, for the world only. These group indices are shown in detail in Tables IV and V. The results obtained by weighting the indices given in Table III by 1913 values are shown in the footnote on the opposite page. They differ but slightly from those given opposite, though the total index for each year is a few points higher, as it is influenced by certain goods the relative prices of which in 1927 had fallen owing to the rapid increase in their production.

**TABLE III.**  
**PRODUCTION INDICES WEIGHTED BY 1927 PRICES.<sup>1</sup>**

	1913	1923	1924	1925	1926	1927	
(a) Eastern and Central Europe:							
Excluding Russia (U.S.S.R.)...	100	79	84	99	94	103	
Including Russia (U.S.S.R.)...	100	77	83	101	100	108	
(b) Rest of Europe .....	100	98	103	108	98	115	
Europe, excluding Russia (U.S.S.R.)..	100	88	93	103	96	109	
Europe, including Russia (U.S.S.R.)..	100	85	90	103	100	110	
North America .....	100	127	118	126	130	128	
Caribbean.....	100	153	171	163	154	148	
South America .....	100	130	121	131	136	141	
Africa .....	100	125	135	142	142	148	
Asia, excluding Asiatic Russia.....	100	110	117	121	122	123	
Oceania .....	100	107	122	117	128	121	
WORLD	General Index.....	100	106	108	116	117	121
	Foodstuffs .....	100	103	102	111	109	113
	Raw materials .....	100	110	116	125	129	135

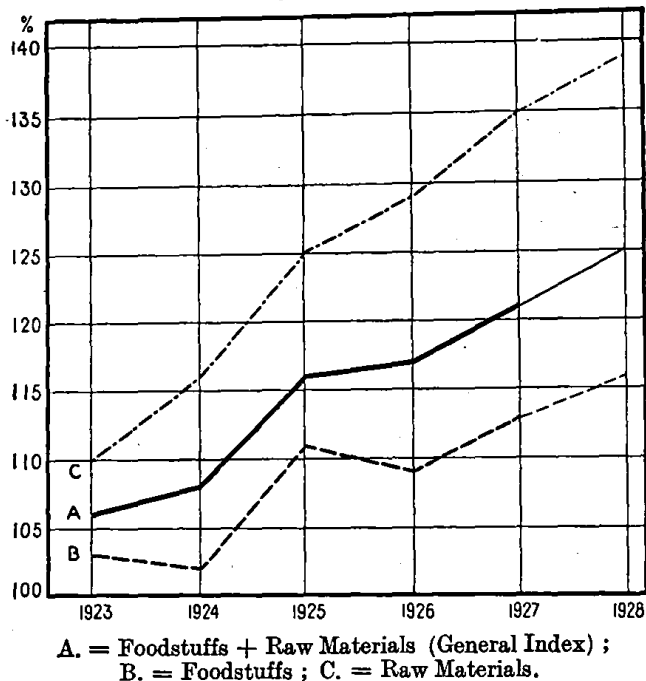
The figures indicate a continuous increase in the production of raw materials and foodstuffs in the world as a whole during the five years under review. For 1927, the general index records a volume of production which was 21 to 24 per cent greater than that of 1913. The expansion of the production of foodstuffs is much slower and, on account of its dependence on weather conditions, more fluctuating than that of the output of industrial raw materials proper. In 1927, the foodstuffs index was 113 and the raw material index 135.

Judging from the preliminary production data available for 1928, the general index weighted by 1927 values would appear to have risen in that year to 125 and

<sup>1</sup> PRODUCTION INDICES WEIGHTED BY 1913 VALUES.

	1913	1923	1924	1925	1926	1927	
(a) Eastern and Central Europe:							
Excluding Russia (U.S.S.R.).....	100	78	86	100	96	105	
Including Russia (U.S.S.R.) .....	100	77	84	102	102	110	
(b) Rest of Europe .....	100	98	103	109	99	116	
Europe, excluding Russia (U.S.S.R.).....	100	88	94	104	98	110	
Europe, including Russia (U.S.S.R.) .....	100	85	91	104	101	112	
North America.....	100	127	118	127	131	129	
Caribbean.....	100	152	169	162	154	148	
South America.....	100	128	121	130	135	140	
Africa.....	100	125	136	143	143	149	
Asia, excluding Asiatic Russia.....	100	115	122	127	130	132	
Oceania.....	100	107	123	118	129	123	
WORLD	General Index.....	100	107	110	119	120	124
	Foodstuffs.....	100	104	103	112	110	113
	Raw materials .....	100	113	119	130	135	141

*Production Indices weighted by 1927 values.  
1913=100*



the sub-indices for foodstuffs and raw materials to 116 and 139 respectively. If 1913 values be used as weights, the rise both in the general index and in that for raw materials is still greater. It seems indubitable, therefore, that the world production of foodstuffs and raw materials to-day is about one-quarter greater than in the period immediately preceding the war. Although provisional in character, the above index figures for 1928 have been taken into account in the diagram herewith.

When comparing the foodstuffs and raw material indices, account must be taken of the fact that the base used for agricultural produce is the last pre-war quinquennium and for all other commodities the

year 1913. That year was one of exceptional prosperity and, had an identical base been taken for all products, the discrepancy between the foodstuffs and the raw material indices would have been more marked than it is.

In 1926, the general world production index showed no substantial advance. In 1927, it rose by about 3½ per cent. In Europe, it rose by 10 per cent, mainly owing to the much higher output of raw materials. It will be recollected that production in 1926 was influenced by the British coal dispute. Of the other continents, only in South America and Africa was the rate of growth in 1927 more rapid than the world average. In North America, the Caribbean and Oceania, there was a drop in production ; the North-American production of foodstuffs, however, in 1927 exceeded that of any year since 1923. The steady decline in the Caribbean index since 1924 must be attributed to the restrictions imposed on the production of sugar in Cuba and to the declining supplies of petroleum from Mexico.

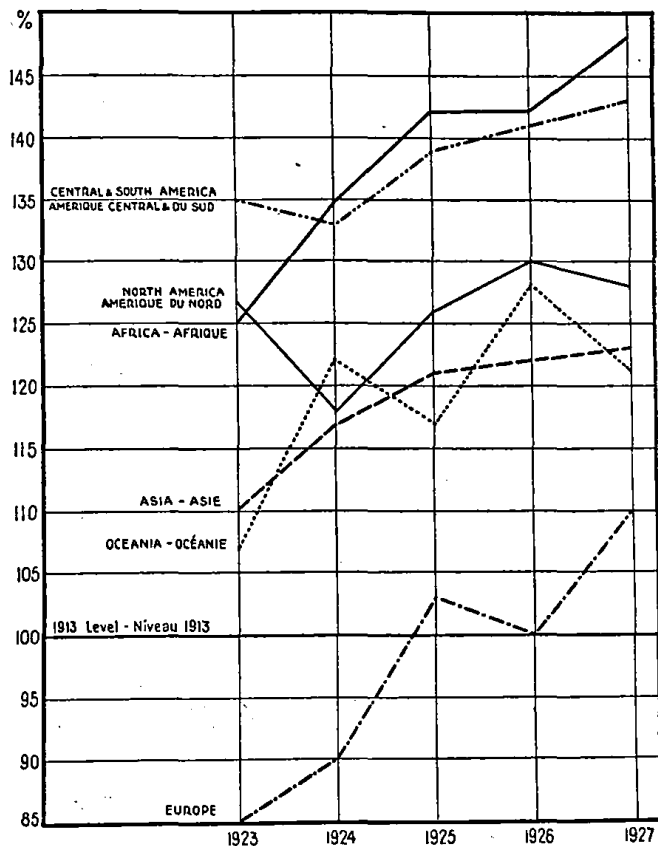
In spite of the recovery in European production during the last year under review, the general index for that continent indicates an increase in the annual volume of production since 1913 of only one-tenth, whereas the output of the other continents was from one-fifth to one-half greater than in the base year.

Attention has been drawn in previous issues of this Memorandum to the gradual restoration of the economic equilibrium between Central and Eastern Europe and the rest of the Continent. This process was temporarily disturbed in 1926, when the general index for Western and Maritime Europe as a result of the British coal stoppage fell even below that of the Central and Eastern division of the Continent ; but the tendency of earlier years was continued in 1927. In that year, the foodstuffs index for Central and Eastern Europe, including

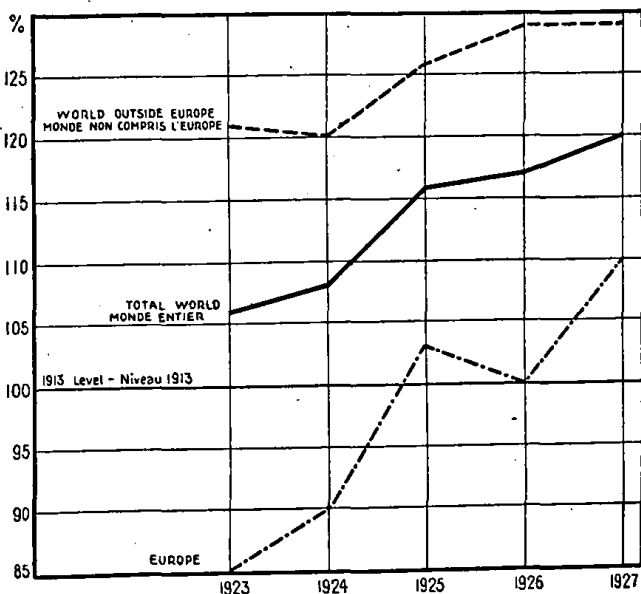
the U.S.S.R., was slightly higher than that of the rest of Europe. Its raw material

*Production Indices weighted by 1927 values (1913=100)*

I.



II.



index was considerably lower, but it has risen more rapidly than corresponding indices for other parts of the Continent.

Particularly striking has been the increase in Russian agricultural production. The official Russian crop returns have given rise to considerable discussion in view of the fact that, in spite of the increase indicated by the published statistics, the surplus available for export has recently been comparatively insignificant. It has been suggested that possibly the estimates for pre-war production in the present territory of the Soviet Union which have been employed as the basis of comparison are too low. However that may be, it does not affect the recent upward trend of production.

In 1927, the production of food-stuffs and raw materials in the world apart from Europe was 29 to 32 per cent greater than in 1913, which is equivalent to a growth of 1.8 to 2 per cent per annum throughout the whole period. But the advance during the four years since 1923 only amounts to from 6 to 8 per cent, while the European index rose in the same period by 31 to 32 per cent, or by roughly 7 per cent per annum.

The rapid recent approach of Europe towards the world average is clearly illustrated in the accompanying diagrams showing the production curves of the various continents, of the world as a whole and of the world excluding Europe. The continental indices naturally fluctuate

appreciably from year to year as crops vary.



In Table IV below, the foodstuffs indices are set out in a manner similar to that adopted for the general production indices. The double figures indicate the results obtained by using 1913 and 1927 values as weights.

TABLE IV.  
FOODSTUFFS PRODUCTION INDICES WEIGHTED BY 1927 AND 1913 VALUES.

	1913	1923	1924	1925	1926	1927
(a) Eastern and Central Europe :						
Excluding Russia (U.S.S.R.)	100	82	82/3	98/9	90/1	97/8
Including Russia (U.S.S.R.)	100	81/2	83/4	103/4	101	106/7
(b) Rest of Europe . . . . .	100	98	98/9	109/10	101	105/6
Europe, excluding Russia (U.S.S.R.)	100	88/9	89/90	103	94/5	100/1
Europe, including Russia (U.S.S.R.)	100	86	88/9	105	101	106/7
North America . . . . .	100	126	113	117	115	120
Caribbean . . . . .	100	140/1	169	160/1	153	147/8
South America . . . . .	100	130/1	118	129/30	131/2	135/6
Africa . . . . .	100	116	120/1	123/4	119/21	132/4
Asia (excluding China) . . . . .	100	103/4	108	108/9	108	108
Oceania . . . . .	100	114/5	135/7	118/21	132/4	124/6
WORLD . . . . .	100	103/4	102/3	111/2	109/10	113

It will be observed that weighting by present and by pre-war values gives almost identical results.

As already indicated, the foodstuffs production of China is not included in the index. The 1927 population of the world apart from China was almost 11 per cent greater than in 1913. In spite of the comparatively favourable crops of the world as a whole in 1927, the production increase indicated by the foodstuffs index for that year was only slightly in excess of the population increase. If, in addition to China, the Soviet Union be excluded from the world totals, the growth in the foodstuffs production proves to be identical with the population growth.

	Population in 1927 as percentage of that in 1913.	Foodstuffs production in 1927 as percentage of that in 1909-13 or 1913.
Europe, excluding U.S.S.R. . . . .	106	100 (99)
North America . . . . .	123	120 (117)
Caribbean . . . . .	105	147 (153)
South America . . . . .	141	136 (133)
Africa . . . . .	111	132 (125)
Asia excluding China . . . . .	109	108 (108)
Oceania . . . . .	123	124 (125)
WORLD, excluding China and U.S.S.R.	111	111 (110)

The figures in brackets are averages for the period 1925-27. In Europe and North and South America, the population has increased more than the foodstuffs production. In Asia, the output of foodstuffs has not quite kept pace with the population growth ; in Oceania it is slightly greater, and in Africa and the Caribbean group it is considerably greater. The result for the world as a whole, granted the exclusions indicated above, is an exact maintenance of the balance between foodstuffs production and population growth.

The rapid increase in the output of industrial raw materials shown in Table V below is in striking contrast, in all continental groups except Oceania and the Caribbean, with the relatively modest growth of the foodstuffs production. As in the preceding table, the double figures indicate the results obtained by using both 1913 and 1927 values as weights.

TABLE V.  
RAW MATERIAL PRODUCTION INDICES WEIGHTED BY 1927 AND 1913 VALUES.

	1913	1923	1924	1925	1926	1927
(a) Eastern and Central Europe :						
Excluding Russia (U.S.S.R.)	100	70	89/90	100/2	104/7	118/22
Including Russia (U.S.S.R.)	100	64/5	81/2	95/7	99/03	113/7
(b) Rest of Europe . . . . .	100	97/8	107	107/8	95/7	125/7
Europe, excluding Russia (U.S.S.R.)	100	86/7	100/1	104/6	99/01	122/5
Europe, including Russia (U.S.S.R.)	100	81/2	94/5	101/3	97/00	119/22
North America . . . . .	100	127/8	123/4	135/7	146/8	137/8
Caribbean . . . . .	100	174/9	169/74	163/7	156/8	147/9
South America . . . . .	100	126/7	124	132	140/2	148/9
Africa . . . . .	100	135/7	154	166/7	170/2	167/9
Asia, excluding Asiatic Russia . .	100	128/42	140/55	151/70	155/82	163/88
Oceania . . . . .	100	100/1	110	115/6	124	118/9
WORLD . . . . .	100	110/3	116/9	125/30	129/35	135/41

In 1927, the lowest raw material index was that for Oceania, which is largely determined by a single agricultural product, namely, wool. The Caribbean index fell for reasons which have already been explained.

The advance in raw material production in 1927 as compared with 1926 was greater in Europe than in any other continent. There was a very considerable decline in North America and a smaller drop in Africa. The African index, weighted by 1927 values, remained the highest ; but, had gold been included, it would have worked out at 155 instead of 167. The increase in the Asiatic production of raw materials is also very great. The large discrepancy between the index figures

resulting from the utilisation of 1913 and 1927 values as weights is due to the preponderating influence of rubber, the Asiatic production of which has increased more than ten times, while the price has fallen by 50 per cent since 1913. The South American and Caribbean indices are both nearly 50 per cent above the pre-war level, and available production data for 1928 would appear to indicate that the North American raw material index for that year will be of about the same order of magnitude.

The world's production of raw materials has grown steadily year by year since 1923 and was 35 to 41 per cent greater in 1927 than in 1913. In the world, excluding Europe and Oceania, the increase was 46 to 53 per cent. This means that the rate of growth throughout the whole period of fourteen years has been 2.2 to 2.5 per cent per annum in the world as a whole and 2.8 to 3.1 per cent in America, Africa and Asia taken together.

In order to obtain a rough measure of the relative changes in the raw material output per head of population in the various continental groups, the index figures for 1927 (weighted by 1927 values) as given in Table V above have been divided by the index figures for the population increase shown in Table II. The results are set out below :

Continental groups :	Percentage increase (+) or decrease (—) in production per head in 1927 compared with 1913
Central and Eastern Europe :	
Excluding U.S.S.R. . . . . .	+ 13
Including U.S.S.R. . . . . .	+ 6
Rest of Europe . . . . .	+ 18
Europe, excluding U.S.S.R. . . . . .	+ 16
Europe, including U.S.S.R. . . . . .	+ 12
North America . . . . .	+ 11
Caribbean . . . . .	+ 42
South America . . . . .	+ 6
Africa . . . . .	+ 52
Asia . . . . .	+ 51
Oceania . . . . .	— 4
WORLD . . . . .	+ 24

Only in Oceania has the output per head fallen. The comparative results for Europe and more especially its Western and Maritime division are much more favourable than when the aggregate of the production is considered without reference to the changes in the population. It will be noticed that the increase in Europe's *per capita* output of industrial raw materials is greater than that of both South and North America. But 1927 was a comparatively slack industrial year in the United States of America. If the above calculation be made on the basis of the 1926 figures for that continent, the increase in its output per head would be 20 per cent, not 11 per cent as in 1927. Much greater progress has been made in Asia, Africa

and the Caribbean group. Despite this development, their output per head remains relatively low, as the following figures show.

	Output of industrial raw materials per head in each continental group as percentage of the average output per head in the world in 1927.
Central and Eastern Europe, excluding U.S.S.R.	128
U.S.S.R. . . . .	54
Rest of Europe . . . . .	178
Europe, excluding U.S.S.R. . . . .	155
Europe, including U.S.S.R. . . . .	126
North America . . . . .	507
Caribbean . . . . .	96
South America . . . . .	147
Africa . . . . .	48
Asia. . . . .	36
Oceania . . . . .	502
<b>WORLD . . . . .</b>	<b>100</b>

In the following table, the indices of each commodity group for the five years ending 1927 are given.

TABLE VI.  
PRODUCTION INDICES WEIGHTED BY 1927 VALUES.<sup>1</sup>

	1913	1923	1924	1925	1926	1927
Cereals . . . . .	100	100	90	105	104	104
Cereals and other food crops .	100	103	101	111	108	112
<i>Meat</i> . . . . .	<i>100</i>	<i>104</i>	<i>110</i>	<i>110</i>	<i>112</i>	<i>116</i>
Colonial produce, etc. . . . .	100	127	131	135	138	141
Vegetable oil materials . . . .	100	120	136	142	138	166
Textiles . . . . .	100	94	109	123	129	122
<i>Hides and skins</i> . . . . .	<i>100</i>	<i>97</i>	<i>101</i>	<i>104</i>	<i>107</i>	<i>109</i>
Rubber . . . . .	100	328	356	446	564	550
Wood-pulp . . . . .	100	129	135	151	169	179
Cement . . . . .	100	122	133	149	158	179
Fuels . . . . .	100	116	115	117	118	128
Metals . . . . .	100	104	106	120	124	134
Chemicals (fertilisers) . . . . .	100	106	116	133	133	139
General Index . . . . .	100	106	108	116	117	121
Foodstuffs . . . . .	100	103	102	111	109	113
Raw materials . . . . .	100	110	116	125	129	135

<sup>1</sup> For the production indices of the various groups weighted by 1913 values, see Annex III.

As already stated, the first index given above is supplementary to the second, which includes, in addition to other cereals, rice, potatoes and raw sugar.

An inspection of Annex I will show that the commodities the production of which in 1927 was over one-third greater than before the war are : cane-sugar 68 and potatoes 35 per cent, cocoa 116, tobacco 53 and coffee 41 per cent ; ground-nuts 192, soya beans 178, copra 115, olive oil 87, palm and palm-kernel oil 63, linseed 44 and hempseed 37 per cent ; artificial silk 746, natural silk 84 and hemp 34 per cent ; rubber 450 per cent ; chemical pulp 88 and mechanical pulp 57 per cent ; cement 79 per cent ; petroleum 222 and lignite 56 per cent ; aluminium 229, copper 54, lead 48, zinc 34 and steel 33 per cent ; nitrate of lime 575, cyanamide of calcium 453, sulphur 165, sulphate of ammonia 158, natural guano 114, potash 48 and natural phosphates 39 per cent.

It will be observed that the largest increases outside the fertiliser group and the group of semi-chemical industries using vegetable oils have been affected in connection with the relatively new industries, artificial silk, aluminium and motor transport, while the rapid advance in electric installations is reflected in the copper and lead indices. The dispersion of the various indices from their mean indicates, therefore, to a greater extent economic progress than failure of the world to recover its economic balance.

On the other hand, among the foodstuffs, barley fails to reach the pre-war level, and the production of hops is greatly reduced. In the vegetable oil group, rape-seed and sesamum show a decline compared with 1913, as also do flax in the textile group, goat skins in the hides and skins group and Chilian nitrate in the chemical group.

Of the foodstuffs, the cereals have increased the least. The 1928 harvest, however, was much heavier than that of 1927 and constitutes an unprecedented record. Judging from the preliminary data available, the cereal index for last year should reach 108 compared with 104 for 1927 and 105 for 1925. The 1928 index for wheat alone was as high as 119. The consumption of meat per head of the population has increased in recent years and is substantially greater now than it was before the war.

The production of other vegetable foodstuffs, including rice, potatoes and raw sugar, in 1925 was 20 per cent, in 1926 15 per cent, and in 1927 23 per cent greater than the average for 1909-13. The decline in 1926 was largely due to the restrictions imposed on sugar cultivation and to the light potato crop. But, in 1927, both the potato crop and the beet-sugar production rose very considerably, while the production of rice and cane sugar remained stationary. The output of cane sugar rose in 1928 owing to the removal of the restrictions on production in Cuba and the rice crop in that year was also good, so that the " other vegetable foodstuffs " index will probably prove to be 28 per cent above the pre-war level. The 1928 index for the total group of cereals and other food crops will probably reach 116 compared with 112 in 1927.

The group of colonial products is miscellaneous in character and requires further analysis. The weighted index for coffee, cocoa and tea fell from 128 in 1923

to 126 in 1925 but rose again to 137 in 1926, and to 141 in 1927. The pre-war tendency towards an increased consumption of non-alcoholic beverages thus continued and greatly affected hop-growing. The tobacco crop has declined slightly since 1925, but still remains more than one-half greater than the pre-war average.

In the absence of production figures for soya beans, copra, palm and palm-kernel oil, the export statistics of the various tropical and sub-tropical producing countries have been employed for the construction of this portion of the vegetable oil index.

The textile index is influenced by the inclusion of the generally accepted trade estimates for artificial silk, the production of which in 1927 is believed to have been about seven and a-half times and in 1928 almost nine times as great as in 1913. According to the latest revised estimates by the United States Agricultural Department, the world production of raw wool was almost exactly the same in 1925 as in the last pre-war quinquennium. It has since risen by some 6 per cent. The raw-cotton production dropped by over 15 per cent in 1927 compared with 1926, but appears to have recovered by some 12 per cent in 1928. Preliminary estimates of the 1928 production are also available for some of the remaining textiles and it is not unlikely that that year's index for the whole textile group will touch the 1925 record figure of 129. The index for 1927 was 122.

More precise data for meat and hides and skins than were readily available last year have now been obtained. Though the indices for these commodities are of more doubtful accuracy than those for the other goods and are therefore given in italics in the table on page 23, they may be accepted as being probably of approximately the right order of magnitude. The hides and skins index includes exports from China and India. It represents, indeed, rather the quantity of skins coming forward for treatment by tanners both locally and especially in the more industrialised areas of the world than total world production. Since 1925, however, it has moved in sympathy with the meat-production index and is indeed based largely on the same slaughter statistics. That it has remained lower than the meat index is due in part to the fact that exports of hides and skins from China and India during the period under review have remained below the pre-war level. However, the composition of the two group indices is not identical. The meat index comprises cattle, calves, pigs, sheep and lambs, the other cattle hides and calf skins, goat skins and sheep and lamb skins.

The world production of rubber is estimated somewhat varyingly by different authorities, but would appear in 1926 to have been more than four and a-half times as great as in 1913. The output dropped slightly in 1927, but rose again in 1928, as a result of the abolition of the restrictions in British Malaya, the index for that year being 585 compared with 550 in 1927.

It has proved possible to obtain more accurate and complete information on the pulp production of a number of countries than heretofore. The pre-war output has been somewhat under-estimated in the earlier editions of this Memorandum. The index for this group, therefore, proves to be lower than previously indicated. The production of both mechanical and chemical pulp has developed rapidly in

recent years, the output of the former in 1927 being 57 per cent and of the latter 88 per cent greater than in 1913. Moreover, great progress has been made in the utilisation of the numerous by-products from the chemical pulp-production process.

Although it was not possible to obtain exact information for all the years under review from all cement-producing countries, the figures on which the index for this product is based may be accepted as fully representative of the world production. The index shows an uninterrupted rapid increase since 1923 and reached, in 1927, a level which was almost 80 per cent higher than in 1913.

The comparatively low level of the post-war coal consumption, especially in Europe, must be attributed in part to the serious depression which, until recent years, persisted in the heavy-metal and particularly the pig-iron industry, in part to the greater use of alternative forms of power and to a considerable extent to economy in use. The production index for this commodity remained practically stable from 1923 to 1926 at some 2 per cent below the 1913 level. The very serious drop in the British coal output caused by the 1926 conflict was almost wholly made good by the simultaneous increase in the coal output elsewhere. In 1927, the production of North America dropped; in Europe it increased owing to the decrease of stocks. In 1928, stocks being adequate, the production dropped again by almost 2 per cent. In North America, the decline was still greater and the world index for that year was only 102. The comparatively high level of the total fuel index given in Table VI is, of course, due to the inclusion therein of crude petroleum and, though to a much less degree, of lignite. The extraction of both of these products continued to expand in 1928, and the fuel index for that year maintained its 1927 record level of 128.

The rise in the metal index in 1925 was striking. It continued in 1926 in spite of the great reduction in the British output consequent upon the coal conflict. Though, as will be shown later, the production in the United States of America fell in 1927, the world index, thanks to the remarkable recovery in the European output, rose appreciably, and this upward movement continued in 1928, when both Europe and, more especially, North America marked new records. By 1927 the world metal index had risen to 134. It probably exceeded 143 in 1928. The rapid development since 1923 is, above all, due to the recovery of the European iron and steel industry.<sup>1</sup> The 1928 world index for raw steel appears to be 43 per cent higher than in 1913. The pig-iron index still lags very much behind (in 1928, 11 to 12 per cent above the 1913 level). The production of all other metals has increased more than that of pig-iron.

The production of heavy chemicals and fertilisers apart from Chilian nitrate shows a similar, though still more pronounced, increase in recent years. Chilian nitrate of soda has suffered from the competition of synthetic fertilisers and its production in 1927 only amounted to little more than half of the pre-war figure.

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<sup>1</sup> In order to avoid overlapping of the indices for pig-iron and raw steel, only the output of those qualities of pig-iron which are not used for the manufacture of steel are included in the group index.

The supply of basic slag obtained as a by-product from the manufacture of pig-iron has grown with the recovery in smelting. Its output is now greater than it was in 1913.

From the foregoing rapid survey of the progress attained in the production of foodstuffs and raw materials, it is clear that the world to-day is much richer than it was in 1913 ; but the production of wealth has developed much more rapidly in some parts of the world than in others. It remains, therefore, to consider in greater detail the extent to which the different continents have shared in the progress achieved. In Table VII (see pages 28 and 29), the various commodity indices are shown according to the same territorial grouping as has been employed in the other tables.

As already stated, China is omitted from the foodstuffs groups. For tea, oil-seeds, soya beans, raw silk, hides and skins, her export figures have been employed, a practice that has also been adopted in connection with tropical products in the case of a few other countries whose exports are of world importance.

The vast majority of the indices for all continental groups show a material advance over pre-war conditions ; but the indices for Europe are as a rule lower than those of the other continents. Cereals are substantially lower in the Caribbean group and also in Asia and Europe — more especially in its eastern and central division, excluding Russia ; the production of hides and skins is lower in Asia and Oceania ; the wild-rubber extraction in Africa and Brazil has receded before the competition of the Asiatic plantation rubber ; Chilean nitrates have been largely replaced by artificial fertilisers ; certain crops have suffered normal fluctuations. But, apart from these few exceptions, all indices for all continents are higher, in many cases very much higher, than in 1913. Taken as a whole, the table affords a picture of general progress in which all continents have shared and to which all classes of commodities have contributed.

By 1925, even Europe had more than regained the ground it had lost in the production of the commodities included in its index. The setback in 1926 affected the different divisions of the Continent unequally. The fuel index in Western and Maritime Europe fell as low as 62 compared with 91 in the preceding year ; but the metal index for the whole Continent remained unchanged. In 1927, there was an all-round increase in the indices for all commodity groups except cereals, hops and tobacco. The group indices which have risen most since 1913, apart from that of the vegetable oil group (by 79 per cent), entirely governed by olives, the crop of which in 1927 was exceptional, are : chemicals by 51 per cent ; cement by 50 per cent ; wood pulp by 49 per cent and textiles by 26 per cent. The index for the last-mentioned group is largely influenced by artificial silk, the European output of which has increased over five times since 1913. The metal index for 1927 is 117 for the whole of Europe and 121 for its Western and Maritime division. The total raw materials index for Western and Maritime Europe still remains higher than those for any other of the groups of European countries. But, since 1925, Eastern and Central Europe has appreciably narrowed the gap which then existed.

In striking contrast to the all-round acceleration of the industrial activity in Europe in 1927, the indices for all raw-material groups except wood pulp, cement and chemicals declined in North America. Its general raw materials index fell from 146



**TABLE VII.**  
**PRODUCTION INDICES WEIGHTED BY 1927 VALUES : BY CONTINENTAL GROUPS.**  
 1913=100

Groups of Products	Years	Eastern and Central Europe		Rest of Europe (Western and Maritime)	Europe		North America	Caribbean	South America	Africa	Asia	Oceania	World
		Excluding U.S.S.R.	Including U.S.S.R.		Excluding U.S.S.R.	Including U.S.S.R.							
Cereals	1923	82	77	100	89	83	124	84	146	112	91	122	100
	1924	70	72	92	79	77	106	85	114	111	87	160	90
	1925	91	96	108	98	99	115	66	139	116	88	113	105
	1926	88	98	98	92	98	112	73	139	110	88	154	104
	1927	85	94	97	90	95	118	72	145	118	89	117	104
Cereals and Other Food Crops	1923	85	84	97	90	87	124	146	156	118	102	121	103
	1924	82	83	97	88	87	107	181	129	122	107	154	101
	1925	99	104	111	103	106	115	171	151	125	107	129	111
	1926	89	101	100	93	101	112	161	153	118	107	152	108
	1927	95	106	104	99	106	118	154	159	134	106	133	112
Meat	1923	68	70	100	84	82	135	109	104	109	124	104	104
	1924	84	87	103	93	93	135	106	107	112	129	103	110
	1925	95	96	105	100	100	126	106	107	114	132	99	110
	1926	99	99	106	102	102	127	110	110	121	131	100	112
	1927	105	106	109	107	107	127	113	111	129	138	109	116
Colonial Produce, Tobacco, Hops, etc.	1923	87	87	87	87	87	134	113	139	283	120	126	127
	1924	117	108	145	127	119	114	110	127	329	131	140	131
	1925	97	118	131	110	122	126	114	122	342	137	127	135
	1926	98	119	121	106	120	120	103	147	355	136	128	138
	1927	108	121	106	107	117	116	119	148	351	143	134	141
Vegetable-oil Materials	1923	76	77	127	114	108	85	128	186	134	128	196	120
	1924	109	99	140	132	125	119	129	153	155	142	199	136
	1925	88	108	121	113	116	118	123	239	169	148	212	142
	1926	84	98	101	97	100	122	180	221	177	146	227	138
	1927	84	104	224	189	179	108	130	250	180	164	228	166
Textiles	1923	101	66	109	106	79	83	84	113	110	109	98	94
	1924	113	77	123	119	91	108	98	111	121	120	111	109
	1925	127	96	143	136	110	127	97	115	138	128	116	123
	1926	123	91	157	142	111	142	159	114	136	130	127	129
	1927	130	103	178	156	126	110	79	113	122	136	112	122
Hides and Skins	1923	84	81	95	90	87	110	113	117	106	83	100	97
	1924	96	93	95	96	94	114	112	123	109	78	91	101
	1925	105	102	97	101	100	117	117	122	111	85	84	104
	1926	106	105	99	102	102	119	122	125	118	85	88	107
	1927	104	106	102	103	104	114	127	129	123	90	98	109
Rubber	1923	—	—	—	—	—	—	—	56	22	676	—	328
	1924	—	—	—	—	—	—	—	58	22	737	—	356
	1925	—	—	—	—	—	—	—	71	33	922	—	446
	1926	—	—	—	—	—	—	—	67	44	1,186	—	564
	1927	—	—	—	—	—	—	—	78	44	1,145	—	550

TABLE VII (continued).

PRODUCTION INDICES WEIGHTED BY 1927 VALUES: BY CONTINENTAL GROUPS.  
1913=100

Groups of Products	Years	Eastern and Central Europe		Rest of Europe (Western and Maritime)	Europe		North America	Caribbean	South America	Africa	Asia	Oceania	World
		Excluding U.S.S.R.	Including U.S.S.R.		Excluding U.S.S.R.	Including U.S.S.R.							
Wood-pulp	1923	80	74	118	102	98	170	105		—	550	—	129
	1924	89	82	133	113	109	166	105		—	560	—	135
	1925	110	103	146	130	126	181	105		—	632	—	151
	1926	120	114	157	141	137	207	105		—	769	—	169
	1927	131	126	169	153	149	212	105		—	836	—	179
Cement	1923	74	70	118	98	94	144	250	600	229	247	193	122
	1924	80	77	129	107	103	156	300	800	229	267	238	133
	1925	101	97	138	121	118	169	350	900	257	318	253	149
	1926	106	103	151	131	128	172	400	1,000	286	408	278	158
	1927	131	126	173	154	150	182	450	1,150	343	498	536	179
Fuels	1923	64	63	96	84	82	141	544	287	143	162	100	116
	1924	90	85	97	94	92	127	513	431	150	171	110	115
	1925	95	91	91	93	91	131	431	636	157	180	110	117
	1926	105	103	62	79	80	144	346	1,054	168	182	108	118
	1927	112	112	96	102	103	142	251	1,599	164	182	111	128
Metals	1923	55	48	86	73	68	139	139	350	730	130	99	104
	1924	72	63	102	90	84	123	137	341	975	146	110	106
	1925	88	81	104	98	93	142	145	350	978	151	125	120
	1926	91	87	99	96	93	151	155	377	974	150	130	124
	1927	118	111	121	120	117	144	170	421	1,100	167	134	134
Chemicals (Fertilisers)	1923	100	98	107	104	103	165	246	71	114	182	100	106
	1924	113	113	120	117	116	144	286	89	137	206	114	116
	1925	150	148	125	136	135	173	234	93	151	227	154	133
	1926	149	147	131	139	138	176	306	74	172	261	198	133
	1927	170	163	137	152	151	187	311	60	196	273	214	139
<i>Total Production</i>	1923	79	77	98	88	85	127	153	130	125	110	107	106
	1924	84	83	103	93	90	118	171	121	135	117	122	108
	1925	99	101	108	103	103	126	163	131	142	121	117	116
	1926	94	100	98	96	100	130	154	136	142	122	128	117
	1927	103	108	115	109	110	128	148	141	148	123	121	121
Foodstuffs	1923	82	82	98	89	86	126	140	131	116	103	114	103
	1924	82	83	98	89	88	113	169	118	120	108	135	102
	1925	98	103	109	103	105	117	160	130	123	108	118	111
	1926	90	101	101	94	101	115	153	132	119	108	132	109
	1927	97	106	105	100	106	120	147	136	132	108	124	113
Raw Materials	1923	70	64	98	86	81	127	179	127	137	128	100	110
	1924	89	81	107	100	94	123	174	124	154	140	110	116
	1925	100	95	107	104	101	135	167	132	167	151	115	125
	1926	104	99	95	99	97	146	158	142	172	155	124	129
	1927	118	113	125	122	119	137	149	149	169	163	118	135

for 1926 to 137 for 1927, but its foodstuffs index rose from 115 to 120. This decline in the raw-material production, however, was temporary in character. Judging from the preliminary data available, the North-American industrial raw-material output in 1928 would appear to have more than regained the ground lost in 1927 and simultaneously its foodstuffs index has advanced beyond the 1927 figure and almost touched the record level reached in 1923. The productive activity in Europe in 1928 somewhat slackened towards the end of the year; but the Continent as a whole would appear to have well maintained and even somewhat increased the volume of its output of foodstuffs and raw materials.

In certain cases, the high indices of Asia and Africa, South and Central America reflect in part the development of European industry. Thus, although the United States of America are very much the biggest consumers of rubber, petroleum and certain metals, European consumption has likewise grown much since 1913 with the development of the motor industry, electrical engineering, etc. Moreover, the prices of raw materials and foodstuffs have not risen to the same extent as those of manufactured articles, and Europe reaps an advantage from the fact that it can purchase a greater quantity of foodstuffs or raw materials with a given quantity of finished goods than it could before the war.

On the other hand, the increased production of many raw materials elsewhere reflects an increase in the productive capacity of other territorial groups and a contraction of demand for European goods.

Naturally, those continental areas with the most highly developed economic organisation show a more even rate of progress than lands in which new fields of enterprise have quite recently been opened up. Thus, the highest index in North America in 1927 is 212 for wood pulp, compared with 1,599 for fuels in South America, 1,145 for rubber in Asia and 1,100 for metals in Africa. But the three last-mentioned figures have, in point of fact, a very limited significance. The production of fuels in South America and of metals in Africa is small and the very great relative increase is almost wholly due to the opening-up of new petroleum wells in Colombia and Venezuela and new copper mines in the Belgian Congo. The rubber production in Asia has likewise vastly developed since 1913, and practically the whole production is exported in crude form for treatment and use elsewhere.

In order to determine the real significance of the figures given in Table VII, it is necessary to show the importance of the contributions of each continent to the world production of each group of commodities. This is done in Table VIII (pages 32 and 33).

The data are, of course, far from being sufficiently complete for Table VIII to give an exact picture of the contribution of each continental group to the total supply of raw materials and foodstuffs. The omission of China from the cereals and other foodstuffs groups, the omission of dairy produce, of timber and of certain building materials, to quote the most important gaps in the statistics, and the fact that, for some products and certain countries, exports have had to be substituted for production, set obvious limitations to the conclusions that can be drawn.

The Table is important, however, because, when read in conjunction with Table VII, it becomes possible to distinguish between those changes which are of

real and immediate importance in the general economic equilibrium of the world and those which, though individually striking, are not far-reaching in their effects. Thus the growth in the importance of South America and Oceania as cereal producers and the drop in the North-American cereal index from 124 in 1923 to 118 in 1927 are significant and important, for these three continents are the main granaries of the world. But the total South-American and Oceanic crop was on an average only 7 per cent of the world supply. Significant too are the steady decline since 1923 in the North-American meat index and the simultaneous recovery in the European index. Though exports of meat from South America and Oceania have substantially increased, the share of those two continents in the total world meat supply is actually less than it was in 1913.

The generality of the progress in the textile production up to and including 1926 is the result largely of a common endeavour by consuming countries to render themselves more independent of the restricted sources of supply of vegetable textiles both by starting new cotton plantations and by the development of the silk and artificial-silk industries. Despite this endeavour, however, the contribution of North America to the total world production of textiles rose from 26 per cent in 1923 to 32 per cent in 1926. The drop in the world index for textiles in 1927 was due mainly to certain restrictions imposed in the United States on cotton production, which resulted in North America's share in the world textile supply dropping to 26 per cent. As a result partly of this contraction in the American supply and partly of the appreciable increase in its own textile production, Europe's share simultaneously rose to more than it was before the war.

Table VIII brings out perhaps even more clearly than the others the tendency of the centre of productive activity to shift in post-war years from Europe west to the United States and Canada and beyond them to Japan, China and the Malay. The most striking feature of the year 1927, however, is the restoration of the balance between Europe on the one hand and North America on the other. Europe's share in the world supply of foodstuffs, a little over 44 per cent before the war, recovered in 1927 to about 42 per cent. North America's share in that year was a little more than 23 per cent compared with a pre-war share of roughly 22 per cent. With regard to the output of industrial raw materials, Europe's share, 38 per cent in 1913, recovered to about 34 per cent in 1927 (compared with 29½ per cent on an average for the years 1923-26), whereas North America's share was practically equal in the two years (between 33 and 34 per cent). It remains to be seen whether this straightening of the balance between the two chief industrial continents proves to be a chance and passing phenomenon only. As already stated, 1927 was a relatively slack industrial year in the United States of America and activity revived there in 1928, while in Europe it slowed down.

Central and South America, Africa and Oceania have increased their share in the total supply of foodstuffs from somewhat over 10 per cent before the war to somewhat over 12 per cent in 1927, while that of Asia (excluding China) dropped from 24 to 23 per cent. Central and South America, Africa and Asia increased their share in the output of industrial raw materials from 26 per cent in 1913 to over

TABLE VIII.

## PERCENTAGE DISTRIBUTION OF AGGREGATE PRODUCTION.

Groups of Products	Years	Eastern and Central Europe		Rest of Europe (Western and Maritime)	Europe		North America	Caribbean	South America	Africa	Asia	Oceania	World
		Excluding U.S.S.R.	Including U.S.S.R.		Excluding U.S.S.R.	Including U.S.S.R.							
Cereals	1913	20.0	37.9	13.8	33.8	51.7	31.7	1.0	4.2	2.3	8.0	1.1	100
	1923	16.3	29.1	13.7	30.0	42.8	39.1	0.9	6.1	2.5	7.2	1.4	100
	1924	15.6	30.0	14.1	29.7	44.1	37.2	0.9	5.3	2.8	7.7	2.0	100
	1925	17.3	34.5	14.2	31.5	48.7	34.8	0.6	5.5	2.5	6.7	1.2	100
	1926	16.8	35.5	13.0	29.8	48.5	34.3	0.7	5.6	2.4	6.8	1.7	100
	1927	16.3	34.1	12.9	29.2	47.0	35.9	0.7	5.8	2.6	6.8	1.2	100
Cereals and Other Food Crops	1913	19.5	32.4	11.9	31.4	44.3	20.4	1.9	3.0	2.0	27.3	1.1	100
	1923	16.1	26.3	11.3	27.4	37.6	24.5	2.6	4.6	2.3	27.2	1.2	100
	1924	15.9	26.5	11.5	27.4	38.0	21.7	3.3	3.9	2.5	29.0	1.6	100
	1925	17.3	30.3	11.9	29.2	42.2	21.0	2.8	4.1	2.3	26.4	1.2	100
	1926	15.9	30.2	11.0	26.9	41.2	21.1	2.7	4.3	2.2	27.0	1.5	100
	1927	16.7	30.8	11.1	27.8	41.9	21.6	2.6	4.3	2.4	26.0	1.2	100
Meat	1913	17.3	26.1	18.0	35.3	44.1	28.5	1.7	13.6	3.4	5.6	3.1	100
	1923	11.3	17.3	17.2	28.5	34.5	36.9	1.8	13.5	3.6	6.6	3.1	100
	1924	13.1	20.5	16.8	29.9	37.3	34.9	1.7	13.2	3.5	6.5	2.9	100
	1925	14.8	22.6	17.2	32.0	39.8	32.4	1.7	13.1	3.5	6.7	2.8	100
	1926	15.2	23.0	16.9	32.1	39.9	32.1	1.7	13.3	3.7	6.5	2.8	100
	1927	15.6	23.7	17.0	32.6	40.7	31.2	1.7	13.1	3.8	6.6	2.9	100
Colonial Produce, Tobacco, Hops, etc.	1913	6.6	9.5	3.8	10.4	13.3	15.4	7.1	21.6	3.2	39.2	0.2	100
	1923	4.6	6.6	2.6	7.2	9.2	16.3	6.3	23.8	7.1	37.1	0.2	100
	1924	5.9	7.9	4.2	10.1	12.1	13.5	5.9	21.0	8.0	39.3	0.2	100
	1925	4.8	8.3	3.7	8.5	12.0	14.4	6.0	19.5	8.1	39.8	0.2	100
	1926	4.7	8.2	3.3	8.0	11.5	13.4	5.2	23.0	8.2	38.5	0.2	100
	1927	5.0	8.2	2.8	7.8	11.0	12.7	6.0	22.6	7.9	39.6	0.2	100
Vegetable-oil Materials	1913	5.6	10.3	17.1	22.7	27.4	15.0	0.3	4.9	11.1	40.8	0.5	100
	1923	3.6	6.5	18.1	21.7	24.6	10.6	0.4	7.6	12.4	43.5	0.9	100
	1924	4.5	7.5	17.6	22.1	25.1	13.1	0.4	5.5	12.6	42.5	0.8	100
	1925	3.5	7.8	14.6	18.1	22.4	12.5	0.3	8.3	13.2	42.5	0.8	100
	1926	3.4	7.3	12.6	16.0	19.9	13.3	0.5	7.8	14.3	43.3	0.9	100
	1927	2.9	6.4	23.0	25.9	29.4	9.8	0.3	7.4	12.0	40.3	0.8	100
Textiles	1913	4.8	15.2	6.7	11.5	21.9	29.2	0.5	5.6	5.1	29.8	7.9	100
	1923	5.2	10.7	7.8	13.0	18.5	25.8	0.5	6.7	5.9	34.4	8.2	100
	1924	5.0	10.8	7.8	12.6	18.4	28.9	0.5	5.7	5.7	32.7	8.1	100
	1925	5.0	11.9	7.6	12.8	19.7	30.2	0.4	5.3	5.7	31.2	7.5	100
	1926	4.6	10.8	8.1	12.7	18.9	32.3	0.6	4.9	5.4	30.1	7.8	100
	1927	5.1	12.9	9.7	14.8	22.6	26.3	0.3	5.2	5.1	33.2	7.3	100
Hides and Skins	1913	13.8	24.3	18.9	32.7	43.2	18.1	1.4	13.5	7.1	10.6	6.1	100
	1923	11.8	20.2	18.4	30.2	38.6	20.4	1.6	16.3	7.7	9.1	6.3	100
	1924	13.2	22.5	17.7	30.9	40.2	20.5	1.5	16.4	7.7	8.2	5.5	100
	1925	13.9	23.7	17.6	31.5	41.3	20.3	1.6	15.8	7.5	8.6	4.9	100
	1926	13.6	23.8	17.5	31.1	41.3	20.2	1.6	15.7	7.8	8.4	5.0	100
	1927	13.1	23.7	17.6	30.7	41.3	19.0	1.6	15.9	8.0	8.7	5.5	100
Rubber	1913	—	—	—	—	—	—	—	39.5	15.8	44.7	—	100
	1923	—	—	—	—	—	—	—	6.7	1.1	92.2	—	100
	1924	—	—	—	—	—	—	—	6.4	1.0	92.6	—	100
	1925	—	—	—	—	—	—	—	6.3	1.2	92.5	—	100
	1926	—	—	—	—	—	—	—	4.7	1.2	94.1	—	100
	1927	—	—	—	—	—	—	—	5.6	1.3	93.1	—	100

TABLE VIII (continued).

## PERCENTAGE DISTRIBUTION OF AGGREGATE PRODUCTION.

Groups of Products	Years	Eastern and Central Europe		Rest of Europe (Western and Maritime)	Europe		North America	Caribbean	South America	Africa	Asia	Oceania	World
		Excluding U.S.S.R.	Including U.S.S.R.		Excluding U.S.S.R.	Including U.S.S.R.							
Wood-pulp	1913	25.0	27.9	32.0	57.0	59.9	39.0	0.3	—	0.8	—	—	100
	1923	15.5	15.9	29.3	44.8	45.2	51.3	0.2	—	3.3	—	—	100
	1924	16.4	17.1	31.5	47.9	48.6	48.0	0.2	—	3.2	—	—	100
	1925	18.1	19.0	30.9	49.0	49.9	46.7	0.2	—	3.2	—	—	100
	1926	17.8	18.8	29.7	47.5	48.5	47.8	0.2	—	3.5	—	—	100
	1927	18.4	19.6	30.3	48.7	49.9	46.3	0.2	—	3.6	—	—	100
Cement	1913	22.3	26.1	27.0	49.3	53.1	42.7	0.2	0.1	0.4	3.1	0.4	100
	1923	13.5	14.9	25.9	39.4	40.8	50.4	0.5	0.6	0.8	6.2	0.7	100
	1924	13.3	15.0	26.1	39.4	41.1	49.9	0.5	0.8	0.8	6.1	0.8	100
	1925	15.2	17.1	25.0	40.2	42.1	48.5	0.6	0.8	0.8	6.5	0.7	100
	1926	15.0	17.1	25.7	40.7	42.8	46.4	0.6	0.8	0.8	7.9	0.7	100
	1927	16.3	18.4	26.1	42.4	44.5	43.5	0.6	0.8	0.8	8.5	1.3	100
Fuels	1913	16.7	20.5	27.4	44.1	47.9	44.9	0.8	0.2	0.6	4.6	1.0	100
	1923	9.2	11.0	22.6	31.8	33.6	54.4	3.5	0.4	0.7	6.4	1.0	100
	1924	13.0	15.0	23.0	36.0	38.0	49.4	3.3	0.6	0.8	6.9	1.0	100
	1925	13.5	15.8	21.3	34.8	37.1	50.3	2.8	0.9	0.8	7.1	1.0	100
	1926	14.9	18.0	14.5	29.4	32.5	54.9	2.2	1.5	0.9	7.1	0.9	100
	1927	14.5	17.8	20.6	35.1	38.4	49.8	1.5	2.1	0.7	6.6	0.9	100
Metals	1913	18.8	23.1	27.3	46.1	50.4	41.6	1.6	0.6	0.1	4.4	1.3	100
	1923	9.9	10.6	22.5	32.4	33.1	55.5	2.2	2.0	0.5	5.5	1.2	100
	1924	12.7	13.7	26.2	38.9	39.9	48.0	2.1	1.9	0.7	6.0	1.4	100
	1925	13.8	15.5	23.8	37.6	39.3	49.5	2.0	1.7	0.6	5.5	1.4	100
	1926	13.7	16.2	21.9	35.6	38.1	50.8	2.0	1.8	0.6	5.3	1.4	100
	1927	16.5	19.1	24.8	41.3	43.9	44.7	2.0	1.9	0.7	5.5	1.3	100
Chemicals (Fertilisers)	1913	24.5	24.9	30.7	55.2	55.6	14.8	0.02	24.0	2.0	1.9	1.7	100
	1923	23.0	23.0	31.0	54.0	54.0	23.0	0.1	16.0	2.1	3.2	1.6	100
	1924	23.8	23.9	31.8	55.6	55.7	18.4	0.1	18.5	2.3	3.3	1.7	100
	1925	27.5	27.6	28.8	56.3	56.4	19.3	0.1	16.8	2.2	3.2	2.0	100
	1926	27.4	27.7	30.4	57.8	58.1	19.6	0.1	13.4	2.5	3.7	2.6	100
	1927	30.0	30.2	30.3	60.3	60.5	19.8	0.1	10.4	2.8	3.7	2.7	100
<i>Total Production</i>	1913	16.9	26.5	15.4	32.3	41.9	26.1	1.7	5.0	2.5	20.9	1.9	100
	1923	12.6	19.3	14.2	26.8	33.5	31.2	2.4	6.2	3.0	21.8	1.9	100
	1924	13.2	20.4	14.7	27.9	35.1	28.6	2.7	5.6	3.1	22.8	2.1	100
	1925	14.3	23.0	14.3	28.6	37.3	28.1	2.3	5.6	3.1	21.7	1.9	100
	1926	13.6	22.9	13.0	26.6	35.9	29.1	2.2	5.9	3.0	21.8	2.1	100
	1927	14.3	23.7	14.6	28.9	38.3	27.6	2.0	5.9	3.0	21.3	1.9	100
Foodstuffs	1913	19.1	31.3	13.0	32.1	44.3	21.7	1.8	4.8	2.3	23.7	1.4	100
	1923	15.3	24.8	12.3	27.6	37.1	26.6	2.5	6.1	2.6	23.6	1.5	100
	1924	15.4	25.4	12.5	27.9	37.9	24.1	3.0	5.6	2.7	24.9	1.8	100
	1925	16.9	29.0	12.8	29.7	41.8	22.9	2.6	5.6	2.5	23.1	1.5	100
	1926	15.8	29.0	12.0	27.8	41.0	23.0	2.6	5.8	2.5	23.4	1.7	100
	1927	16.5	29.6	12.1	28.6	41.7	23.2	2.4	5.8	2.7	22.7	1.5	100
Raw Materials	1913	13.1	18.7	19.4	32.5	38.1	33.2	1.4	5.4	2.9	16.2	2.8	100
	1923	8.3	10.9	17.2	25.5	28.1	38.4	2.3	6.2	3.6	18.9	2.5	100
	1924	10.0	12.9	17.9	27.9	30.8	35.2	2.1	5.8	3.8	19.6	2.7	100
	1925	10.4	14.1	16.5	26.9	30.6	35.9	1.9	5.7	3.9	19.5	2.5	100
	1926	10.6	14.4	14.3	24.9	28.7	37.6	1.7	5.9	3.8	19.6	2.7	100
	1927	11.4	15.6	18.0	29.4	33.6	33.6	1.6	5.9	3.6	19.3	2.4	100

30 per cent in 1927 ; that of Oceania dropped from 2.8 to 2.4 per cent. Generally speaking, those parts of the world where industry is new have gained the ground lost by Europe since pre-war times, while in the production of these particular crude products North America has maintained its position.

In previous editions of this Memorandum a table was published showing the relative importance, in terms of aggregate values, of each group of commodities. The aggregate values were calculated both at 1913 prices and at the prices which ruled in the particular year under specific consideration. It was possible by comparing the aggregates derived from these two price schedules to measure roughly the changes which had taken place in the relative aggregate costs of the different groups of commodities. These changes might be due either to variations in price or to variations in supplies.

It is not proposed to repeat this table on the present occasion and reference should be made by those desiring to study the details to the *Memorandum on Production and Trade* for the period 1913 and 1923-26. The calculations have, however, been made and the following summary table which is based thereon illustrates certain of the major tendencies which are in operation to-day.

*Percentages of Aggregate Values at : (a) 1913 prices, (b) 1927 prices.*

Territorial divisions	Foodstuffs		Raw materials		Total Production	
	1913 or 1909-13	1927 or 1923-27	1913 or 1909-13	1927 or 1923-27	1913 or 1909-13	1927 or 1923-27
	(a)	(b)	(a)	(b)	(a)	(b)
Europe, excluding Russia (U.S.S.R.) . . . . .	60.5	56.6	39.5	43.4	100	100
North America . . . . .	50.5	{ 48.4 } { (46.8) }	49.5	{ 51.6 } { (53.2) }	100	100
Rest of the world. . . . .	68.4	63.3	31.6	36.7	100	100
Total World . . . . .	61.0	57.2	39.0	42.8	100	100

In the above summary statement, quinquennial production averages, both pre- and post- war, are taken for cereals and other food crops in order to eliminate the fluctuations due to meteorological conditions. With regard to the other products for the indices of which 1913 is, as a rule, the base year, the output in that year and in 1927 is considered. In the case of North America, the 1926 production figures (added in parentheses) are more typical and should be used when making comparisons with the figures for Europe and the rest of the world.

The table shows that, in all the three divisions of the world given, the relative importance of industrial raw materials has increased considerably and that of foodstuffs has diminished. In North America, a greater proportion of total

expenditure is devoted to the production of raw materials than in Europe and a much greater proportion than in the rest of the world. A still greater proportion than that indicated above is, in point of fact, devoted to the purchase of raw materials at home and abroad, for the United States are relying more and more on outside sources of supply. It is indeed natural that, as any community becomes richer, it should devote a smaller fraction of its energies or its wealth to the production or purchase of food.

The more detailed calculations referred to above which are not included in the present edition of this Memorandum prove that the main foodstuffs, and more especially the cereals, have lost everywhere in importance and most where general progress has been greatest. But expenditure on colonial products, including tobacco, has increased considerably. Indeed, all raw-material groups, except hides and skins, metals and chemicals, have gained in relative importance, the shares of vegetable-oil materials, cement, rubber and wood pulp in the production aggregate having increased most. On account of the very great drop in the price of rubber, the proportion of total expenditure devoted to this raw material has increased very much less than has its production. As already mentioned, the aggregate cost of hides and skins, metals and chemicals is lower than before the war. In point of fact, the prices of these commodity groups have risen less than those of all other raw-material groups here considered except rubber. The price index for chemicals weighted by the 1927 production quantities was in that year even below the level of 1913.

Had the Chinese production and dairy produce been included, it is probable that foodstuffs would have accounted for about two-thirds of the total values of all the goods considered in 1913 instead of 61 per cent as shown in the summary statement above.

\* \* \*

It is not the object of this Memorandum to discuss in detail the conditions of particular industries or to study the special problems appertaining to individual countries. But it may be useful to supplement the data already presented by a further analysis of the groups of products.

### **Foodstuffs, Beverages and Tobacco.**

The combined production of wheat, rye, barley, oats and maize in 1925 was 5 per cent, and in 1926 and 1927 4 per cent, higher than the annual average during the quinquennium immediately preceding the war; but the average for the whole period 1923-27 was only 1 per cent higher. The area sown has been extended by an amount more than proportionate to the increase in crops harvested. The wheat crop has been steadily rising throughout the whole period with the exception of 1924. In 1928 (1928-29 in the Southern Hemisphere), it would appear to have been almost 16 per cent above the pre-war average. Barley and oats also show an increase in 1928 compared with 1927, but the rye and maize crops were somewhat



less. As mentioned in a preceding section, the aggregate cereal index for 1928 probably exceeds 108. The low level of the barley index is due mainly to a reduction in the European and, more especially, the Russian crops. In 1927, the European area under barley was 15 per cent and the crop 20 per cent below the pre-war average.

*Production Indices.*

	1913	1923	1924	1925	1926	1927
I. Cereals :						
Wheat . . . . .	100	101	92	105	108	110
Rye . . . . .	100	96	83	106	96	102
Barley . . . . .	100	87	79	95	91	93
Oats . . . . .	100	97	95	103	104	100
Maize . . . . .	100	109	92	112	107	105
II. Other food crops :						
Rice . . . . .	100	103	111	110	109	110
Potatoes . . . . .	100	106	113	124	111	135
Beet sugar . . . . .	100	76	102	103	96	112
Cane sugar . . . . .	100	152	168	177	168	168
III. Meat :						
Cattle, including calves	100	107	114	116	118	118
Pork . . . . .	100	107	113	110	111	118
Mutton and lamb . . .	100	87	87	90	95	100
IV. Colonial produce, etc. :						
Coffee . . . . .	100	128	116	116	138	141
Cocoa . . . . .	100	203	222	219	207	216
Tea . . . . .	100	105	110	109	116	118
Hops . . . . .	100	47	85	72	72	79
Tobacco . . . . .	100	140	144	157	152	153

Table VI shows that the production of cereals in North and South America, Oceania and Africa in all the years under review has exceeded, in some years greatly exceeded, the pre-war average; in Europe, Asia and the Caribbean countries, it has remained constantly below that average. In 1925, however, the aggregate cereal crop of Europe, including the U.S.S.R., almost touched the pre-war average, and in 1928 it even exceeded it by one-half per cent. The indices of production of the various cereals for Europe, excluding the U.S.S.R., were as follows :

	1923	1924	1925	1926	1927	1928*
Wheat . . . . .	92	77	102	88	93	101
Rye . . . . .	83	66	95	75	81	90
Barley . . . . .	94	82	97	98	97	106
Oats . . . . .	93	84	92	98	95	97
Maize . . . . .	79	99	105	112	82	61

\* Provisional figures.

The result of the relative falling-off in European cereal production has been to increase the net imports into Europe, including the U.S.S.R., as the following approximate figures show :

Quintals (000,000's) (+ = net import ; — = net export)						
	1909-1913	1923	1924	1925	1926	1927
Wheat. . . . .	+ 74	+126	+136	+129	+108	+156
Wheaten flour . . .	+ 3	+ 12	+ 15	+ 15	+ 10	+ 11
Rye . . . . .	— 0.3	+ 6	+ 11	+ 11	+ 3	+ 13
Barley . . . . .	+ 7	+ 10	+ 19	+ 16	+ 14	+ 24
Oats . . . . .	+ 9	+ 9	+ 11	+ 16	+ 11	+ 8
Maize . . . . .	+ 38	+ 43	+ 46	+ 40	+ 48	+ 81

The decline in the net imports in 1926 and the increase in 1927 reflect the harvest results of the preceding years.

The potato crop in Europe, excluding U.S.S.R., exceeded the pre-war average in 1927 by 14 per cent. The inclusion of the U.S.S.R. raises this figure, on the basis of available information, to 38 per cent. According to the Russian agricultural statistics, the cultivation of potatoes in the U.S.S.R. has developed to a remarkable extent; it is stated that the 1925 crop was 108 per cent, that of 1926 125 per cent, and that of 1927 171 per cent greater than the average crop in the same territory in 1909-13. This increase is ostensibly due in part to an extension of the area devoted to this cultivation, but mainly to higher yields per hectare. From the data published, the yield would appear to have averaged 69 quintals in 1909-13 and 99 in 1927.

During the period under review, and more especially up to the year 1925-26, the production of cane sugar has developed with great rapidity, while the European beet-sugar output was in 1927 only some 7 to 10 per cent above the pre-war figure as shown in the following statement giving the absolute and relative changes in the raw-sugar production :

	1909-10 1913-14	1923-24	1924-25	1925-26	1926-27	1927-28
Actual production in metric tons (000's omitted)						
Cane sugar . . . . .	9,624	14,706	16,135	17,023	16,176	16,183
Beet sugar . . . . .	7,960	6,015	8,135	8,184	7,629	8,936
Indices of Production						
Cane sugar . . . . .	100	152	168	177	168	168
Beet sugar : . . . . .	100	76	102	103	96	112
Europe, including the U.S.S.R.	100	69	95	99	91	107
Europe, excluding the U.S.S.R.	100	80	111	107	100	110
U.S.S.R. . . . .	100	26	32	67	56	93
North America . . . . .	100	145	182	145	150	176

The decline in the cane-sugar production in 1926-27 and 1927-28 was due to the restrictive policy pursued in those years by the Cuban authorities. As a result of the recent abolition of these restrictions, the production in 1928-29 shows signs of rising, even above the level of 1925-26. The beet-sugar index for Europe,

excluding the U.S.S.R., in the same year rose to 116, compared with 100 in 1926-27. But the beet-sugar output of North America, the relative expansion of which up to 1927 had been even greater than the increase in cane sugar, declined in 1928 by some 17 per cent, its index figure for that year being 146.

The meat indices are only intended to be illustrative of general tendencies. They cannot claim to measure with precision the actual development of production, although the statistical series from which they have been calculated are now considerably more accurate than those previously employed. The available slaughter or official meat-inspection statistics of some twenty leading meat-producing countries in Europe, North and South America, Oceania and South Africa are accepted as reasonably representative for the meat production in those parts of the world. It has been found that these figures move in general sympathy with the live-stock figures for the same countries, even though the ratios between the two series of figures vary from country to country and continent to continent. These ratios have been taken as a basis for estimating the slaughter in other countries in the same regions or continents for which live-stock but not slaughter statistics are given. The slaughter figures have in their turn been converted into terms of meat. All estimates have in principle been made conservatively.

The indices indicate that, in the world as a whole, the production of meat is considerably greater than before the war, even per head of the population, and that it has increased more than the aggregate output of vegetable foodstuffs. The production of beef and veal appears to have been stationary in 1926 and 1927, but the pork index, which had previously lagged somewhat behind, rose in 1927 and attained the same level as the beef index. The mutton and lamb production has ruled much lower and only reached the pre-war volume in 1927. From the more detailed production figures from which the indices are calculated, it appears that the increase in the production of beef and veal was lowest in Europe, where the slaughter figures just attained the 1913 level in 1925. Europe, therefore, has had to cover the deficiency in its production of meat by increased imports, as illustrated by the following figures of the meat exports from Argentine, Australia and New Zealand, which are mainly destined for European markets :

		<i>Exports.</i>					
		Average	Metric tons (000's omitted)				
		1912 and 1913	1923	1924	1925	1926	1927
Argentine :							
Beef, frozen	. . . . .	325	215	368	297	227	236
Beef, chilled	. . . . .	30	327	364	372	431	467
Australia :							
Beef, frozen	. . . . .	82	69	48	129	97	51
Lamb and mutton	. . . . .	73	76	18	23	39	42
New Zealand :							
Meat (mainly lamb and mutton)		131	155	161	175	154	171
Total . . . . .		641	842	959	996	948	967

It will be observed that the exports from the above countries declined in 1926 and 1927, when European production recovered beyond the 1913 level.

Of the colonial products, cocoa has increased the most, though production has gone back since 1924. If the tea exports of China, which in post-war years have dropped to little more than one-half of what they were in 1913, be left out of account, the index for that commodity would be raised to 121 in 1923, 128 in 1924, 126 in 1925, 134 in 1926 and 137 in 1927.

Too much reliance must not be placed on the tobacco statistics as, owing to lack of data, the Asiatic production has had to be very roughly estimated largely on the basis of figures of area under cultivation. There is no doubt, however, that the production and consumption of tobacco has increased by roughly one-half since before the war, owing mainly to the very great expansion of the habit of cigarette-smoking.

### Vegetable Oil Materials.

The individual production indices are :	1913	1923	1924	1925	1926	1927
Cotton-seed . . . . .	100	89	112	126	125	106
Linseed . . . . .	100	113	119	143	128	144
Rape-seed . . . . .	100	95	88	97	79	79
Hemp-seed . . . . .	100	88	84	140	127	137
Sesamum . . . . .	100	95	98	79	82	99
Soya beans . . . . .	100	202	243	211	253	278
Ground-nuts . . . . .	100	166	205	236	250	292
Copra . . . . .	100	172	183	188	209	215
Palm and palm-kernel oil . . . . .	100	142	158	170	161	163
Olive oil . . . . .	100	116	134	112	97	187

The contribution of Asia and Africa to the total production of this group of commodities is under-stated, as no production figures are available for China and as it has proved necessary to employ export statistics of soya beans, copra, palm kernels and palm oil which are mainly derived from these two continents. Moreover, certain reservations should be made in regard to the ground-nuts index, which is based on somewhat incomplete, though probably fairly representative, production statistics. There are reasons to believe, however, that the development of the industries in which these oils are employed is adequately represented by the figures given above. The decline in the cotton-seed index in 1927 is, of course, mainly due to the restrictions applied on the growing of American cotton in that year.

### Textiles.

By far the biggest increase in the production of textiles has been effected in artificial silk, the output of which was estimated at almost 87,000 tons in 1925, about 109,000 in 1926, and almost 137,000 in 1927, compared with about 16,000 tons in 1913. More than two-thirds of the world's supply in 1927 was derived

from European and a little more than a quarter from American mills. Some artificial silk is also produced in Japan.

The following are the textile indices :

	1913	1923	1924	1925	1926	1927
Cotton . . . . .	100	88	111	125	127	107
Flax . . . . .	100	53	70	86	78	78
Hemp . . . . .	100	93	85	138	127	134
Manila hemp . . . . .	100	122	128	117	118	112
Jute . . . . .	100	100	96	106	143	120
Wool . . . . .	100	91	95	100	105	106
Raw silk . . . . .	100	138	150	164	174	184
Artificial silk . . . . .	100	300	401	538	673	846

The statistics of wool production are of the nature of somewhat hazardous estimates. The supply in 1927 was greater in North America, Africa and Oceania than before the war, but it was less in all the other territorial groups. The European production, which represents to-day over a quarter of the world's total, is 3 per cent less than in 1913.

The main cause of the shrinkage in the flax crop is the partial drying-up of Russian supplies. But, in 1925, a marked recovery is stated to have been made in the Russian production, which rose to almost three-quarters of the pre-war average; by 1927, it had again declined to two-thirds.

The raw-silk index is misleading. Production figures for China, India, Indo-China, Persia and Turkestan do not exist, and in their stead export statistics have been utilised. According to rough trade estimates of the world production of raw silk before the war, based on similar estimates of cocoon production, the total supply of silk was almost 100,000 tons, of which somewhat more than 90,000 were from Asiatic sources. These estimates, however, are scarcely of a reliable nature. Of this total, only 29,300 tons in 1913 are taken into account for the calculation of the index, and it is practically certain that the total production of silk did not increase in proportion to this fraction, which represents Western and Japanese production plus that part of other Eastern production which entered into international trade. On the assumption that the Chinese cocoon production remained stationary, the total world production of silk cocoons in 1927 would have been some 16 per cent greater than the pre-war. If the raw silk index in 1927 had been taken as 116, instead of 184 shown above, then the total textile index, weighted by 1927 prices, on the presumption of a pre-war raw silk production of 100,000 tons, would also have been about 116 instead of 122. This would have affected the total index for all commodities by less than one-half of 1 per cent.

The increase in the cotton crop up to the year 1926-27 is striking. As the yield per hectare in the agricultural years 1925-27 was in the main producing continents, though not in all countries in those continents, somewhat below the averages for the last pre-war quinquennium, the larger crop was due to an extension of the area under cultivation. The indices of area and crops for the three leading

cotton-growing countries — the United States of America, British India and Egypt — for the rest of Asia and Africa and for the South-American continent are given below :

	<i>Averages for the period 1909-10/1913-14=100</i>				
	1923-24	1924-25	1925-26	1926-27	1927-28
United States of America :					
Area . . . . .	109	121	135	138	118
Crop . . . . .	78	105	124	138	99
South America :					
Area . . . . .	297	318	285	232	267
Crop . . . . .	211	221	235	203	215
British India :					
Area . . . . .	105	119	126	110	110
Crop . . . . .	121	142	145	117	137
Rest of Asia :					
Area . . . . .		120	118	93	90
Crop . . . . .	72	86	94	79	91
Egypt :					
Area . . . . .	102	106	115	106	90
Crop . . . . .	93	104	114	109	87
Rest of Africa :					
Area . . . . .		635	700	665	637
Crop . . . . .	329	514	628	559	534
<hr/>					
WORLD :					
Area . . . . .	109	122	132	126	115
Crop . . . . .	88	111	125	127	107

It will be observed that the United States of America was responsible for practically the whole reduction in the world crop in 1927-28. Indeed, whereas the world crop fell by 1.03 million tons, that of the United States dropped by 1.10 million tons. The Egyptian crop likewise fell by 0.7 million tons, but those of the remaining cotton-growing countries rose by 1.3 million tons. As a result of a deliberate policy, the area under cotton in the United States of America was reduced by 15 per cent in 1927 ; but, owing to the very considerable decrease in the average yield, the crop dropped by not less than 28 per cent. The effect on the price may be judged from the fact that the average price of middling in New Orleans for the periods running from July 1926 to June 1927, and from July 1927 to June 1928, rose from 14.80 to 19.66 cents per pound, or by 33 per cent. In view of this rise in prices, the cotton growers in the United States again increased the area under cotton by 13 per cent in 1928, and as a result the crop for 1928-29 is reported to have risen by 11 per cent.

### Hides and Skins.

The indices of production of hides and skins are mainly based on the same slaughter figures and supplementary estimates as have served for the construction of the meat-production indices in the case of cattle and calves, sheep and lambs ; but the export figures for China and India have been added. This has been done also in the case of goat and kid skins, for which the data available for other parts of the world proved to be very defective. The individual production indices are given below :

	1913	1923	1924	1925	1926	1927
Cattle hides and calf skins . . . . .	100	104	111	114	115	116
Goat and kid skins . . . . .	100	90	81	91	97	94
Sheep and lamb skins . . . . .	100	87	86	89	94	99

The second index is, of course, largely affected by the exports from China and India, China being the most important producer of goat and kid skins in the world.

### Rubber — Wood-pulp — Cement.

The individual indices for these products, which have all increased much more than the majority of others, are given below :

	1913	1923	1924	1925	1926	1927
Rubber . . . . .	100	328	356	446	564	550
Wood-pulp . . . . .	100	129	135	151	169	179
Cement . . . . .	100	122	133	149	158	179

Estimates of rubber production vary to an appreciable extent. The figures adopted here are subject to revision and must not be considered official.

The increase in the world supplies has been wholly due to the development of the plantation industry ; the quantity of Para and wild rubber sold in recent years has been little more than half, in 1928 even less than half, of what it was in 1913. Indeed, while the production of Para and wild rubber constituted some 55 per cent of the world supplies in 1913, in the last three years it has represented only 4 to 7 per cent.

The decline in the rubber index in 1927 was due exclusively to the restriction of output in British Malaya. In April 1928, however, the measures of restriction were abolished, and as a result world production in that year rose between 6 and 7 per cent, pushing the index figure up to 588.

There has been a certain shift in recent years from the production of mechanical in favour of chemical pulp, which is used, not only for paper, but as the raw material of the artificial-silk industry. As the price of chemical is higher than that of mechanical pulp, the weighted indices of this group slightly exaggerate the increase in the absolute quantity of material available for paper-making.

The unweighted quantity indices are :

	1913	1923	1924	1925	1926	1927
Mechanical pulp . . . . .	100	118	127	141	153	157
Chemical pulp . . . . .	100	134	138	155	175	188
Total . . . . .	100	126	133	149	165	173

Europe accounts to-day for exactly half of the world output. Her share has, however, sunk from 60 per cent in 1913, despite an increase of 50 per cent in the actual quantities produced, on account of the doubling of the North American output. Europe still produces over half of the chemical and North America roughly the same proportion of the mechanical pulp. Both chemical and mechanical pulp is also produced in Japan, which in recent years has developed its pulp industry very considerably from comparatively small pre-war beginnings.

The development of the cement industry has been most rapid in South America, Oceania and Asia. But, in North America, cement production has risen by 82 per cent and in Europe by 50 per cent since 1913. The consequent shift in the relative importance of the production of this building raw material may be summarised as follows :

	1913	1927
	%	%
Europe . . . . .	53	45
North America . . . . .	43	43
Rest of the world . . . . .	4	12
Total . . . . .	100	100

Thus, whereas Europe is still the main producer of cement, it has failed to develop its pre-war market in the overseas countries, thanks to the rapid development of the local cement industry in those countries, but North America has been able just to maintain its relative pre-war position.

### Fuels.

As stated above, the rise in the total fuel index is almost wholly due to the rapid increase in the world's supply of petroleum. The individual indices for the three types of fuel considered are :

	1913	1923	1924	1925	1926	1927	1928*
Coal . . . . .	100	99	98	98	98	106	102
Lignite . . . . .	100	125	133	144	144	156	170
(Coal and lignite)	(100)	(100)	(99)	(99)	(99)	(107)	(104)
Petroleum . . . . .	100	265	263	277	285	322	343

\* Provisional figures.



Lignite is of quite minor importance as a fuel except in a few Central-European countries. Measured in terms of coal, the world production of lignite before the war represented only a little over 2 per cent and, in 1928, less than 5 per cent of the combined production of coal and lignite. Lignite-mining was given a stimulus by the success of the attempts made in Germany during and after the war to substitute lignite for coal for certain purposes. It will be observed that the world production of coal and lignite (in terms of coal) in the years 1923-26 remained practically stationary at or just below the 1913 level, that it rose considerably in 1927 after the cessation of the British coal dispute, and that it dropped again by some 3 per cent in 1928. That this drop was due more to the decline in the North American output, which had started in the preceding year, than to the slight contraction of the European production may be seen from the following table showing the territorial group indices for 1925-28 and the contribution of each group to total production in the same year and in 1913. The figures for 1928 are provisional, more especially in the case of the continents producing minor quantities.

*Production Indices for Coal, including Lignite, converted into terms of Coal.*

	Percentage distribution	Production in each year as percentage of 1913 production				Percentage distribution			
		1913	1925	1926	1927	1928	1925	1926	1927
(a) Eastern and Central Europe: Excluding Russia (U.S.S.R.) . . .	18.8	95	104	110	112	18.0	19.7	19.4	20.2
Including Russia (U.S.S.R.) ..	21.1	91	102	110	113	19.4	21.8	21.8	22.9
(b) Rest of Europe .	30.2	91	62	96	93	27.7	19.0	27.3	27.0
Europe, excluding Russia (U.S.S.R.).	49.0	93	78	102	100	45.7	38.7	46.7	47.2
Europe, including Russia (U.S.S.R.).	51.3	91	79	102	101	47.1	40.8	49.1	49.9
North America . . . .	42.3	101	116	105	100	43.2	49.4	41.7	40.7
Caribbean . . . . .	0.1	162	141	116	116*	0.1	0.1	0.1	0.1
South America . . . .	0.1	124	130	130	130*	0.2	0.2	0.2	0.2
Africa . . . . .	0.7	154	164	160	162	1.0	1.1	1.0	1.0
Asia, excluding Asiatic Russia . . .	4.4	161	162	162	164	7.2	7.2	6.7	6.9
Oceania . . . . .	1.1	111	109	113	113	1.2	1.2	1.2	1.2
WORLD . . . . .	100	99	99	107	104	100	100	100	100

\* Figure for 1927.

North America's coal production in 1928 was practically the same as in 1913, that of Europe, including lignite converted into terms of coal, was slightly greater, and that of Asia, the only other continent which really counts in this connection, increased by almost two-thirds. All the remaining continents show a more or less considerable increase. As a result, the relative share of North America has dropped compared with 1913, as has also that of Europe, though to a less extent. Asia's share has increased most. The coal output in Western and Maritime Europe, influenced above all by the British production figures, was 7 per cent below the 1913 level. This drop has been more than compensated by the simultaneous increase in the Central and Eastern division of the Continent, which in 1928 produced 13 per cent more than in 1913 and was responsible for a greater relative share in the world output than before the war.

### Metals.

The smelter production of metals has been taken in preference to the output of ore, as the metal content of ore mined is not normally calculated with any great accuracy, and the output of the smelter-works better reflects industrial activity. The system adopted has, of course, an important influence on the figures of national or continental distribution. Thus, the smelter production of both Europe and North America exceeds their ore production, while South-American and Asiatic ore is exported for smelting elsewhere. As stated above, very large stocks of certain metals existed after the war. By the beginning of 1925, these stocks had been reduced to normal dimensions, a fact which points to a somewhat greater activity within the non-ferrous branches of the metal industry than is indicated by the index figures for the preceding years.

The individual indices of the world production of the metals considered are :

	1913	1923	1924	1925	1926	1927
Pig-iron . . . . .	100	89	87	98	100	110
Steel . . . . .	100	102	103	119	122	133
Copper . . . . .	100	124	134	141	147	154
Lead . . . . .	100	102	112	130	140	148
Zinc . . . . .	100	96	103	116	126	134
Tin . . . . .	100	106	112	113	114	122
Aluminium . . . . .	100	219	264	286	315	329
Nickel . . . . .	100	101	114	121	109	111
Silver . . . . .	100	109	107	109	113	114

The alteration of the balance between the production of pig-iron and steel is almost universal, and is to be attributed in part to the increased utilisation of scrap as raw material for steel production and in part to the substitution of cheap steel for wrought and cast iron. Of the pig-iron produced, more is accordingly converted into steel and less into iron products.

The recovery in the iron and steel output since 1924 is striking and was surprisingly little affected by the British stoppage in 1926. The increased activity of European industry accounts for practically the whole rise in the pig-iron and steel indices for 1927, in which year, as previously mentioned, the North-American production figures declined considerably. The iron and steel indices are given in greater detail in the following table, constructed in the same manner as the coal table above in order to show the changes which have taken place in the main producing areas and in the world as a whole. The figures for 1928 are provisional.

*Production Indices for Pig Iron and Raw Steel.*

	Percentage distribution	Production in each year as percentage of 1913 production.				Percentage distribution.			
		1913	1925	1926	1927	1928	1925	1926	1927
<i>Pig Iron.</i>									
Eastern and Central Europe :									
Excluding U.S.S.R.	17	87	84	113	105	15	15	18	16
Including „	23	76	78	103	99	17	18	21	20
Rest of Europe...	35	83	77	97	98	30	27	31	31
Europe, excluding U.S.S.R. ....	52	84	79	102	101	45	42	49	47
Europe, including U.S.S.R. ....	58	80	77	99	99	47	45	52	51
North America ....	41	117	126	117	122	49	51	44	45
Asia .....	1	359	356	434	443	3	3	3	3
Rest of the world..	—	1,033	1,058	1,274	1,347	1	1	1	1
WORLD .....	100	98	100	110	112	100	100	100	100
<i>Raw Steel.</i>									
Eastern and Central Europe :									
Excluding U.S.S.R.	22	93	95	125	116	17	17	20	17½
Including „	27	84	90	117	113	20	20	23	21½
Rest of Europe....	30	107	99	126	133	26	24	28	27
Europe, excluding U.S.S.R. ....	52	101	97	126	126	43	41	48	44½
Europe, including U.S.S.R. ....	57	96	95	122	123	46	44	51	48½
North America ....	43	143	152	142	163	51	53	46	48½
Asia .....	—	551	550	694	723	2	2	2	2
Rest of the world..	—	3,350	3,570	3,570	3,928	1	1	1	1
WORLD .....	100	119	122	134	144	100	100	100	100

In 1928, the steel production in North America more than recovered the ground lost in the preceding year and rose to 63 per cent above the 1913 level. The pig-iron output recovered less and did not reach the 1926 volume. Production declined in Central Europe and more especially in Germany, but continued to rise in the Western and maritime division of the Continent. As a result, in Europe as a whole, the 1927 level was practically maintained for pig iron (1 per cent below that of 1913). The steel output expanded further and is to-day almost one-quarter bigger than in 1913. Europe again accounts for more than half of the pig-iron production of the world and, in 1928, its steel output was practically equal to that of North America (53,600,000 and 53,475,000 tons respectively). In spite of the rapid development of the iron and steel industry in the remaining parts of the world, it does not still account for more than 3 to 4 per cent of the quantities produced.

The European smelter production of aluminium and tin has increased much more than the steel output. That of zinc was in 1928 about 5 per cent greater than in 1913; but the quantities of copper, lead and silver produced were still in 1927 much below the pre-war standard, as is shown in the following statement giving the European and the North-American production indices for the non-ferrous metals included in the metal group.

*Smelter Production Indices.*

1913 = 100.

	Europe.					North America.				
	1923	1924	1925	1926	1927	1923	1924	1925	1926	1927
Copper .....	51	55	63	71	86	126	136	143	150	148
Lead .....	46	54	66	69	72	139	157	181	195	198
Zinc .....	61	69	79	83	97	155	156	175	195	191
Tin .....	94	108	114	127	141	—	—	—	—	—
Aluminium..	188	239	277	301	293	263	300	299	336	381
Nickel .....	No production.					125	140	148	133	137
Silver .....	59	67	73	77	76	93	87	88	86	86

The contrast in the progress achieved East and West of the Atlantic is striking. The 1927 copper index for Europe, excluding Soviet Russia, was 92 compared with 86 shown above for Europe, including the U. S. S. R. With regard to the other metals shown, the output in the Soviet Union is too insignificant to affect the indices. The greater part of the tin ore smelted in Europe is derived from Asiatic mines.

**Chemicals (Fertilisers).**

The indices for the eleven different types of fertilisers considered are :

	1913	1923	1924	1925	1926	1927
Natural phosphates .....	100	98	107	123	130	139
Potash .....	100	117	100	145	127	148
Sulphur .....	100	248	167	185	237	265
Natural guano .....	100	209	264	250	174	214
Nitrate of soda (Chilian).....	100	69	87	91	73	58
Nitrate of lime .....	100	223	196	260	521	675
Cyanamide of calcium .....	100	294	333	464	536	553
Sulphate of ammonia.....	100	169	194	223	225	258
Superphosphate of lime .....	100	91	101	113	114	114
Basic slag .....	100	55	81	90	99	108
Sulphate of copper .....	100	106	115	114	123	126

As already pointed out, the greatest progress has taken place in the manufactured azotic fertilisers, *i.e.*, cyanamide of calcium, nitrate of lime and sulphate of ammonia. Europe has contributed to this progress quantitatively more than any other territorial group.

### III. TRADE.

In order to compare the quantum of the world's trade in recent years with that before the war, it is necessary to estimate the average rise in the value of the goods constituting that trade. Such an estimate cannot, of course, be made with any close precision; but there are reasons for believing that the changes in gold prices in 1925, 1926 and 1927 were approximately of the following order of magnitude:

	1913	1925	1926	1927
Imports . . . . .	100	153	143	137
Exports . . . . .	100	156	145	140
Total trade . . . . .	100	154.5	144	138.5

It is not necessary here to discuss in detail the data upon which these estimates are based or the principles applied in framing them. The question is treated in a companion publication to this.<sup>1</sup> The procedure here adopted in order to ascertain the growth or contraction of world trade, however, differs from that employed in the preceding section in the case of raw materials. For raw materials, quantum indices, with prices in selected years as fixed weights, are employed. For trade, the actual values, as recorded in the official returns of the various countries, are first converted into their dollar equivalents and then divided by what are believed to be average increases in the prices ruling in the year in question — that is, by the indices just set out.

The indices in question would, at first sight, appear to be rather low. In spite of the fact that manufactured articles — which, since 1913, have increased more in price than raw materials and foodstuffs — constitute a considerable proportion of the world trade, the indices point to a price level of all goods in foreign trade which is probably not very different from that of raw materials and foodstuffs produced.

But there are reasons to believe that prices of goods in foreign trade have increased less than those of goods produced. Certain raw materials which have risen comparatively little or even fallen in price since 1913, such as rubber and mineral oils, play a far more predominant rôle in world trade at present than in 1913 and occupy a greater share in foreign trade than in world production. The fact that freights are, on an average, not far above the pre-war level has also contributed to a relative decrease in import prices and probably extended the range of cheap commodities able to bear transport costs and thus enter into foreign trade. Further, one of the causes which has contributed to the high price of manufactured goods lies in the fact that Customs tariffs on finished articles have been raised considerably more than on raw materials and foodstuffs. Indeed, tariffs on the two latter classes of goods are generally lower than they were before the war.

Although high specific duties to some extent tend to check trade in the cheaper qualities of each article, the general influence of the high protective duties has been an increase in the price of goods produced for home consumption. Goods

<sup>1</sup> See *Memorandum on International Trade and Balances of Payments, 1912-1927*.

the prices of which have been artificially raised fail to find foreign markets. Articles produced on a big scale, which enter largely into foreign trade in manufactured goods, have also probably risen somewhat less in price than manufactured goods in general, owing to the recent technical progress made in mass production.

The trade of the world as a whole has not increased to the same extent since 1913 as the production of raw materials and foodstuffs. But, during 1927, the increase in the world trade, amounting to about 9 per cent, was more than double the increase in production of raw materials and foodstuffs, which appears to have been somewhat less than 4 per cent. The two quantum indices in question were, in fact, in that year not materially different, that for trade lying nearly 20 per cent and that for production 21-24 per cent above the 1913 level.

The following table shows the percentage changes which have taken place in the imports, exports and total trade of the various groups of countries considered above. The trade of each country is converted into dollars and the results are divided by the price indices already quoted.

TABLE IX.  
PERCENTAGE CHANGES IN QUANTUM OF TRADE.

Continental Group	Imports				Exports				Total			
	1913	1925	1926	1927	1913	1925	1926	1927	1913	1925	1926	1927
(a) Eastern and Central Europe : Excluding Russia (U.S.S.R.) . . . .	100	93	83	115	100	76	86	96	100	84	85	106
Including Russia (U.S.S.R.) . . . .	100	84	76	102	100	67	75	84	100	75	76	93
(b) Rest of Europe*	100	101	104	111	100	98	95	108	100	100	100	110
Europe, excluding Russia (U.S.S.R.)*	100	99	98	112	100	90	92	104	100	95	96	108
Europe, including Russia (U.S.S.R.)*	100	95	94	108	100	86	88	99	100	91	91	103
North America . . . .	100	140	159	161	100	138	143	149	100	139	150	155
Caribbean . . . . .	100	132	132	134	100	133	136	138	100	133	134	137
South America . . . .	100	103	108	115	100	103	104	121	100	103	106	118
Africa . . . . .	100	114	119	126	100	103	103	113	100	108	111	119
Asia, excluding Asiatic Russia . . . .	100	130	146	146	100	157	157	158	100	144	151	152
Oceania . . . . .	100	130	138	150	100	133	132	136	100	132	135	142
World * . . . . .	100	108	112	121	100	107	109	120	100	107	110	120

Note. — In the case of a few countries, the figures include bullion and specie or relate to general trade.

The table requires careful interpretation. The trade of each group of countries has been divided by the same price index, irrespective of the actual prices at which the goods handled by any particular country may have been actually bought or sold. This procedure has been adopted because separate price indices are available for a restricted number of countries only. The table, as has been pointed out above, is not identical with that showing the production indices, but, although

\* Excluding the Netherlands, owing to incomparability of pre- and post-war statistics.

the difference of methods employed may have a negligible effect so far as the world as a whole is concerned, or even in the case of figures for total trade of continental groups, it may not be without importance when the more detailed figures are considered. Any difference which exists between general price indices for the world's exports and the world's imports must, of course, be due to a relative change in costs which are included in import prices but not in export prices, namely, freights and insurance, or to defects in the trade statistics on which the indices are based. But the price development has not been the same for different articles — *e.g.*, it is known that prices of foodstuffs and raw materials have increased less since 1913 than those on manufactured goods.<sup>1</sup>

It might be concluded that Europe, which mainly imports foodstuffs and raw materials and exports manufactured goods, has not in reality seen its imports increase so much in price as the world as a whole and that it has enjoyed a higher increase in the price on its exports. Had it been possible to take this fact into account when calculating Table IX, the percentages for the European import quantum in later years would have worked out higher, and those for its export quantum lower, than is indicated.

Further, the increase in prices, even on goods of the same kind, has varied in different countries. It is probable, for instance, that the trade of Central and Eastern Europe is still conducted on the average at a lower level of prices than that of the world in general, and that, in so far as those States trade *inter se* at a lower price level, the utilisation of the world index has tended to exaggerate the contraction of their activities.

For these reasons, the dollar figures of recorded trade and the percentage figures from which Table IX is derived are given in a footnote.<sup>2</sup> The tables in this section should be studied with these considerations in mind, and less precision should be attributed to the import and export figures for continents and parts thereof than to figures for total trade and the general trend of the post-war development.

Table IX indicates that world trade in 1925 was about 7 per cent, in 1926 10 per cent, and in 1927 20 per cent greater than in 1913. The calculations upon which this estimate is made have, step by step, been conservative in character and are likely to under-state rather than exaggerate the magnitude of recorded international trade in recent years.

The fact that the total recorded international trade has increased does not prove that the interchange of commodities in the world has grown to an equivalent extent, for the number of trading nations is now greater than it was in 1913. Actually, however, there can be little doubt that the trade of the world was greater in 1927 than in 1913; for that part of the trade of countries with modified frontiers or of newly founded States which might before have been domestic is by itself less than 4.5 per cent of world trade and from it must be deducted the trade which used to cross a Customs frontier and does so no longer.

The considerable increase in the international trade in 1927 was greater in Europe than in any other continent except South America. For the first time,

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<sup>1</sup> This question will be treated in the following chapter.

<sup>2</sup> See table on the following page.



PERCENTAGE CHANGES IN WORLD TRADE BY CONTINENTAL GROUPS (1913 = 100).

(Basis : Recorded Values, reduced to dollars)  
Special Trade, Merchandise only.

Continental Groups	Imports					Exports					Total				
	1913	1924	1925	1926	1927	1913	1924	1925	1926	1927	1913	1924	1925	1926	1927
(a) Eastern and Central Europe :															
Excluding Russia (U.S.S.R.) . . . .	100	117	142	119	158	100	98	118	125	134	100	108	130	122	147
Including Russia (U.S.S.R.) . . . .	100	102	128	108	140	100	86	104	109	118	100	94	116	109	129
(b) Rest of Europe * . . .	100	144	155	149	152	100	144	153	138	151	100	144	155	144	152
Europe, * excluding Russia (U.S.S.R.) . . .	100	136	151	140	154	100	129	141	134	145	100	133	147	137	150
Europe, including Russia (U.S.S.R.)* . . . . .	100	130	146	135	148	100	121	134	127	138	100	126	140	131	143
North America . . . . .	100	183	214	227	220	100	193	215	208	209	100	188	214	216	214
Caribbean . . . . .	100	179	202	188	183	100	213	208	197	193	100	197	205	193	189
South America . . . . .	100	123	157	154	158	100	147	160	151	170	100	135	159	152	164
Africa . . . . .															
Asia, excluding Asiatic Russia . . . . .	100	144	174	170	172	100	144	161	150	158	100	144	167	160	165
Oceania . . . . .	100	175	199	208	200	100	192	245	228	221	100	184	222	218	211
WORLD * . . . . .	100	176	199	197	205	100	177	208	191	190	100	176	204	194	197
WORLD * . . . . .	100	144	165	160	167	100	148	167	158	166	100	146	166	159	166

Note. — In the case of a few countries, the figures include bullion and specie or relate to general trade.

\* Excluding the Netherlands, owing to incomparability of pre- and post-war statistics.

the quantum of recorded European trade exceeded the 1913 level. Within Europe, the greatest progress was achieved in the central and eastern countries.

There was thus a reversal of the tendency in the preceding years for the rate of advance in Europe — and especially Eastern and Central Europe — to drag behind that in other parts of the world.

The percentage increases in 1927 in the quantum of imports and exports since 1913 were :

	<i>Imports</i>	<i>Exports</i>
Eastern and Central Europe . . . . .	26.7	9.1
Rest of Europe . . . . .	6.7	12.7
Total Europe . . . . .	13.6	11.0

The very great increase in the imports of Eastern and Central Europe is due, of course, mainly to the borrowing of capital abroad. The aggregate negative balance of trade in this region, which amounted in 1913 to \$207 million and in 1926 to \$177 million, rose in 1927 to 1,171 million. This remarkable development was due almost wholly to Germany and Poland.

In the rest of Europe, exports have advanced more than imports, a fact which must be attributed in part to the execution of orders during the first half of 1927, postponed owing to the British coal dispute. The aggregate negative balance of trade amounted in 1926 to \$3,159 million and in 1927 to \$2,579 million.

The most noteworthy progress and the most striking changes during the year 1927 took place in Europe, whose trade had lagged behind that of the rest of the world. But it is perhaps significant that, during this same year, the other continents which made the greatest step forward were those whose previous progress had been relatively least. Thus the greatest is recorded in South America and Africa, whereas the trade of Asia — which in the period 1913-26 (but not 1913-27) had increased more than any other continent — was practically the same as in 1926. But the trade of North America still progressed. The quantum of North-American exports grew more than that of imports. Measured in dollars, North-American exports were fairly constant, whereas imports dropped. The excess of exports over imports rose from \$544 million in 1926 to \$735 million in 1927.

The total trade index for the world, excluding Europe, in 1926 was as high as 143, or considerably more than the corresponding index for the production of foodstuffs and raw materials weighted by 1913 values, which was 132. This is the natural result of the fact that the foodstuffs which have increased least constitute a greater proportion of production than of international trade. On the other hand, the aggregate trade of these continents has risen less than their production of industrial raw materials, the 1927 index for which was 152 when weighted by 1913 values and 145 weighted by 1927 values.

A comparison of the European trade and production indices will show that the contraction in trade is not due, at least not primarily, to reduced local production of foodstuffs and raw materials. It is due rather to obstructions to the free international interchange of goods, to the contraction of certain overseas markets for manufactured products in countries which have developed their own industry

in recent years, and to the reduced supplies of new capital savings available for lending abroad.

Further, in certain agricultural countries in Europe land reforms and other economic factors have resulted in the peasants consuming a greater proportion of their produce themselves.

Eastern Europe has been most affected both by the artificial obstructions to trade and by land reforms, and it is natural, therefore, that the quantum of its imports and exports, despite the increase in the number of trading units, should have contracted more than that of the rest of the Continent. The trade of Central and Eastern Europe, inclusive of U.S.S.R., was in 1926 25 per cent, and in 1927 7 per cent, less than before the war. In the rest of Europe, total trade in both 1925 and 1926 was practically up to the 1913 standard and in 1927 nearly 10 per cent higher.

The changes which have taken place in the relative growth of trade in different parts of the world may further be judged from the following table, giving the percentage distribution of world trade drawn up on lines similar to those adopted for Table VIII.

TABLE X.

PERCENTAGE DISTRIBUTION OF WORLD TRADE BY CONTINENTAL GROUPS.  
(Basis: Recorded Values, reduced to Dollars.) Special Trade. Merchandise only.

Continental Group	Imports				Exports				Total			
	1913	1925	1926	1927	1913	1925	1926	1927	1913	1925	1926	1927
(a) Eastern and Central Europe: Excluding Russia (U.S.S.R.) . . . .	17.9	15.3	13.3	17.0	17.4	12.3	13.8	14.2	17.7	13.9	13.6	15.6
Including Russia (U.S.S.R.) . . . .	21.5	16.6	14.5	18.1	21.7	13.4	15.0	15.5	21.6	15.1	14.8	16.8
(b) Rest of Europe*	40.0	37.9	37.3	36.5	33.5	30.7	29.1	30.6	36.8	34.4	33.3	33.6
Europe, excluding Russia (U.S.S.R.)*	57.9	53.2	50.6	53.5	50.9	43.0	42.9	44.8	54.5	48.3	46.9	49.2
Europe, including Russia (U.S.S.R.)*	61.5	54.5	51.8	54.6	55.2	44.1	44.1	46.1	58.4	49.5	48.1	50.4
North America . . . .	12.4	16.0	17.6	16.4	15.8	20.2	20.7	19.9	14.1	18.1	19.1	18.1
Caribbean . . . . .	1.9	2.3	2.2	2.1	2.4	3.0	3.0	2.8	2.1	2.6	2.6	2.5
South America . . . .	5.7	5.4	5.5	5.4	6.7	6.4	6.4	6.9	6.2	5.9	6.0	6.1
Africa . . . . .	4.1	4.3	4.4	4.3	4.7	4.3	4.4	4.4	4.4	4.3	4.4	4.4
Asia, excluding Asiatic Russia . . . .	11.8	14.4	15.3	14.1	12.5	18.6	18.1	16.8	12.1	16.4	16.6	15.4
Oceania . . . . .	2.6	3.1	3.2	3.1	2.7	3.4	3.3	3.1	2.7	3.2	3.2	3.1
Total* . . . . .	100	100	100	100	100	100	100	100	100	100	100	100

Note. — In the case of a few countries, the figures include bullion and specie or relate to general trade.

\* Excluding the Netherlands, owing to incomparability of pre- and post-war statistics. The inclusion of the Netherlands would raise the percentages for Europe, including Russia, in 1925, 1926 and 1927 to: imports 55.9, 53.3 and 56.0; exports 45.3, 45.5 and 47.4; totals 50.8, 49.5 and 51.8.

The Netherlands have been omitted, as the pre- and post-war trade statistics of this country are not comparable. Had the Netherlands been included, the contribution of Europe to world trade in 1925 would still have been about one-half.

Europe and South America were thus the only continents which increased their share of world trade during 1927. The shares of Europe and of North America were exactly the same in that year as they had been in 1924 before the depression which affected Central Europe in the following year and the British coal dispute of 1926.

It will be seen that about half of the trade of the world is European, under one-fifth North-American, slightly under one-sixth Asiatic. The rest of the trade, again slightly under one-sixth, is divided between that part of America which lies between the northern frontier of Mexico and Cape Horn, Africa and Oceania.

On the whole, there has been since 1913 a tendency towards a shift of the world's centre of activity from Europe and the Atlantic to America, Japan and the Pacific Ocean. The growth of exports in that part of the world where the most rapid progress has been achieved since 1913 is shown below :

Countries	Increase in exports since 1913			
	\$ (000,000's)		Per cent	
	1926	1927	1926	1927
U. S. A. . . . .	2,264	2,310	92.5	94.4
British India . . . . .	387	373	49.2	47.5
Canada . . . . .	838	821	194.0	190.0
Japan . . . . .	618	595	198.7	191.3
China . . . . .	363	340	123.5	115.6
Australia . . . . .	332	313	88.5	83.5
New Zealand . . . . .	110	126	107.8	123.5
Argentine . . . . .	215	458	41.7	88.9
British Malaya . . . . .	519	403	268.9	208.8
	5,646	5,739	103.5	105.2

The increase in European exports since 1913 amounted to \$2,705 million in 1926 and \$3,859 million in 1927, that is to say, to only 48 and 67 per cent respectively of the amount by which exports of these nine countries had grown.

In the introductory section to this Memorandum, a comparison was made of the broad results obtained from this analysis by which an endeavour has been made to answer the first three questions with which this study is concerned.

It may, however, be not without interest to supplement that comparison by Table XI, showing the percentage changes that have taken place in the territorial distribution of the production of foodstuffs and raw materials and of trade. As has been mentioned above, the distribution figures themselves are intended to be illustrative rather than exhaustive, and the percentage changes given below

must not be accepted as doing more than indicating the direction in which economic forces in the world to-day are moving.

TABLE XI.

RELATIVE CHANGES IN THE GEOGRAPHICAL DISTRIBUTION OF WORLD PRODUCTION AND WORLD TRADE.

	Relative share of each continental group in 1925, 1926 and 1927 as percentage of its relative share in 1913					
	1925		1926		1927	
	Production	Trade	Production	Trade	Production	Trade
(a) Eastern and Central Europe :						
Excluding Russia (U.S.S.R.)	85	79	80	77	85	88
Including Russia (U.S.S.R.)	87	70	86	69	89	78
(b) Rest of Europe .....	93	93	84	91	95	91
Europe, excluding Russia (U.S.S.R.)	89	88	82	86	89	90
Europe, including Russia (U.S.S.R.)	89	85	86	82	91	86
North America .....	108	129	111	135	105	128
Caribbean .....	135	124	129	124	118	119
South America .....	112	95	118	97	118	98
Africa .....	124	98	120	100	120	100
Asia, excluding Asiatic Russia..	104	135	104	137	102	127
Oceania .....	100	118	111	119	100	115

The figures are only intended to be roughly indicative of general tendencies. So far as 1927 is concerned, the single fact of outstanding note which is brought out is a quite general tendency of all the figures to re-approach the pre-war distribution, that is to say, those which were substantially in excess of 100 have declined and those which were below 100 have mounted. Only the experience of future years can tell us whether this is more than a passing phenomena. In any case, it would be wrong to interpret it as indicating that the general economy of the world and the equilibrium of forces are likely to revert to the conditions which existed fifteen years ago. Moreover, it must not be forgotten that the development of European trade during 1927 was to a material degree due to her external borrowings.

It will be observed that the share of Central and Eastern Europe, including U.S.S.R., in world trade has contracted more than has the share of this group in the production of raw materials and foodstuffs. Possibly the production figures, including the U.S.S.R., are slightly too high and those of trade too low ; but, despite the increase in the number of trading countries, the results shown in the table are by no means inexplicable. The development of small agricultural holdings has diminished the exportable surplus of wheat and other grain without reducing agricultural production to an equivalent extent. The trade of Russia has certainly shrunk to a greater degree than the yield of her soil and higher tariffs have impeded intercourse in a number of countries.

That the share of Africa in the trade of the world has somewhat decreased is due in a large measure to the relatively low price of raw gold.

North America and Asia have both won a position in world trade out of proportion to the increased yield of their natural resources as a whole (foodstuffs included) but not to that of their industrial raw materials sources proper. In both continents there has been a rapid, in the former an extremely rapid, growth of manufacturing industries.

This particular table, and indeed the whole analysis contained in this Memorandum, attracts attention to the importance of the question whether the changes that have taken place in the position of different countries and of different groups of countries in the scale of trading nations are primarily due to causes relating to prices or to causes relating to quantities, whether a unit of manufactured commodities purchases to-day a greater or less quantity of raw materials and foodstuffs. An attempt to answer this question is made in the following section.

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#### IV. THE RELATIVE MOVEMENTS IN THE PRICES OF RAW PRODUCTS AND MANUFACTURED ARTICLES.

In the last issue of this Memorandum a tentative approach was made to the problem of the relative prices of raw products and manufactured articles. On the ratio of the prices of these two groups of commodities the productive activity (and incidentally the foreign trade) of different classes of producers and different countries is largely dependent, and the problem is therefore one of very great practical importance. In the present chapter the analysis of certain of the somewhat inadequate available data is continued. The investigation is, moreover, carried a stage further and the relationship of the prices of certain distinct classes of crude products is considered.

As was stated last year, the problem under investigation is rendered difficult of solution owing to the inadequacy of the data concerning the prices of manufactured products. The lack of information is not simply due to the fact that students of prices have unduly concentrated on raw materials and foodstuffs or that standard manufactured articles at any given date are relatively few in number. The period under review covers fourteen years, in which normal inventive progress has been stimulated and the normal conservatism of habits has been undermined by the war and by the uncertainty and insecurity of the conditions that ensued. Methods of production have undergone important modifications; demand has changed and the products of industry, even when bearing the same name as in 1913, are often no longer the same products. Even when price data are available, therefore, they frequently fail to measure identical goods. The amount of carefully sifted data that is available is remarkably small. In view of this fact, it is not advisable to rely on any single line of enquiry or to endeavour to prove thereby the character or the degree of change that has taken place. It is preferable — in the first instance, at any rate — to select evidence as independent in origin as possible, to apply a number of different tests, and ascertain whether the data thus drawn from different sources tend to point in a like direction. Four sources of evidence — none of them in themselves wholly satisfactory, or by themselves adequate — are in fact available.

First, in certain countries, the indices of wholesale prices are composed of groups that embrace respectively raw materials, semi-manufactured articles and finished products. Secondly, something may be learnt from a comparison of wholesale and retail price indices. Thirdly, it is possible to obtain price quotations in some markets for raw materials and for the articles manufactured therefrom. Fourthly, the price indices of the goods that constitute the international trade of different countries are in certain cases composed mainly of manufactured articles and in others mainly of raw materials and foodstuffs. Thus, the export

index of an agricultural country is likely to be confined mainly to raw products and its import index mainly to finished goods.

It will be shown below that the evidence drawn from these four sources points to the conclusion that the prices of individual manufactured goods have, in the great majority of cases, risen more than those of the raw materials from which they are made, and that in certain important areas of the world manufactured goods as a whole have risen more in price than have raw products. But it does not necessarily follow from this that, if it were possible to compute world indices for raw materials and for manufactured products, the discrepancy between these indices would be similar to that which the evidence considered below suggests. In the first place, a number of manufactured products are in everyday popular use now that were scarcely obtainable or were not obtainable before the war — wireless receiving-sets and many classes of knitted over-garments may be quoted by way of illustration. Secondly, changes of great significance have taken place in the relative importance of the consumption of goods which were in use in 1913. The growth of the motor-car and electrical and aluminium industries, for instance, has been such that any price index of manufactured goods based on 1913 weights implies a hypothesis which is not in conformity with facts.

If the evidence to be considered, therefore, points to the conclusion that the prices of individual manufactured products have risen more than those of raw materials and foodstuffs in certain countries, it must not be presumed that it is necessarily true that the prices of manufactured goods as a whole are likewise, and to the same extent, higher than those of raw materials and foodstuffs as a whole. There is, indeed, a strong presumption that they are higher. But the present analysis is at least insufficient to measure the amount of such discrepancy as exists. Moreover, as will be shown later, although all the evidence points to the conclusion that the prices of those particular manufactured commodities which it is possible to compare in the years considered here, as a whole, relatively higher than the prices of the raw materials from which they are manufactured, the discrepancy which exists to-day is appreciably less than it was some years ago.

Unfortunately, very few countries publish indices of wholesale prices in such a form as to permit of a clear distinction being made between goods in various stages of manufacture. In the following table indices for seven countries are given. The figures show the average prices for the year 1927. Two systems of classification or a combination of these two are adopted. According to one system the commodities are divided into raw materials, semi-finished and finished goods, and according to the other into consumers' and producers' goods. Consumers' goods may be taken as roughly equivalent to finished products including foodstuffs; producers' goods are nearer akin to semi-manufactured products. Thus in the case of Sweden, under consumers' goods are included various textile fabrics, stockings, boots and shoes, flour, meat, etc., and under producers', various grains and animals, iron ore and pig-iron, metal sheet and wire, building materials and yarns.



COMPARATIVE PRICES ; AVERAGE FOR 1927.

1913 = 100.

Index	Raw materials	Semi-finished products	Finished products	Producers' goods	Consumers' goods	General index
Denmark . . . . .	132				175	154
Canada . . . . .	153	149				152
Germany (official) . . . . .	132	147		130	160	138
Italy (Milan) . . . . .	518	491			606	527
Norway . . . . .	161				172	167
Sweden . . . . .	138	149	149	136	155	146
U. S. A. . . . .	98 <sup>1</sup>	82 <sup>1</sup>	95 <sup>1</sup>			

<sup>1</sup> Base 1923.

The evidence afforded by this table taken alone is not wholly conclusive. In Denmark, Germany, Norway and Sweden the indices for finished products or consumers' goods lie well above those for materials in earlier stages of production. In Germany there is a margin of over 20 per cent between the prices of producers' and consumers' goods and in Denmark of nearly a third between the two indices for that country.

The original classification of the index of the Milan Chamber of Commerce has been changed in the above table and the group called by the compilers "Finished products" transferred to the heading "Consumers' goods". This group consists of foodstuffs, raw materials naturally ready for consumption, such as coal and wood, oil and one or two finished manufactured products.

This index, it will be noted, stood at the end of 1927 at 17 per cent above the raw material index and 23 per cent above that for semi-finished products. The last-mentioned index is strikingly low, a fact which is to be attributed in part to the low prices of certain iron and steel products and in part to the large proportion of chemical products which enter into its composition. Indeed, the whole of the chemical group, which contains twenty commodities, is classed as semi-finished. The index of this group in 1927 averaged 487.

Canada is the only one of the six countries for which indices of manufactured products based on 1913 are available in which the prices of those products averaged lower than the prices of raw materials and partly manufactured goods.

Unfortunately, no general index of raw materials alone exists, and the second index includes some partially manufactured goods. Special indices for groups of commodities in their raw and manufactured state have, however, been compiled and are given below for the two years 1926 and 1927 :

Articles of	1926		1927	
	Products		Products	
	Raw	Manufactured	Raw	Manufactured
Farm origin :				
Field . . . . .	171	167	165	162
Animal . . . . .	137	147	139	141
Marine origin . . . . .	127	163	126	161
Forest origin . . . . .	149	185	148	177
Mineral origin . . . . .	156	141	150	135

It will be noted that the figures for goods manufactured from articles of farm and mineral origin are lower than those for the raw materials constituting these groups. The term "farm origin" is used by the compilers of the index in its widest sense, and embraces such articles as cotton fabrics, fibre products, etc.

The composition of the two divisions—raw materials and manufactured products—into which the group indices are separated is not identical. The indices do not, therefore, indicate exactly the difference in average prices for similar commodities according to their stage of manufacture. Table XII (given below on pages 64 and 65), which sets out the prices of certain individual commodities classified according to their stage of manufacture, presents results which are in direct contradiction to those for the farm products and mineral groups contained in the above table.

No figures comparable with those given above are available for the United States of America. This is to be regretted, as it might be expected that, in those countries in which the newer industries not producing prime necessities of life have made exceptional progress, the discrepancy between the prices of manufactured goods and raw materials would be of an order different from that which characterises other countries. The only index which exists giving the classification required is that based on the year 1926.

Of some value in this connection, however, is the grouping employed in the revised index of the Department of Labor, which shows :

	1913	Average	1927
1. Farm products . . . . .	100		139
2. Foodstuffs . . . . .	100		150
3. Textile products . . . . .	100		167
4. Metals and metal products. . .	100		108
5. House-furnishing goods. . . .	100		174
6. Miscellaneous . . . . .	100		97

The fourth group includes motor-cars, agricultural implements, etc., in addition to crude metal products; the sixth, paper and pulp, rubber, rubber tyres, etc. The low indices of these groups are in striking contrast at once to those

for agricultural products and for such basic pre-war industrial products as those represented in the textile group.

Further light may be thrown on the problem under investigation by a comparison of retail and wholesale price indices, as the former normally relate to the prices of consumers' goods and the latter to foodstuffs, raw materials and semi-manufactured goods. Such comparison must, however, be made with care, as the objects for which the two sets of indices are compiled are different. Retail-price (cost-of-living) indices generally include rent and only such goods as are likely to be consumed by a typical working-class family. Comparison is made, therefore, between a selection of raw materials, foodstuffs, etc., which is intended to be characteristic of the general economy of the country and a special group of immediately consumable commodities (or services) of major concern to one section of the population. It is possible — indeed, in present conditions probable — that these retail-price indices tend to stand higher than would indices covering all classes of manufactured goods, for it is in the industries catering for secondary needs rather than in those supplying the prime necessities of life that the greatest technical progress has been made in recent years, and the products of these industries have probably fallen most in price. On the other hand, these retail prices refer to classes of goods of primary importance to the vast majority of people. The inclusion of rent in most countries helps to lower and not to raise the level of the cost-of-living indices.

In the following table the average wholesale and retail price indices for 1927 are given for all countries whose exchanges were stable during that and the preceding year. Wholesale prices tend to fluctuate at once much more rapidly and more widely than do retail prices under unstable currency conditions. The price ratios which exist in countries suffering from instable paper currencies therefore afford no evidence from which general conclusions on the problem under investigation might be drawn.

AVERAGE WHOLESALE AND RETAIL PRICES IN 1927.

	Wholesale (Base 1913)	Retail (Base 1913 or 1914)		Wholesale (Base 1913)	Retail (Base 1913 or 1914)
South Africa . .	124	131	Egypt . . . . .	121	153
British India . .	166	173	Estonia . . . . .	114	105
New Zealand . .	146	162	U.S.A. . . . .	146	173
Netherlands . .	148	168	Finland . . . . .	145	157
Germany . . . .	138	147	Hungary . . . . .	132	111
Austria . . . . .	133	106	U.S.S.R. . . . .	171	203
United Kingdom.	141	167	Sweden . . . . .	146	171
Bulgaria . . . .	2,819	2,788	Switzerland . . .	142	160
Canada . . . . .	152	152	Czechoslovakia .	979	745

In twelve out of the eighteen countries given in the foregoing table, the retail-price indices are distinctly higher than the wholesale ; in Canada the two practically equate ; in five countries the wholesale-price indices are higher. These five countries are Estonia and a group of Central and South-east European countries, Austria, Czechoslovakia, Hungary and Bulgaria. The Austrian and Hungarian cost-of-living indices are affected by the inclusion of rent, as in both countries rents are still subject to special legislation.

It is probable that in all these five European countries the level of wages has had an important influence on the ratio of retail to wholesale prices. The evidence afforded by this comparison of retail and wholesale prices taken as a whole goes to confirm the view that the prices of manufactured commodities continued in 1927 to rule higher than those of raw materials. But it cannot be accepted alone as constituting in any way a conclusive proof.

Table XII (pages 64 and 65) showing the relative changes in the prices of individual commodities or groups of commodities arranged according to their stages of manufacture, although confined to four countries, points to the same conclusion.

The evidence afforded by the above statements confirms and strengthens that already obtained from the composite index numbers, namely, that, as in preceding years, there remained in 1927 a general and appreciable alteration in relative values in favour of manufactured articles. The exceptions to this rule are surprisingly few. Moreover, it will be noted that the discrepancy between the relative price levels is greater the higher a commodity is placed in the scale of production.

The causes that may have contributed to this change in relative values are numerous and their importance differs greatly from commodity to commodity and from one quarter of the globe to another. In the first place, in the case of a number of foodstuffs, new areas were developed and brought into cultivation during the war to compensate for the reduced production in the war areas ; these areas continue to some extent to compete with those whose output was temporarily reduced or stopped. Sugar cultivation to-day affords an excellent example of this phenomenon. Similarly, the capacity for the production of certain raw materials or semi-manufactured products (such as pig-iron and crude steel) was increased during the war beyond normal requirements, and competing establishments tend to depress prices. Further, as the science of manufacture advances, less raw materials are frequently required for any given amount of finished goods. But opinion to-day tends towards the belief that the two factors of primary importance are the restrictions imposed on the supply of labour and the restrictions imposed by tariffs on the free movement of goods. The restrictions on the labour supply, whether effected by minimum wages, unemployment benefits or other means, affect industrial workers and their wages to a greater extent than agricultural. Further, more labour, more wages and more of those classes of wages the level of which is maintained relatively high by restrictions on supply are incorporated in the prices of finished manufactured goods than in those of raw products and foodstuffs. Tariffs since the war are generally higher on manufactured goods and lower on raw materials and foodstuffs than they were before the war.

**TABLE XII.**  
**RELATIVE CHANGES IN THE PRICES OF INDIVIDUAL COMMODITIES OR GROUPS**  
**OF COMMODITIES ARRANGED ACCORDING TO STAGES OF MANUFACTURE**

**A. UNITED STATES OF AMERICA**

Commodities	Indices			Percentage changes in relative value			Commodities	Indices			Percentage changes in relative value		
	1925	1926	1927	1925	1926	1927		1925	1926	1927	1925	1926	1927
Maize .....	165	120	138	100	100	100	Wool .....	110	83	88	100	100	100
"  meal .....	174	142	150	105	118	109	"  yarn.....	222	185	176	202	223	200
"  oil .....	200	198	179	121	165	130	Overcoating, etc. ....	214	195	190	195	235	216
Rye .....	177	150	165	100	100	100	Silk, raw .....	169	155	133	100	100	100
"  flour .....	196	179	182	111	119	110	"  yarn.....	173	167	141	102	108	106
Oat .....	124	115	132	100	100	100	Iron ore .....	124	120	121	100	100	100
"  meal .....	135	124	142	109	108	108	Pig iron .....	130	124	119	105	103	98
Wheat .....	190	171	156	100	100	100	Iron bars .....	163	160	150	131	133	124
"  flour .....	200	189	174	105	111	112	Steel plate and structural steel	137	134	128	110	112	106
"  bread.....	198	199	198	104	116	127	Skelp .....	141	137	132	114	114	109
Cattle .....	125	112	150	100	100	100	Wire and nails .....	161	158	152	130	132	126
Beef, fresh .....	133	124	143	106	111	95	Cutlery .....	222	208	210	179	173	174
"  salt .....	105	112	113	84	100	75	Copper .....	89	88	82	100	100	100
Hogs .....	146	155	125	100	100	100	"  wire.....	100	102	98	112	116	120
Pork, fresh .....	169	184	158	116	119	126	Lead .....	207	192	154	100	100	100
"  cured and hams.	169	173	146	116	112	117	"  pipe .....	207	195	162	100	102	105
Cotton.....	181	133	136	100	100	100	Zinc, slab .....	137	132	113	100	100	100
"  yarn, carded ..	172	146	140	95	110	103	"  sheet .....	137	146	128	100	111	113
"  thread.....	186	186	186	103	140	137	Glass, window .....	143	156	145	100	100	100
"  cloth.....	194	168	169	107	126	124	"  plate.....	175	159	130	122	102	90
"  underwear ....	191	187	165	106	141	121	"  tumblers .....	256	243	239	179	156	165
Hides, cow .....	83	71	102	100	100	100	Wood, pulp .....	121	129	118	100	100	100
Harness.....	110	109	117	133	154	115	Paper, newsprint.....	179	167	157	148	129	133
Skins, calf.....	107	92	104	100	100	100	White pine, boards...	182	171	158	100	100	100
"  shoes.....	186	185	187	174	201	180	"  "  doors ..	191	182	—	105	106	—
Skins, goat.....	110	103	106	100	100	100	Yellow pine, timber...	181	190	177	100	100	100
Shoes, kid .....	196	195	196	178	189	185	"  "  boards...	178	175	161	98	92	91
Milk, fresh.....	147	148	150	100	100	100	Flooring .....	220	206	176	122	108	99
Butter and cheese ....	147	142	153	100	96	102							

**B. CANADA**

	1925	1926	1927	1925	1926	1927		1925	1926	1927	1925	1926	1927
Sugar.....	133	130	143	100	100	100	Furniture .....	195	195	195	131	132	131
"  products.....	150	143	149	113	110	104	Iron ore.....	112	106	106	100	100	100
Tobacco, raw .....	133	181	207	100	100	100	Pig iron .....	132	128	122	118	121	115
"  manufactured	217	217	217	163	120	105	Rolling mill prod. ....	155	149	148	138	141	140
Grains .....	168	156	153	100	100	100	Cast iron pipe .....	177	164	162	158	155	153
Flour .....	179	168	157	107	108	103	Hardware .....	175	165	159	156	156	150
Bakery prod. ....	199	191	194	118	122	127	Tools .....	203	203	203	181	192	192
Cotton, raw .....	193	144	142	100	100	100	Copper.....	103	101	95	100	100	100
"  yarn and thread	183	158	147	95	110	104	"  prod.....	106	105	99	103	104	104
"  fabrics .....	199	181	166	103	126	117	Lead .....	195	176	145	100	100	100
"  hosiery .....	278	277	263	144	192	185	"  pipe .....	260	253	225	133	144	155
Live-stock.....	125	127	115	100	100	100	Coal.....	214	213	210	100	100	100
Meat .....	136	145	141	109	114	123	"  tar.....	229	238	238	107	112	113
"  canned and cured	165	138	141	132	109	123	Hides.....	89	75	110	100	100	100
Milk.....	134	135	142	100	100	100	Harness leather.....	118	117	126	133	156	115
"  products .....	147	144	146	110	107	103	Boots.....	158	166	153	178	221	139
Silk, raw .....	172	167	135	100	100	100	Calf skins .....	110	89	103	100	100	100
"  manuf.....	198	194	181	115	116	134	"  boots .....	115	112	114	105	126	111
Wool .....	215	167	141	100	100	100	Bricks .....	171	171	176	100	100	100
"  yarn.....	181	186	186	84	111	132	Pottery .....	316	330	330	185	193	188
Cloth, hosiery .....	231	220	226	107	132	160	Glass, window .....	114	100	90	100	100	100
Fish, raw .....	120	127	129	100	100	100	"  trumblers .....	119	114	111	104	114	123
"  dried .....	134	112	102	112	88	79	Rubber .....	105	71	54	100	100	100
"  canned .....	183	203	207	153	160	160	Goloshes .....	123	128	125	117	180	231
Maize.....	177	130	146	100	100	100	Flax, fibre .....	266	227	216	100	100	100
"  canned.....	193	147	158	109	113	107	"  tow sewing twine	180	180	190	68	79	88
Lumber, timber.....	149	148	149	100	100	100							
Pulp .....	153	156	148	103	105	99							
Paper .....	187	176	173	126	119	116							

TABLE XII (continued)

## C. GERMANY

Commodities	Indices		Percentage changes in relative value		Commodities	Indices		Percentage changes in relative value	
	1926	1927	1926	1927		1926	1927	1926	1927
Rye .....	121	157	100	100	Zinc .....	150	125	100	100
„ flour .....	134	165	111	105	„ sheets .....	154	132	103	106
Wheat .....	140	140	100	100	Wool .....	182	195	100	100
„ flour .....	138	132	99	94	„ stockings † .....	200	206	110	106
Potatoes .....	88	158	100	100	Flax .....	162	218	100	100
„ meal .....	127	193	144	122	„ thread .....	154	190	95	87
„ groats .....	132	190	150	120	Cotton .....	* 104	136	100	100
Cattle .....	106	118	100	100	„ yarn .....	* 135	158	130	116
Beef .....	110	118	104	100	„ tissues .....	* 165	194	159	143
Pigs .....	135	110	100	100	Hemp .....	144	141	100	100
Pork .....	141	119	104	108	„ yarn .....	159	152	110	108
Milk .....	122	124	100	100	Jute .....	140	111	100	100
Butter and Cheese .....	146	150	119	121	„ yarn .....	142	123	101	111
Coal .....	121	121	100	100	„ tissues .....	124	117	89	105
Briquettes .....	134	151	111	125	Bags .....	128	121	91	109
Benzol .....	197	165	163	136	Hides and skins .....	102	127	100	100
Lignite .....	135		100		Leather .....	128	137	125	108
Briquettes .....	145*	142	107		Shoes .....	† 130	137	127	108
Iron ore .....	100	111	100	100	Timber .....	121	148	100	100
Pig iron .....	115	112	115	101	Paper and cardboard .....	164	159	136	108
Iron Products .....	125	128	125	114	Timber, round .....	125	154	100	100
Machines .....	* 140	141	140	127	„ hewn .....	164	159	131	103
Copper .....	91	87	100	100					
„ sheets .....	102	98	112	113					

\* Figures referring to January 1927. † Figures referring to December 1926.

† Figures calculated from the data of the *Frankfurter Zeitung*. The other figures are computed from official data.

## D. SWEDEN

	1926	1927	1926	1927		1926	1927	1926	1927
Cattle .....	135	108	100	100	Raw textiles .....	123	140	100	100
Meat .....	149	124	110	115	Yarn .....	164	158	133	113
Iron ore .....	110	110	100	100	Tissues .....	192	182	156	130
Pig iron .....	127	118	115	107	Hides and Skins .....	81	103	100	100
Iron and steel prod. ....	134	124	122	113	Leather .....	109	118	135	115
Wood .....	147	150	100	100	Shoes .....	161	146	199	142
Wooden articles .....	177	183	120	122	Tallow .....	125	111	100	100
Pulp .....	171	136	100	100	Candles and soap .....	153	148	122	133
Tar paper .....	155	160	91	118	Coal .....	109	101	100	100
Paper .....	176	171	103	126	Coal tar .....	202	212	185	210

But the tables necessarily fail to take account of the price movement in new industries and happen not to cover certain important commodities in the manufacture of which marked technical progress has been made. Further, although the more highly finished goods shown in the last tables remained in 1927 relatively higher in price than the raw materials from which they were made, the discrepancy was less in that year than in 1926. To this question of recent price tendencies it will be necessary to revert shortly. Before considering it in greater detail, however, it is desirable to set out the last group of evidence, namely, that afforded by the foreign trade price indices. In the following table are compared the export and import price indices of certain countries whose imports and exports are fairly homogeneous, either manufactured goods or raw materials and foodstuffs. The import-price index is expressed in each case as a percentage of the export index.<sup>1</sup> Whenever, therefore, the figures in the second column exceed 100, import prices have risen more than export prices; whenever they are below 100, export prices have risen the more.

	Import-price index as percentage of export-price index			Year	Manufactured articles as percentages of total:	
	1925	1926	1927		Imports	Exports
Europe :						
Germany . . . . .			93	1927	17.1	73.7
Hungary . . . . .		No data		1927	54.6	17.2
Norway . . . . .	98		106	1925	42.3	23.9
U. S. S. R. . . . .	113*		104†	1925-26	36.6	4.6
Sweden . . . . .	82		75	1925	39.8	39.5
Switzerland . . . . .	92	89		1925	36.3	73.1
United Kingdom . . . . .	88		85	1925	17.6	72.0
British India . . . . .		112			No data	
New Zealand . . . . .	87		96	1925	72.9	1.2
Argentine . . . . .		137			No data	

It will be observed that the export indices of such industrialised States as Germany, Sweden, Switzerland and the United Kingdom are relatively high, while the export indices of agricultural States such as the Argentine or British India are relatively low. Reciprocally, the industrial States buy their imports of raw materials and foodstuffs cheap, while the producers of foodstuffs and raw materials buy their requirements of manufactured goods dear.

<sup>1</sup> Last year, the table was calculated in the reverse fashion. It has now been changed in order to agree with certain new tables published in this year's *Memorandum on International Trade and Balances of Payments*. Further discussion of certain special aspects of the subject here under discussion will be found in this work.

\* 1925/26.

† 1926/27.

Each separate group of evidence therefore goes to substantiate the conclusion that the prices of manufactured articles in the great majority of countries have risen to a greater extent and remained in 1927 at a higher level than the prices of raw materials and foodstuffs.

Up to this point, raw materials and foodstuffs have been considered as a single group of commodities and contrasted with finished manufactures. Such a grouping, however, may tend, and indeed in certain quarters has tended, to lead to exaggerated views concerning the extent to which the change in relative prices has adversely affected agricultural interests. It is necessary, therefore, to pursue the analysis a little further and compare the prices of agricultural products with those of other raw materials. Unfortunately, the goods entering into the existing index numbers of wholesale prices are grouped so variously that it is difficult to employ them for this purpose. In the following statement, certain group indices which, though far from ideal, afford some evidence of value are tabulated. The groups are never

Country	Description of index	Average for year :		Compiler
		1926	1927	
Australia . . . . .	Agricultural products . . . . .	182	166	Melbourne. Commonwealth Bureau of Census and Statistics.
	Metals and coal . . . . .	185	188	
	Textiles . . . . .	148	154	
Belgium . . . . .	Foodstuffs . . . . .	782	938	<i>Revue du Travail.</i>
	Metals and metal products . . .	730	798	
Denmark . . . . .	Foodstuffs . . . . .	145	145	<i>Finanstidende.</i>
	Industrial materials . . . . .	145	140	
France . . . . .	Foodstuffs . . . . .	619	584	Statistique générale de la France.
	Minerals . . . . .	809	636	
	Textiles . . . . .	882	715	
Germany . . . . .	Agricultural products . . . . .	129	138	Statistisches Reichsamts.
	Iron . . . . .	124	125	
	Non-ferrous metals . . . . .	117	108	
Italy . . . . .	Foodstuffs . . . . .	683	568	Chamber of Commerce, Milan.
	Minerals and metals . . . . .	665	503	
	Textiles . . . . .	660	476	
Netherlands . . . . .	Agricultural products . . . . .	136	145	Official.
	Non-agricultural products . . . .	155	142	
Norway . . . . .	Foodstuffs . . . . .	197	200	Official.
	Other goods . . . . .	165	168	



Country	Description of index	Average for year :		Compiler
		1926	1927	
United Kingdom . . . . .	Foodstuffs . . . . .	155	152	Board of Trade.
	Other than foodstuffs . . . . .	144	136	
	Iron and steel . . . . .	124	120	<i>The Economist.</i>
	Cereals and meat . . . . .	153	149	
	Minerals . . . . .	154	128	
United States of America .	Farm products . . . . .	142	144	Bureau of Labor Statistics.
	Non-agricultural products . . .	154	146	
	Crops . . . . .	143	142	
	Grain . . . . .	148	148	
	Animal products . . . . .	136	141	
	Forest products . . . . .	188	176	
	Mineral products . . . . .	175	164	

identical in composition, and the figures for one country must not be compared with those for another. The second of the group indices for Denmark and Norway include textiles and certain other agricultural products intended for industrial use. As the textile indices are relatively high, however, this fact does not militate against the general conclusions to which the tabulated data point.

In all the European countries given, except France, the prices of agricultural products (or foodstuffs) ruled higher in 1927 than those of other raw materials. The products of the extractive industries, as the figures for Belgium, Germany and the United Kingdom show, were the lowest in price.

In the United States of America, on the other hand, the agricultural price indices are still the lowest and the mineral index is relatively high. In Australia, almost all the group indices have remained at an extraordinarily high level as compared with gold indices in either Europe or America. But agricultural products are at a slightly lower level than metals and coal.

The factors which have influenced the agricultural situation in the United States are to a large extent peculiar to that country and the figures given for the other countries are certainly more characteristic of general conditions to-day. While producers of raw materials and foodstuffs as a whole have been adversely affected by the change in price ratios, the farmer is less affected than the miner or heavy-metal worker.

But there is a danger in considering only the static position, and it is perhaps proper to lay more emphasis to-day on the fact that the relative prices of raw materials and manufactured products are tending to approach each other than that they have not yet met. Without an index of the prices of manufactured products it is impossible to obtain a clear and definite picture of the tendencies of the last few years ; but if some of the data considered above be traced back to 1921, the fact that the discrepancy of prices is decreasing becomes patent enough.

In the following table the percentage differences between certain price indices of raw materials and finished articles and between certain import and export price indices are set out.

TABLE SHOWING PERCENTAGE DIFFERENCES BETWEEN THE AVERAGE ANNUAL PRICE INDICES OF RAW MATERIALS AND FINISHED PRODUCTS AND BETWEEN CERTAIN IMPORT AND EXPORT INDICES.

Raw materials or similar indices = 100.

	Sweden	U. S. A.		Germany	U. S. A.	U. K.	British India	Argentine
	Finished products				Exports	Exports	Imports	Imports
			1923					
1921 . . .	+ 27	+ 22	=100	—	+ 27	+ 42	+ 69	+ 59
1922 . . .	+ 33	+ 7		—	+ 22	+ 32	+ 21	+ 62
1923 . . .	+ 22	+ 7		—	+ 11	+ 28	+ 31	+ 52
1924 . . .	+ 17	+ 6	-2	+ 30	+ 11	+ 22	+ 17	+ 36
1925 . . .	+ 8	+ 6	-6	+ 18	+ 1	+ 19	+ 4	+ 17
1926 . . .	+ 9	+ 11	-1	+ 16	- 4	+ 23	+ 12	+ 37
1927 . . .	+ 8	—	-3	+ 7	- 5	+ 21		
First half 1928 .	+ 3			+ 18				

In every case, the index which measures the price of crude products or the group of commodities, whether imports or exports, which is known to consist mainly of crude products, is taken as equal to 100 and the percentage difference between it and the other index named at the top of each column is calculated. All figures preceded by a plus sign (+) indicate that the price index of the more finished goods stood higher than that for goods in earlier stages of manufacture. It will be seen that the discrepancy during the last three years has in every case been less than during the preceding three years, and that there is a general tendency for the two curves on which the figures are based to converge. In other words, the advantage in price which the industrialist enjoyed has diminished and continues to diminish. The import and export indices show a less well-defined movement than do the others, as is to be expected, since they are composed of less homogeneous groups of commodities.

Too much importance must not be attached to the figures for the slump year 1921, for during periods of depression the prices of raw materials normally shrink more rapidly than any others; nor should minor fluctuations from year to year (as, for instance, the rise in the last three indices in 1926), the natural result of harvest conditions and other passing causes, be considered here. Of real importance and significance is the general trend of the figures.

Since 1925, the prices of these two main groups of commodities have approached each other much less rapidly than in the immediately preceding years. But with the stabilisation of monetary conditions in Europe and the steady development of industrial production, the tendency towards a re-establishment of the pre-war equilibrium is not unnatural.

The conclusions to which the foregoing analysis points, then, may be summarised as follows :

(a) Compared with 1913, the prices of manufactured articles, taken as a group (excluding those produced by new industries or industries which have enjoyed a very marked and exceptional development in post-war years), appear to have remained in 1927 relatively higher than those of raw materials and foodstuffs.

(b) The significance of this fact to the economy of any particular country, however, is affected by the importance of the products of new and newly developed industries, and is greater, therefore, in Europe than in the United States of America.

(c) The prices of the products of the extractive industries appear to rule substantially lower than those of agricultural produce.

(d) Although the change in the ratio as compared with 1913 between the prices of crude products and manufactured articles — at any rate in Europe — still remains a factor of material importance in world economy, not less important is the fact that there has during recent years been a distinct tendency towards the re-establishment of the old equilibrium.

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## **ANNEXES**

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**Annex I**

**INDICES OF WORLD PRODUCTION OF FOODSTUFFS AND RAW MATERIALS**

Groups of Products	Articles	1913	1923	1924	1925	1926	1927	
Cereals and other food crops .....	<i>Group index weighted by 1927 values</i>	100	103	101	111	108	112	
	Wheat	100	101	92	105	108	110	
	Rye	100	96	83	106	96	102	
	Barley	100	87	79	95	91	93	
	Oats	100	97	95	103	104	100	
	Maize	100	109	92	112	107	105	
	Rice	100	103	111	110	109	110	
	Potatoes	100	106	113	124	111	135	
	Sugar	{ Beet sugar	100	76	102	103	96	112
		{ Cane sugar	100	152	168	177	168	168
Meat .....	<i>Group index weighted by 1927 values</i>	100	104	110	110	112	116	
	Cattle	100	107	114	116	118	118	
	Pork	100	107	113	110	111	118	
	Mutton	100	87	87	90	95	100	
Colonial produce, etc. . .	<i>Group index weighted by 1927 values</i>	100	127	131	135	138	141	
	Coffee	100	128	116	116	138	141	
	Cocoa	100	203	222	219	207	216	
	Tea	100	105	110	109	116	118	
	Hops	100	47	85	72	72	79	
	Tobacco	100	140	144	157	152	153	
Vegetable-oil materials .	<i>Group index weighted by 1927 values</i>	100	120	136	142	138	166	
	Cotton seed	100	89	112	126	125	106	
	Linseed	100	113	119	143	128	144	
	Rapeseed	100	95	88	97	79	79	
	Hempseed	100	88	84	140	127	137	
	Sesamum	100	95	98	79	82	99	
	Soya beans	100	202	243	211	253	278	
	Copra	100	172	183	188	209	215	
	Palm oil and palm-kernel oil (raw)	100	142	158	170	161	163	
	Olive oil (raw)	100	116	134	112	97	187	
Ground-nuts	100	166	205	236	250	292		
Textiles .....	<i>Group index weighted by 1927 values</i>	100	94	109	123	129	122	
	Cotton	100	88	111	125	127	107	
	Flax	100	53	70	86	78	78	
	Hemp	100	93	85	138	127	134	
	Manila hemp	100	122	128	117	118	112	
	Jute	100	100	96	106	143	120	
	Wool	100	91	95	100	105	106	
	Raw silk	100	138	150	164	174	184	
	Artificial silk	100	300	401	538	673	846	

Annex I (concluded)

INDICES OF WORLD PRODUCTION OF FOODSTUFFS AND RAW MATERIALS

Groups of Products	Articles	1913	1923	1924	1925	1926	1927
Hides and skins .....	<i>Group index weighted by 1927 values</i>	100	97	101	104	107	109
	Cattle	100	104	111	114	115	116
	Goats	100	90	81	91	97	94
	Sheep	100	87	86	89	94	99
Rubber .....	<i>Group index weighted by 1927 values</i>	100	328	356	446	564	550
	Raw rubber	100	328	356	446	564	550
Wood-pulp .....	<i>Group index weighted by 1927 values</i>	100	129	135	151	169	179
	Mechanical pulp	100	118	127	141	153	157
	Chemical pulp	100	134	138	155	175	188
Cement .....	<i>Group index weighted by 1927 values</i>	100	122	133	149	158	179
		100	122	133	149	158	179
Fuels .....	<i>Group index weighted by 1927 values</i>	100	116	115	117	118	128
	Coal	100	99	98	98	98	106
	Lignite	100	125	133	144	144	156
	Petroleum	100	265	263	277	285	322
Metals .....	<i>Group index weighted by 1927 values</i>	100	104	106	120	124	134
	(smelter production)						
	Pig iron	100	89	87	98	100	110
	Steel	100	102	103	119	122	133
	Copper	100	124	134	141	147	154
	Lead	100	102	112	130	140	148
	Zinc	100	96	103	116	126	134
	Tin	100	106	112	113	114	122
	Aluminium	100	219	264	286	315	329
	Nickel	100	101	114	121	109	111
Silver	100	109	107	109	113	114	
Chemicals (fertilisers) ...	<i>Group index weighted by 1927 values</i>	100	106	116	133	133	139
	Natural phosphates	100	98	107	123	130	139
	Potash	100	117	100	145	127	148
	Sulphur	100	248	167	185	237	265
	Natural guano	100	209	264	250	174	214
	Chile nitrate of soda	100	69	87	91	73	58
	Nitrate of lime	100	223	196	260	521	675
	Superphosphates of lime	100	91	101	113	114	114
	Basic slag	100	55	81	90	99	108
	Cyanamide of calcium	100	294	333	464	536	553
	Sulphate of ammonia	100	169	194	223	225	258
	Sulphate of copper	100	106	115	114	123	126

**Annex II.**

**METHOD OF CALCULATION OF THE COMPOSITE PRODUCTION INDEX.**

The various articles composing the index are given in Annex I. For the purposes of the calculation of the index, a "weight" has been attributed to each commodity equivalent to its relative importance as measured by its aggregate value at selected "world" prices. The prices selected are intended to be representative in the sense that they refer to representative qualities and that their ratios are fairly typical of relative values on the world market. They are annual averages of actual quotations for medium qualities of the various articles in leading producing countries. They are not averages of prices of different qualities or of prices in different countries.

They have all been converted into terms of dollars according to the annual average rates of exchange. In view of the changes that have taken place in relative values, dual calculations have been made and for each year two indices are shown in Annexes III and IV. In the first, the prices for 1913, the base year, have been employed ; in the second, prices in 1927, the last year considered.

The indices are thus compiled by the aggregate method, the mathematical formula of which is :

$$I = \frac{q_1' p' + q_1'' p'' + q_1''' p''' + \dots + q_1^n p^n}{q_0' p' + q_0'' p'' + q_0''' p''' + \dots + q_0^n p^n} = \frac{\Sigma(q_1 p)}{\Sigma(q_0 p)}$$

For the first index, the quantity of each commodity produced each year ( $q'$ ,  $q''$ ,  $q'''$ , etc.) is multiplied by the 1913 price of that commodity ( $p'$ ,  $p''$ ,  $p'''$ , etc.) and the resulting totals for all commodities are summed. The absolute figures thus obtained for each year are then converted into percentages of the absolute figure for 1913. For the second index the same procedure is adopted ; but the prices are those referring to 1927. As the prices are constant, variations in the index represent changes in the quantities produced and not in the values.

Two tables showing the aggregates from which the general index has been calculated are given below :

PRODUCTION AGGREGATES IN TERMS OF DOLLARS (000,000's omitted)

Groups of Commodities	(a) Aggregates according to 1913 Prices						(b) Aggregates according to 1927 Prices					
	1913	1923	1924	1925	1926	1927	1913	1923	1924	1925	1926	1927
Cereals and other food crops	16,512.4	17,070.8	16,771.3	18,484.2	17,972.6	18,579.8	25,107.7	25,831.7	25,316.0	27,941.2	27,190.4	28,075.5
Meat .....	3,953.9	4,152.8	4,396.9	4,400.8	4,471.1	4,604.4	5,067.9	5,291.5	5,593.4	5,596.6	5,690.7	5,874.5
Colonial produce, etc. ....	1,004.9	1,316.6	1,342.5	1,387.1	1,429.1	1,459.6	1,680.6	2,127.2	2,194.1	2,264.8	2,325.5	2,374.2
Vegetable-oil materials .....	902.3	1,065.9	1,209.9	1,274.2	1,245.0	1,435.4	1,221.6	1,464.5	1,659.4	1,732.5	1,682.6	2,027.4
Textiles .....	2,695.8	2,612.0	3,035.0	3,448.6	3,657.2	3,415.3	4,101.4	3,855.2	4,458.1	5,032.2	5,282.8	4,925.2
Hides and skins .....	695.8	688.4	721.9	743.2	760.1	773.0	931.5	906.3	941.9	972.1	998.4	1,018.3
Rubber .....	183.2	601.0	652.4	816.3	1,033.3	1,007.6	95.5	313.0	339.8	425.2	538.2	524.8
Wood-pulp .....	232.5	299.8	313.0	350.7	391.7	413.8	341.6	441.7	460.7	516.5	577.1	610.2
Cement .....	294.7	360.2	392.9	437.9	466.6	527.2	468.7	572.7	624.8	696.2	742.0	838.0
Fuels .....	3,401.9	3,987.9	3,952.4	4,015.0	4,038.9	4,401.6	4,899.7	5,704.8	5,653.4	5,740.2	5,772.8	6,288.2
Metals (smelter production) ..	3,131.2	3,289.0	3,365.6	3,772.0	3,908.2	4,216.0	3,845.2	4,002.4	4,086.8	4,606.0	4,761.1	5,147.3
Chemicals (fertilisers) .....	526.3	572.9	627.0	716.8	723.3	760.2	533.4	565.7	618.2	709.5	707.6	742.1
Total .....	33,534.9	36,017.3	36,780.8	39,852.0	40,097.1	41,593.9	48,294.8	51,076.7	51,946.6	56,233.0	56,269.2	58,445.7
Thereof { Foodstuffs .....	20,466.3	21,223.6	21,168.2	22,885.0	22,443.7	23,184.2	30,175.6	31,123.2	30,909.4	33,537.8	32,881.1	33,950.0
{ Raw materials ..	13,068.6	14,793.7	15,612.6	16,967.0	17,653.4	18,409.7	18,119.2	19,953.5	21,037.2	22,695.2	23,388.1	24,495.7

Territorial Divisions	(a) Aggregates according to 1913 Prices						(b) Aggregates according to 1927 Prices					
	1913	1923	1924	1925	1926	1927	1913	1923	1924	1925	1926	1927
Eastern and Central Europe :												
Excluding Russia (U.S.S.R.)	5,540.7	4,345.2	4,738.2	5,527.9	5,311.2	5,820.3	8,145.5	6,424.3	6,874.3	8,042.9	7,679.7	8,393.4
Including Russia (U.S.S.R.)	8,518.5	6,562.7	7,126.8	8,661.5	8,658.7	9,349.5	12,827.7	9,883.3	10,592.2	12,921.0	12,887.5	13,848.5
Rest of Europe .....	5,166.1	5,045.9	5,337.1	5,630.2	5,135.3	6,001.3	7,426.2	7,247.4	7,614.6	8,034.3	7,292.1	8,514.9
Europe, excluding Russia (U.S.S.R.)	10,706.8	9,391.1	10,075.3	11,158.1	10,446.5	11,821.6	15,571.7	13,671.7	14,488.9	16,077.2	14,971.8	16,908.3
Europe, including Russia (U.S.S.R.)	13,684.6	11,608.6	12,463.9	14,291.7	13,794.0	15,350.8	20,253.9	17,130.7	18,206.8	20,955.3	20,179.6	22,363.4
North America .....	9,022.5	11,447.2	10,686.3	11,432.8	11,858.3	11,640.7	12,585.2	15,931.8	14,841.4	15,819.7	16,363.8	16,117.7
Caribbean .....	615.7	933.7	1,041.5	994.4	948.5	909.5	811.4	1,238.8	1,384.4	1,318.8	1,253.5	1,201.4
South America .....	1,826.7	2,342.0	2,206.2	2,380.5	2,468.6	2,564.3	2,427.1	3,145.6	2,932.5	3,173.1	3,303.1	3,427.3
Africa .....	850.8	1,061.8	1,155.5	1,215.9	1,216.1	1,267.4	1,206.3	1,507.2	1,623.3	1,712.6	1,710.4	1,786.7
Asia .....	6,937.6	7,982.3	8,491.7	8,829.9	9,042.6	9,128.2	10,089.7	11,139.4	11,837.3	12,179.5	12,280.5	12,436.7
Oceania .....	597.0	641.7	735.7	706.8	769.0	733.0	921.2	983.2	1,120.9	1,074.0	1,178.3	1,112.5
WORLD .....	33,534.9	36,017.3	36,780.8	39,852.0	40,097.1	41,593.9	48,294.8	51,076.7	51,946.6	56,233.0	56,269.2	58,445.7





### Annex III.

STUFFS WEIGHTED BY: (a) 1913 VALUES ; (b) 1927 VALUES.

1913 = 100.

North America		Caribbean <sup>1</sup>		South America		Africa		Asia		Oceania		World	
(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
123	124	84	84	145	146	113	112	91	91	123	122	101	100
104	106	85	85	113	114	113	111	88	87	162	160	90	90
115	115	65	66	138	139	116	116	88	88	113	113	106	105
112	112	73	73	139	139	113	110	88	88	155	154	104	104
117	118	71	72	144	145	120	118	89	89	117	117	105	104
123	124	147	146	156	156	119	118	103	102	121	121	103	103
106	107	182	181	129	129	124	122	107	107	155	154	102	101
114	115	172	171	151	151	126	125	108	107	131	129	112	111
112	112	162	161	153	153	120	118	107	107	152	152	109	108
118	118	155	154	159	159	136	134	107	106	135	133	113	112
135	135	109	109	105	104	110	109	123	124	105	104	105	104
136	135	107	106	108	107	114	112	128	129	108	103	111	110
126	126	107	106	108	107	117	114	131	132	105	99	111	110
127	127	111	110	111	110	123	121	130	131	104	100	113	112
127	127	114	113	112	111	132	129	136	138	112	109	116	116
138	134	113	113	139	139	290	283	122	120	120	126	131	127
117	114	109	110	126	127	339	329	133	131	136	140	134	131
129	126	114	114	121	122	350	342	140	137	128	127	138	135
123	120	102	103	146	147	360	355	138	136	130	128	142	138
119	116	119	119	147	148	356	351	146	143	135	134	145	141
82	85	127	128	185	186	133	134	127	128	196	196	118	120
115	119	130	129	153	153	154	155	140	142	200	199	134	136
118	118	124	123	237	239	168	169	145	148	212	212	141	142
125	122	189	180	219	221	173	177	143	146	227	227	138	138
105	108	127	130	248	250	173	180	159	164	228	228	159	166
85	83	86	84	118	113	109	110	108	109	98	98	97	94
110	108	99	98	116	111	121	121	118	120	111	111	113	109
130	127	101	97	121	115	138	138	127	128	116	116	128	123
147	142	165	159	119	114	135	136	130	130	127	127	136	129
113	110	81	79	119	113	119	122	135	136	112	112	128	122
113	110	114	113	120	117	108	106	83	83	101	100	99	97
117	114	114	112	126	123	113	109	80	78	96	91	104	101
120	117	119	117	124	122	115	111	85	85	90	84	107	104
122	119	123	122	127	125	122	118	84	85	91	88	109	107
117	114	129	127	130	129	128	123	91	90	100	98	111	109
—	—	—	—	56	56	22	22	676	676	—	—	328	328
—	—	—	—	58	58	22	22	737	737	—	—	356	356
—	—	—	—	71	71	33	33	922	922	—	—	446	446
—	—	—	—	67	67	44	44	1,186	1,186	—	—	564	564
—	—	—	—	78	78	44	44	1,145	1,145	—	—	550	550

<sup>1</sup> Central America, Mexico and all islands in the Caribbean Sea.

**Annex III (concluded).**

INDICES OF PRODUCTION OF RAW MATERIALS AND FOOD-

*Production in*

Groups of Products	Years	Eastern and Central Europe				Rest of Europe (Western and Maritime)		Europe			
		Excluding U.S.S.R.		Including U.S.S.R.		(a)	(b)	Excluding U.S.S.R.		Including U.S.S.R.	
		(a)	(b)	(a)	(b)			(a)	(b)	(a)	(b)
Wood-pulp .....	1923	80	80	73	74	118	118	101	102	97	98
	1924	88	89	83	82	132	133	113	113	109	109
	1925	110	110	103	103	145	146	130	130	125	126
	1926	120	120	114	114	156	157	140	141	136	137
	1927	131	131	126	126	168	169	152	153	148	149
Cement .....	1923	74	74	70	70	118	118	98	98	94	94
	1924	80	80	77	77	129	129	107	107	103	103
	1925	101	101	97	97	138	138	121	121	118	118
	1926	106	106	103	103	151	151	131	131	128	128
	1927	131	131	126	126	173	173	154	154	150	150
Fuels .....	1923	65	64	63	63	96	96	84	84	82	82
	1924	90	90	85	85	97	97	94	94	92	92
	1925	95	95	91	91	91	91	93	93	91	91
	1926	106	105	104	103	62	62	79	79	80	80
	1927	112	112	112	112	96	96	102	102	103	103
Metals .....	1923	56	55	48	48	85	86	73	73	68	68
	1924	73	72	64	63	101	102	90	90	84	84
	1925	89	88	81	81	104	104	98	98	93	93
	1926	92	91	87	87	99	99	96	96	94	93
	1927	119	118	111	111	121	121	120	120	117	117
Chemicals (fertilisers).....	1923	102	100	100	98	106	107	104	104	103	103
	1924	121	113	119	113	118	120	120	117	119	116
	1925	158	150	156	148	123	125	137	136	137	135
	1926	161	149	159	147	129	131	142	139	142	138
	1927	183	170	181	163	136	137	155	152	155	151
<i>General Index</i> .....	1923	78	79	77	77	98	98	88	88	85	85
	1924	86	84	84	83	103	103	94	93	91	90
	1925	100	99	102	101	109	108	104	103	104	103
	1926	96	94	102	100	99	98	98	96	101	100
	1927	105	103	110	108	116	115	110	109	112	110
Foodstuffs.....	1923	82	82	81	82	98	98	88	89	86	86
	1924	83	82	84	83	99	98	90	89	89	88
	1925	99	98	104	103	110	109	103	103	105	105
	1926	91	90	101	101	101	101	95	94	101	101
	1927	98	97	107	106	106	105	101	100	107	106
Raw materials.....	1923	70	70	65	64	97	98	87	86	82	81
	1924	90	89	82	81	107	107	101	100	95	94
	1925	102	100	97	95	108	107	106	104	103	101
	1926	107	104	103	99	97	95	101	99	100	97
	1927	122	118	117	113	127	125	125	122	122	119

**Annex III (concluded).**

STUFFS WEIGHTED BY : (a) 1913 VALUES ; (b) 1927 VALUES.

1913 = 100.

North America		Caribbean <sup>1</sup>		South America		Africa		Asia		Oceania		World	
(a)	(b)					(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
169	170	105		105		—	—	541	550	—	—	129	129
165	166	105		105		—	—	550	560	—	—	135	135
180	181	105		105		—	—	622	632	—	—	151	151
206	207	105		105		—	—	752	769	—	—	168	169
210	212	105		105		—	—	816	836	—	—	178	179
		(a)	(b)	(a)	(b)								
144	144	250	250	600	600	229	229	247	247	193	193	122	122
156	156	300	300	800	800	229	229	267	267	238	238	133	133
169	169	350	350	900	900	257	257	318	318	253	253	149	149
172	172	400	400	1,000	1,000	286	286	408	408	278	278	158	158
182	182	450	450	1,150	1,150	343	343	498	498	536	536	179	179
142	141	546	544	288	287	144	143	163	162	100	100	117	116
128	127	514	513	437	431	150	150	172	171	110	110	116	115
132	131	433	431	644	636	158	157	181	180	110	110	118	117
145	144	346	346	1,075	1,054	168	168	183	182	108	108	119	118
144	142	252	251	1,631	1,599	164	164	183	182	111	111	129	128
138	139	131	139	355	350	689	730	129	130	92	99	105	104
123	123	130	137	347	341	951	975	145	146	100	110	107	106
142	142	136	145	356	350	967	978	151	151	112	125	121	120
151	151	145	155	384	377	949	974	150	150	116	130	125	124
144	144	157	170	432	421	1,072	1,100	166	167	119	134	135	134
172	165	246	246	71	71	117	114	190	182	101	100	109	106
148	144	286	286	89	89	141	137	215	206	115	114	119	116
178	173	234	234	93	93	153	151	238	227	156	154	136	133
183	176	306	306	74	74	177	172	273	261	200	198	137	133
194	187	311	311	60	60	199	196	287	273	217	214	144	139
127	127	152	153	128	130	125	125	115	110	107	107	107	106
118	118	169	171	121	121	136	135	122	117	123	122	110	108
127	126	162	163	130	131	143	142	127	121	118	117	119	116
131	130	154	154	135	136	143	142	130	122	129	128	120	117
129	128	148	148	140	141	149	148	132	123	123	121	124	121
126	126	141	140	130	131	116	116	104	103	115	114	104	103
113	113	169	169	118	118	121	120	108	108	137	135	103	102
117	117	161	160	129	130	124	123	109	108	121	118	112	111
115	115	153	153	131	132	121	119	108	108	134	132	110	109
120	120	148	147	135	136	134	132	108	108	126	124	113	113
128	127	174	179	126	127	135	137	142	128	101	100	113	110
124	123	169	174	124	124	154	154	155	140	110	110	119	116
137	135	163	167	132	132	166	167	170	151	116	115	130	125
148	146	156	158	140	142	170	172	182	155	124	124	135	129
138	137	147	149	148	149	167	169	188	163	119	118	141	135

<sup>1</sup> Central America, Mexico and all islands in the Caribbean Sea.



### Annex IV.

AND FOODSTUFFS WEIGHTED BY : (a) 1913 VALUES ; (b) 1927 VALUES.

*World Totals = 100.*

North America		Caribbean <sup>1</sup>		South America		Africa		Asia		Oceania		World	
(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
33.2	31.7	1.1	1.0	4.5	4.2	2.4	2.3	8.1	8.0	1.1	1.1	100	
40.4	39.1	0.9	0.9	6.5	6.1	2.6	2.5	7.4	7.2	1.4	1.4	100	
38.1	37.2	1.1	0.9	5.6	5.3	2.9	2.8	7.9	7.7	2.0	2.0	100	
36.0	34.8	0.7	0.6	5.9	5.5	2.6	2.5	6.8	6.7	1.2	1.2	100	
35.5	34.3	0.8	0.7	6.0	5.6	2.5	2.4	6.9	6.8	1.7	1.7	100	
37.1	35.9	0.8	0.7	6.2	5.8	2.7	2.6	6.9	6.8	1.3	1.2	100	
20.7	20.4	2.0	1.9	3.2	3.0	2.1	2.0	28.0	27.3	1.1	1.1	100	
24.6	24.5	2.9	2.6	4.8	4.6	2.4	2.3	27.8	27.2	1.3	1.2	100	
21.5	21.7	3.7	3.3	4.0	3.9	2.5	2.5	29.6	29.0	1.7	1.6	100	
21.0	21.0	3.2	2.8	4.3	4.1	2.3	2.3	27.0	26.4	1.3	1.2	100	
21.2	21.1	3.1	2.7	4.5	4.3	2.3	2.2	27.6	27.0	1.5	1.5	100	
21.6	21.6	2.8	2.6	4.5	4.3	2.5	2.4	26.7	26.0	1.3	1.2	100	
28.8	28.5	1.8	1.7	13.7	13.6	3.2	3.4	5.9	5.6	2.8	3.1	100	
37.1	36.9	1.9	1.8	13.7	13.5	3.4	3.6	6.9	6.6	2.7	3.1	100	
35.1	34.9	1.7	1.7	13.4	13.2	3.3	3.5	6.8	6.5	2.7	2.9	100	
32.7	32.4	1.7	1.7	13.3	13.1	3.4	3.5	6.9	6.7	2.6	2.8	100	
32.4	32.1	1.8	1.7	13.4	13.3	3.5	3.7	6.8	6.5	2.5	2.8	100	
31.4	31.2	1.8	1.7	13.2	13.1	3.7	3.8	6.9	6.6	2.6	2.9	100	
14.7	15.4	8.4	7.1	26.3	21.6	3.9	3.2	34.7	39.2	0.2	0.2	100	
15.5	16.3	7.2	6.3	27.9	23.8	8.6	7.1	32.3	37.1	0.2	0.2	100	
12.8	13.5	6.9	5.9	24.8	21.0	9.9	8.0	34.7	39.3	0.2	0.2	100	
13.7	14.4	6.9	6.0	23.1	19.5	9.9	8.1	35.3	39.8	0.2	0.2	100	
12.6	13.4	6.0	5.2	27.0	23.0	9.9	8.2	33.9	38.5	0.2	0.2	100	
11.9	12.7	6.9	6.0	26.7	22.6	9.5	7.9	35.0	39.6	0.2	0.2	100	
18.6	15.0	0.4	0.3	5.1	4.9	11.1	11.1	41.5	40.8	0.8	0.5	100	
12.9	10.6	0.4	0.4	8.0	7.6	12.6	12.4	44.5	43.5	1.3	0.9	100	
15.9	13.1	0.4	0.4	5.8	5.5	12.8	12.6	43.4	42.5	1.1	0.8	100	
15.5	12.5	0.4	0.3	8.5	8.3	13.2	13.2	42.6	42.5	1.2	0.8	100	
16.8	13.3	0.6	0.5	8.1	7.8	13.9	14.3	42.9	43.3	1.3	0.9	100	
12.2	9.8	0.3	0.3	7.9	7.4	12.1	12.0	41.5	40.3	1.1	0.8	100	
31.8	29.2	0.6	0.5	4.9	5.6	5.1	5.1	33.0	29.8	6.5	7.9	100	
27.7	25.8	0.5	0.5	5.9	6.7	5.7	5.9	36.9	34.4	6.6	8.2	100	
31.1	28.9	0.5	0.5	5.0	5.7	5.5	5.7	34.8	32.7	6.4	8.1	100	
32.4	30.2	0.4	0.4	4.6	5.3	5.5	5.7	33.0	31.2	5.9	7.5	100	
34.4	32.3	0.7	0.6	4.2	4.9	5.0	5.4	31.8	30.1	6.1	7.8	100	
28.0	26.3	0.3	0.3	4.5	5.2	4.7	5.1	34.9	33.2	5.7	7.3	100	
19.2	18.1	1.5	1.4	14.2	13.5	6.3	7.1	9.8	10.6	5.2	6.1	100	
21.9	20.4	1.8	1.6	17.1	16.3	6.9	7.7	8.1	9.1	5.4	6.3	100	
21.8	20.5	1.7	1.5	17.1	16.4	6.8	7.7	7.5	8.2	4.9	5.5	100	
21.7	20.3	1.7	1.6	16.3	15.8	6.7	7.5	7.8	8.6	4.4	4.9	100	
21.6	20.2	1.7	1.6	16.4	15.7	7.0	7.8	7.5	8.4	4.4	5.0	100	
20.3	19.0	1.8	1.6	16.5	15.9	7.2	8.0	8.0	8.7	4.7	5.5	100	
—	—	—	—	39.5	39.5	15.8	15.8	44.7	44.7	—	—	100	
—	—	—	—	6.7	6.7	1.1	1.1	92.2	92.2	—	—	100	
—	—	—	—	6.4	6.4	1.0	1.0	92.6	92.6	—	—	100	
—	—	—	—	6.3	6.3	1.2	1.2	92.5	92.5	—	—	100	
—	—	—	—	4.7	4.7	1.2	1.2	94.1	94.1	—	—	100	
—	—	—	—	5.6	5.6	1.3	1.3	93.1	93.1	—	—	100	

<sup>1</sup> Central America, Mexico and all islands in the Caribbean Sea.

**Annex IV (concluded).**

**PERCENTAGE DISTRIBUTION OF AGGREGATE PRODUCTION OF RAW MATERIALS**  
*World Totals = 100.*

Groups of Products	Years	Eastern and Central Europe				Rest of Europe (Western and Maritime)		Europe			
		Excluding U.S.S.R.		Including U.S.S.R.				Excluding U.S.S.R.		Including U.S.S.R.	
		(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
Wood-pulp .....	1913	24.9	25.0	27.8	27.9	31.8	32.0	56.7	57.0	59.6	59.9
	1923	15.4	15.5	15.7	15.9	29.1	29.3	44.5	44.8	44.8	45.2
	1924	16.3	16.4	17.0	17.1	31.3	31.5	47.6	47.9	48.3	48.6
	1925	18.1	18.1	18.9	19.0	30.7	30.9	48.8	49.0	49.6	49.9
	1926	17.7	17.8	18.8	18.8	29.5	29.7	47.2	47.5	48.3	48.5
	1927	18.3	18.4	19.6	19.6	30.1	30.3	48.4	48.7	49.7	49.9
Cement.....	1913	22.3	22.3	26.1	26.1	27.0	27.0	49.3	49.3	53.1	53.1
	1923	13.5	13.5	14.9	14.9	25.9	25.9	39.4	39.4	40.8	40.8
	1924	13.3	13.3	15.0	15.0	26.1	26.1	39.4	39.4	41.1	41.1
	1925	15.2	15.2	17.1	17.1	25.0	25.0	40.2	40.2	42.1	42.1
	1926	15.0	15.0	17.1	17.1	25.7	25.7	40.7	40.7	42.8	42.8
	1927	16.3	16.3	18.4	18.4	26.1	26.1	42.4	42.4	44.5	44.5
Fuels.....	1913	16.6	16.7	20.5	20.5	27.3	27.4	43.9	44.1	47.8	47.9
	1923	9.2	9.2	11.0	11.0	22.3	22.6	31.5	31.8	33.3	33.6
	1924	12.9	13.0	15.0	15.0	22.7	23.0	35.6	36.0	37.7	38.0
	1925	13.5	13.5	15.8	15.8	21.0	21.3	34.5	34.8	36.8	37.1
	1926	14.8	14.9	17.9	18.0	14.3	14.5	29.1	29.4	32.2	32.5
	1927	14.4	14.5	17.7	17.8	20.4	20.6	34.8	35.1	38.1	38.4
Metals.....	1913	18.2	18.8	22.5	23.1	26.5	27.3	44.7	46.1	49.0	50.4
	1923	9.6	9.9	10.3	10.6	21.6	22.5	31.2	32.4	31.9	33.1
	1924	12.3	12.7	13.3	13.7	25.0	26.2	37.3	38.9	38.3	39.9
	1925	13.3	13.8	15.0	15.5	22.9	23.8	36.2	37.6	37.9	39.3
	1926	13.3	13.7	15.7	16.2	21.0	21.9	34.3	35.6	36.7	38.1
	1927	16.0	16.5	18.6	19.1	23.8	24.8	39.8	41.3	42.4	43.9
Chemicals (fertilisers) ...	1913	23.1	24.5	23.6	24.9	32.8	30.7	55.9	55.2	56.4	55.6
	1923	21.6	23.0	21.7	23.0	31.9	31.0	53.5	54.0	53.6	54.0
	1924	23.5	23.8	23.6	23.9	32.6	31.8	56.1	55.6	56.2	55.7
	1925	26.8	27.5	27.0	27.6	29.6	28.8	56.4	56.3	56.6	56.4
	1926	27.1	27.4	27.3	27.7	30.8	30.4	57.9	57.8	58.1	58.1
	1927	29.3	30.0	29.5	30.2	30.9	30.3	60.2	60.3	60.4	60.5
<i>General Index</i> .....	1913	16.5	16.9	25.4	26.5	15.4	15.4	31.9	32.3	40.8	41.9
	1923	12.1	12.6	18.2	19.3	14.0	14.2	26.1	26.8	32.2	33.5
	1924	12.9	13.2	19.4	20.4	14.5	14.7	27.4	27.9	33.9	35.1
	1925	13.9	14.3	21.7	23.0	14.1	14.3	28.0	28.6	35.8	37.3
	1926	13.2	13.6	21.6	22.9	12.8	13.0	26.0	26.6	34.4	35.9
	1927	14.0	14.3	22.5	23.7	14.4	14.6	28.4	28.9	36.9	38.3
Foodstuffs.....	1913	18.8	19.1	30.3	31.3	12.8	13.0	31.6	32.1	43.1	44.3
	1923	14.9	15.3	23.8	24.8	12.1	12.3	27.0	27.6	35.9	37.1
	1924	15.2	15.4	24.7	25.4	12.3	12.5	27.5	27.9	37.0	37.9
	1925	16.6	16.9	28.0	29.0	12.6	12.8	29.2	29.7	40.6	41.8
	1926	15.5	15.8	27.9	29.0	11.9	12.0	27.4	27.8	39.8	41.0
	1927	16.2	16.5	28.6	29.6	12.0	12.1	28.2	28.6	40.6	41.7
Raw materials.....	1913	13.0	13.1	17.8	18.7	19.4	19.4	32.4	32.5	37.2	38.1
	1923	8.1	8.3	10.3	10.9	16.7	17.2	24.8	25.5	27.0	28.1
	1924	9.8	10.0	12.2	12.9	17.5	17.9	27.3	27.9	29.7	30.8
	1925	10.2	10.4	13.2	14.1	16.2	16.5	26.4	26.9	29.4	30.6
	1926	10.3	10.6	13.5	14.4	14.0	14.3	24.3	24.9	27.5	28.7
	1927	11.2	11.4	14.8	15.6	17.5	18.0	28.7	29.4	32.3	33.6

**Annex IV (concluded).**

AND FOODSTUFFS WEIGHTED BY : (a) 1913 VALUES ; (b) 1927 VALUES.

*World Totals = 100.*

North America		Caribbean <sup>1</sup>		South America		Africa		Asia		Oceania		World	
(a)	(b)					(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
39.3	39.0	0.3		0.3		—	—	0.8	0.8	—	—		100
51.6	51.3	0.3		0.2		—	—	3.3	3.3	—	—		100
48.2	48.0	0.3		0.2		—	—	3.2	3.2	—	—		100
47.0	46.7	0.2		0.2		—	—	3.2	3.2	—	—		100
48.0	47.8	0.2		0.2		—	—	3.5	3.5	—	—		100
46.5	46.3	0.2		0.2		—	—	3.6	3.6	—	—		100
		(a)	(b)	(a)	(b)								
42.7	42.7	0.2	0.2	0.1	0.1	0.4	0.4	3.1	3.1	0.4	0.4		100
50.4	50.4	0.5	0.5	0.6	0.6	0.8	0.8	6.2	6.2	0.7	0.7		100
49.9	49.9	0.5	0.5	0.8	0.8	0.8	0.8	6.1	6.1	0.8	0.8		100
48.5	48.5	0.6	0.6	0.8	0.8	0.8	0.8	6.5	6.5	0.7	0.7		100
46.4	46.4	0.6	0.6	0.8	0.8	0.8	0.8	7.9	7.9	0.7	0.7		100
43.5	43.5	0.6	0.6	0.8	0.8	0.8	0.8	8.5	8.5	1.3	1.3		100
45.0	44.9	0.8	0.8	0.2	0.2	0.6	0.6	4.6	4.6	1.0	1.0		100
54.6	54.4	3.7	3.5	0.4	0.4	0.7	0.7	6.4	6.4	0.9	1.0		100
49.6	49.4	3.5	3.3	0.6	0.6	0.8	0.8	6.8	6.9	1.0	1.0		100
50.6	50.3	2.9	2.8	0.9	0.9	0.8	0.8	7.1	7.1	0.9	1.0		100
55.1	54.9	2.3	2.2	1.6	1.5	0.8	0.9	7.1	7.1	0.9	0.9		100
50.0	49.8	1.5	1.5	2.2	2.1	0.7	0.7	6.6	6.6	0.9	0.9		100
42.5	41.6	2.0	1.6	0.8	0.6	0.1	0.1	4.2	4.4	1.4	1.3		100
55.8	55.5	2.5	2.2	2.8	2.0	0.7	0.5	5.1	5.5	1.2	1.2		100
48.7	48.0	2.4	2.1	2.7	1.9	1.0	0.7	5.6	6.0	1.3	1.4		100
50.0	49.5	2.3	2.0	2.4	1.7	0.9	0.6	5.2	5.5	1.3	1.4		100
51.3	50.8	2.4	2.0	2.5	1.8	0.8	0.6	5.0	5.3	1.3	1.4		100
45.4	44.7	2.4	2.0	2.6	1.9	0.9	0.7	5.1	5.5	1.2	1.3		100
15.8	14.8	0.02	0.02	22.3	24.0	1.7	2.0	2.0	1.9	1.8	1.7		100
24.9	23.0	0.03	0.1	14.5	16.0	1.8	2.1	3.5	3.2	1.7	1.6		100
19.7	18.4	0.1	0.1	16.7	18.5	2.0	2.3	3.6	3.3	1.7	1.7		100
20.7	19.3	0.03	0.1	15.3	16.8	1.8	2.2	3.5	3.2	2.1	2.0		100
21.0	19.6	0.1	0.1	12.1	13.4	2.1	2.5	4.0	3.7	2.6	2.6		100
21.2	19.8	0.1	0.1	9.3	10.4	2.3	2.8	4.0	3.7	2.7	2.7		100
26.9	26.1	1.8	1.7	5.5	5.0	2.5	2.5	20.7	20.9	1.8	1.9		100
31.8	31.2	2.6	2.4	6.5	6.2	2.9	3.0	22.2	21.8	1.8	1.9		100
29.1	28.6	2.8	2.7	6.0	5.6	3.1	3.1	23.1	22.8	2.0	2.1		100
28.7	28.1	2.5	2.3	6.0	5.6	3.0	3.1	22.2	21.7	1.8	1.9		100
29.6	29.1	2.4	2.2	6.1	5.9	3.0	3.0	22.6	21.8	1.9	2.1		100
28.0	27.6	2.2	2.0	6.2	5.9	3.0	3.0	21.9	21.3	1.8	1.9		100
22.2	21.7	2.0	1.8	5.2	4.8	2.3	2.3	23.8	23.7	1.4	1.4		100
27.0	26.6	2.7	2.5	6.5	6.1	2.6	2.6	23.7	23.6	1.6	1.5		100
24.3	24.1	3.3	3.0	6.0	5.6	2.7	2.7	24.9	24.9	1.8	1.8		100
23.3	22.9	2.9	2.6	6.0	5.6	2.5	2.5	23.2	23.1	1.5	1.5		100
23.5	23.0	2.8	2.6	6.2	5.8	2.5	2.5	23.5	23.4	1.7	1.7		100
23.6	23.2	2.6	2.4	6.2	5.8	2.7	2.7	22.7	22.7	1.6	1.5		100
34.2	33.2	1.6	1.4	5.8	5.4	2.9	2.9	15.9	16.2	2.4	2.8		100
38.6	38.4	2.4	2.3	6.5	6.2	3.5	3.6	19.9	18.9	2.1	2.5		100
35.5	35.2	2.2	2.1	6.0	5.8	3.8	3.8	20.6	19.6	2.2	2.7		100
36.0	35.9	2.0	1.9	5.9	5.7	3.8	3.9	20.8	19.5	2.1	2.5		100
37.4	37.6	1.8	1.7	6.0	5.9	3.7	3.8	21.4	19.6	2.2	2.7		100
33.5	33.6	1.6	1.6	6.1	5.9	3.5	3.6	21.0	19.3	2.0	2.4		100

<sup>1</sup> Central America, Mexico and all islands in the Caribbean Sea.