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**SUMMARY MEMORANDUM ON VARIOUS INDUSTRIES**

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## PREFATORY.

The Preparatory Committee for the International Economic Conference considered it desirable that special studies should be made of the conditions of certain industries. For nine of these industries — namely, iron and steel, coal, shipbuilding, chemicals, electrical engineering, mechanical engineering, cotton, silk, artificial silk — special memoranda reviewing the situation in the world as a whole have been prepared. For two others — wool and sugar — the information obtained covered a more restricted area<sup>1</sup>.

In the present Memorandum an attempt is made to summarise, very briefly, the evidence which has been collected and to throw the phenomena and the tendencies on which that evidence bears into their proper perspective. It is not proposed to repeat many of the statistics given in the individual memoranda even in a summarised form, except in so far as they may prove necessary in order to substantiate any particular point or illustrate some general tendency; nor is it proposed in this Memorandum to make a synopsis of the situation in each industry separately. We are concerned here with the comparison of phenomena and the discovery of general tendencies.

The majority of the other memoranda in this series deal with the situation of the various industries up to the end of 1925 and only cursory reference is made to later developments. Most of the problems which obtained in that year still remain unsolved and the period considered is sufficient for a diagnosis of the general world movements and tendencies. The protracted British coal dispute which took place in 1926 obscured temporarily certain of these tendencies, and the situation in 1925 is more informative in many respects than that in 1926. On the other hand, recent political difficulties in China may necessitate a qualification of certain of the remarks made about the Far East, and no year since 1915 can be said to be typical, still less normal. Each has been characterised by some special event which has seriously affected the slower forces of economic development and in 1925 the instability of the French and Belgian currencies had important international reactions which should not be overlooked.

Moreover, the conditions which obtain in various parts of the globe are widely different. In North America, in Japan, China and India, in Australasia and South Africa and, to a lesser extent, in certain countries in South America, great industrial progress has been achieved since 1914, while Europe is still suffering from the effects of the war.

Similarly, the industries considered vary greatly in relative prosperity. Of no industry save, possibly, shipbuilding can it be said that a worldwide depression exists, and the conditions ruling in the shipbuilding industry have materially

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<sup>1</sup> In the case of wool valuable memoranda were prepared for the use of the Preparatory Committee concerning conditions in France and the U. K. by the *Comité Central de la Laine* and the British Wool Textile Delegation.

improved in the last few months, and differ widely in the different branches. But in certain of the most important producing countries of Europe at any rate, the iron and steel industry, shipbuilding, coal-mining, the manufacture of chemicals, cotton-spinning and weaving, and, to a lesser extent, the woollen industry, are still suffering from a disequilibrium, the character and causes of which are considered below. The electrical engineering, silk and artificial silk industries on the other hand have shown an almost universal expansion, while the production of sugar is about 40 per cent higher than before the war.

In many countries the industries producing for the local markets are more prosperous than those dependent on exports.

Further, within Europe itself conditions vary widely from country to country, and while in France, Italy and Sweden, and also in certain countries whose industries are less generally important, industrial production has risen, in the United Kingdom, Germany, Russia and Poland it will be found that the conditions ruling in certain of the industries considered are far from favourable.

In view of this dissimilarity of conditions both from industry to industry and from country to country, the tendencies which can be traced, the phenomena which prove characteristic, and the causes which have determined those phenomena are seldom if ever universal in character.

It is important to distinguish between those tendencies which have had their origin in the war and those which, though possibly intensified by the war, are due to causes primarily independent thereof.

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## PRODUCTIVE CAPACITY.

One of the most disturbing characteristics of certain industries lies in the excess of productive capacity over actual requirements. It is necessarily difficult to determine whether such excess is likely to be permanent, and whether a policy of conservation or of scrapping should be pursued. Excess capacity may equally well be due to an increase of plant, or to a falling-off in demand or to a combination of these two causes. In the case of the iron and steel industry, shipbuilding, the cotton industry and the manufacture of certain chemicals and dye-stuffs, the growth of plant in one part of the world or another has been the main cause of present difficulties.

The output capacity of the steel-works was greatly increased for armament purposes in belligerent countries, was developed in non-belligerent countries during the war when supplies from the main producers were cut off, and has since the war been expanded to some extent in certain countries of lesser industrial importance which are anxious to render themselves less dependent for their armaments on foreign markets in the future. Thus in the United Kingdom, the capacity of the steel-works and rolling-mills is estimated to be over 50 per cent greater now than before the war (more than 12 million tons per annum as compared with 8 millions), whereas the actual production in 1925 was less than in 1913.

In addition to this increase in capacity, the international distribution of plant has been fundamentally altered by the treaties of peace. Germany has lost plant which accounted for more than 40 per cent of her pre-war pig-iron production and rolling mill output and nearly 40 per cent of her steel. The French pig-iron and steel productive capacity, on the other hand, is now about double what it was, and the German steel-works, though reduced in number, are still largely in excess of immediate productive requirements.

In the shipbuilding industry, capacity was practically doubled during the war, mainly owing to the creation of shipbuilding yards to cover losses of vessels and to meet the enormous demand for repairs. The pre-war capacity is estimated roughly at about 5 million tons per annum. To this was added approximately half-a-million in both the United Kingdom and Japan, 3¼ millions in the United States of America, and a quarter of a million in the continent of Europe. During the last nine years, however, effective capacity has certainly been reduced.

Spindles are normally taken as a rough measure of the spinning capacity of the cotton industry, though, owing to the different types of spindles used, gross figures are frequently misleading. But, unless there has been a change from one type of spinning to another, the figures of spindles afford a useful index for any individual country. The most rapid development has probably taken place in China, for which country, however, exact pre-war data are lacking. In Japan spindles have increased by 142 per cent, in Brazil by 107 per cent, in British India and Canada by over a third, in the United States by 17 per cent. The productive capacity of Europe, on the other hand, has remained practically unchanged. In India and Japan there has likewise, as is shown below, been a very rapid growth of weaving capacity.

The development of the cotton industry in China and to a considerable extent in other countries dependent or previously dependent on external sources for their supply of yarns and piece goods was due largely to the failure of Europe to provision them adequately during the war.

In the case of the coal-tar dye industry, on the other hand, as in that of the iron and steel trades and shipbuilding, it was mainly to the immediate war requirements of belligerent States that the excess of present-day plant is due. Before the war Germany was responsible for some four-fifths of the total world output of dyes. In 1924 her share had fallen to under one-half, important industries having grown up in the United States of America, the United Kingdom, France, Italy and Japan.

The case of nitrates constitutes an interesting exception to general world economic tendencies, inasmuch as Chile, where nitrates are obtained as a natural product, has been adversely affected by the competition of European industry, stimulated during the war when Chilean supplies were difficult to obtain. If the manufacturers continue to be able to compete successfully with the natural product, excess capacity may be considered to exist, for the moment at any rate, in the same sense as may be applied to coal-mining. The natural resources undergoing exploitation and the equipment of the mines, but not primarily factory equipment, is in excess of immediate needs. The difficulties which the coal-owners in the main European export countries have to fear, however, are only to a limited extent due to the opening-up of new mines, though new sources of supply have been tapped, notably in the Netherlands and the German lignite centres. The European demand for coal has slightly diminished for reasons which will be considered later.

Of none of the other industries considered would it be true to state that any difficulties with which they may be faced are to any important extent due to an excessive construction of plant, even though the artificial silk industry, which has developed with extreme rapidity in recent years, may be suffering from a momentary check.

Before dealing with the other main factor determining production, namely, the demand for the products of these industries, it is desirable to consider the changes which have taken place in actual output. For several industries these changes afford the only available evidence concerning the extent to which output capacity has been modified.

## PRODUCTION.

The changes which have taken place in the production of these industries since 1913 vary so greatly from continent to continent that a simple statement indicating the development of world output has but restricted value.

In the following table, the estimated output figures for 1924, and 1925 whenever available, of North America, Europe, with and without Russia, Asia (excluding Russia), and Oceania and the world as a whole are shown as percentages of 1913 production. Except in the case of the electrical and mechanical construction industries, the basic figures refer to quantities. The cotton figures refer to raw cotton consumed in mills only.

TABLE I

|   | North America  |                | Central and South America |                 | Europe, incl. Russia |      | Europe, excl. Russia |      | Asia             |                    | Oceania       |               | Africa              |                     | World |      |
|---|----------------|----------------|---------------------------|-----------------|----------------------|------|----------------------|------|------------------|--------------------|---------------|---------------|---------------------|---------------------|-------|------|
|   | 1924           | 1925           | 1924                      | 1925            | 1924                 | 1925 | 1924                 | 1925 | 1924             | 1925               | 1924          | 1925          | 1924                | 1925                | 1924  | 1925 |
| Coal (and lignite). . . . .                       | 100            | 102            | 142                       | *146            | 93                   | 91   | 95                   | 93   | 148              | *145               | 110           | 110           | 146                 | 153                 | 99    | 99   |
| Petroleum. . . . .                                | 287            | 307            | 583                       | 548             | 76                   | 88   | 89                   | 104  | 295              | 305                | —             | —             | <sup>11</sup> 1,100 | <sup>11</sup> 1,200 | 263   | 277  |
| Pig iron and ferro-alloys. . . . .                | 100            | 117            | <sup>3</sup>              | <sup>3</sup>    | 73                   | 80   | 78                   | 84   | 343              | *335               | 900           | 949           | —                   | —                   | 87    | 98   |
| Raw steel (ingots and castings). . . . .          | 119            | 143            | —                         | —               | 87                   | 95   | 93                   | 100  | 474              | *520               | 2,157         | 3,350         | —                   | —                   | 103   | 118  |
| Shipbuilding. . . . .                             | <sup>252</sup> | <sup>248</sup> | —                         | —               | 67                   | 66   | 67                   | 66   | <sup>9</sup> 113 | <sup>9</sup> 86    | 112           | 121           | —                   | —                   | 67    | 66   |
| Mechanical engineering **. . . . .                | —              | 126            | —                         | —               | —                    | 87   | —                    | 90   | —                | 304                | —             | 133           | —                   | —                   | —     | 108  |
| Electrical engineering ***. . . . .               | —              | 327            | —                         | —               | —                    | 141  | —                    | 146  | —                | 310                | —             | —             | —                   | —                   | —     | 201  |
| Sulphuric acid. . . . .                           | —              | 200            | —                         | —               | —                    | 99   | —                    | 99   | —                | —                  | —             | —             | —                   | —                   | —     | 126  |
| Nitrogen. . . . .                                 | 285            | 298            | <sup>4</sup> 85           | <sup>4</sup> 90 | 202                  | 246  | 204                  | 249  | <sup>9</sup> 900 | <sup>9</sup> 1,100 | 200           | 200           | 100                 | 100                 | 143   | 163  |
| Superphosphates of calcium <sup>1</sup> . . . . . | 91             | 108            | —                         | —               | 96                   | 103  | 97                   | 104  | 116              | 131                | <sup>10</sup> | <sup>10</sup> | —                   | —                   | 100   | 113  |
| Tar dyes . . . . .                                | 1,033          | —              | —                         | —               | 79                   | —    | 79                   | —    | <sup>7</sup>     | —                  | —             | —             | —                   | —                   | 101   | —    |
| Cotton-mill consumption . . . . .                 | 107            | 112            | <sup>5</sup>              | <sup>5</sup>    | 79                   | 84   | 88                   | 88   | <sup>8</sup> 130 | <sup>8</sup> 130   | —             | —             | —                   | —                   | 102   | 108  |
| Natural silk. . . . .                             | —              | —              | —                         | —               | 133                  | 101  | 133                  | 101  | 147              | 164                | —             | —             | —                   | —                   | 142   | 156  |
| Artificial silk. . . . .                          | 2,288          | 3,276          | —                         | —               | 347                  | 510  | 374                  | 546  | <sup>9</sup>     | <sup>9</sup>       | —             | —             | —                   | —                   | 452   | 660  |
| Sugar (cane and beet) . . . . .                   | 138            | 122            | 223                       | 219             | 96                   | 100  | 116                  | 112  | 133              | 145                | 153           | 163           | 129                 | 167                 | 138   | 142  |

\* Estimate.

\*\* Estimate of the *Verein Deutscher Maschinenbau-Anstalten*.

\*\*\* Estimate of the *Zentralverband der Deutschen Elektrotechnischen Industrie*.

<sup>1</sup> Production according to information collected by the International Agricultural Institute in Rome. According to the German Memorandum on the Chemical Industry, world production in 1924 was 91 per cent of that in 1913.

<sup>2</sup> Including Great Lakes and Canadian Lake Ports.

<sup>3</sup> Pre-war figures not available. Production more than trebled between 1920 and 1925.

<sup>4</sup> Chile only.

<sup>5</sup> Pre-war figures not available. Consumption almost doubled between 1920 and 1925.

<sup>6</sup> Japan only.

<sup>7</sup> Pre-war figures not available. In 1924 the production of Japan reached almost 4 per cent of the world production.

<sup>8</sup> Japan and British India only. Pre-war figures for China not available.

<sup>9</sup> No pre-war production. The output of Japan increased tenfold between 1922 and 1925.

<sup>10</sup> Pre-war figures not available. Production more than doubled between 1922 and 1925.

<sup>11</sup> Egypt.

Asia, the United States of America and Oceania on the one hand and Europe on the other, afford a very striking contrast. To some extent the table may tend to over-emphasise the progress achieved in the newer industrial countries as a result of the fact that the figures are shown in percentages. The rapid growth which has taken place is in certain cases from very small beginnings. The extent to which the first impression left by the table may require qualification on this account is indicated below. Attention is drawn now to the similarity, in many respects, which the table bears to those given in the *Memorandum on Production and Trade*<sup>1</sup>. The change in the world economic balance and the growing importance of the countries of the Pacific are not the outcome simply of the development of agriculture or the growth of trade in cereals and raw materials. The progress of many of these countries is general.

In Europe the production of pig iron, steel, coal, petroleum ships, sulphuric acid, coal-tar dyes (1924), cotton yarns and machinery was in 1925 still below the 1913 level. Coal production, however, in Europe was above the 1909-13 average, and had this base been used instead of 1913 all the figures would have been higher.

It must not be presumed, however, that these particular industries are fully representative of the general state of European industrial production. A number of changes have taken place in the character of production and of demand which have tended to influence these particular industries more adversely than the majority of others or alternatively to exaggerate the statistical expression of the difficulties from which they are suffering.

In the first place, saving in Europe at any rate has diminished, with the result that the demand for capital goods, for steel for railway and constructional purposes, for coal for these heavy metal industries, for ships for the transport of coal, to a lesser extent for machinery, has fallen off. On the other hand the demand for articles for immediate consumption and to some extent for higher quality goods has increased. Evidence of this latter fact is afforded even by those industries which as a whole cannot be said to have prospered in Europe in recent years. Thus, the fine cotton-spinning end of the cotton industry is in a much more satisfactory position than are the sections of the industry spinning medium and coarse counts. In the woollen industry in the United Kingdom, the tendency has been towards the production of higher qualities, the use of finer qualities of wool, the substitution of virgin wool for mungo; merinos are replacing cross-breds. One of the causes of the falling-off in the production of coal-tar dyes is that the demand for cheap blacks has sunk.

In the second place, changes in the character of the demand due to technical progress have adversely affected certain of the industries entered in the table and benefited others omitted therefrom. The increase in the use of motor transport, which has restricted the demand for new railway lines, more especially in relatively undeveloped regions, may be quoted as an example. Knitted artificial silk goods, both stockings and other garments, have to some extent replaced cotton and woollen fabrics. The greater average speed of ships increases the service performed by each vessel and therefore restricts the demand for tonnage.

<sup>1</sup> *Memorandum on Production and Trade*, Geneva, 1926.



In the third place, certain of the industries which have developed the most rapidly are omitted from the list considered. Among such may be mentioned the motor car and rubber, and the boot and shoe industries. This point is of importance and can fortunately be confirmed by evidence from a number of sources. Thus, whereas the general index of the quantum of Swedish industrial production in 1924 was only 109, the index for the paper and printing group was 140. That for ores and metals, it may be remarked, was as low as 97; for metals alone only 78. Similarly, in the United Kingdom, according to the calculations of the London and Cambridge Economic Service, whereas the total index of certain groups of industries which that Service publishes was 87.2 for the year 1925, the index for the group coal-mining, iron and steel, shipbuilding and railway vehicles was as low as 65. The index for paper production, on the other hand, was 122, for tobacco 143, and for cocoa 207. It should be remarked, with reference to these calculations, that current production statistics are only available for a limited number of industries and that certain authorities believe that, were it possible to calculate a more fully representative general index, it would be found to be appreciably higher than 87.2.

Annual statistics of production in value and quantity, not so complete as those for Sweden, are also published in Denmark. These statistics show that the most rapid growth has taken place in the production of food products, especially those for export, of chocolate, leather, bottles and soap, none of which industries is dealt with here. The textile industry, on the other hand, is seriously depressed.

Somewhat similar though more indirect evidence is available from Norway, where figures of power employed in industry are compiled from which it appears that the oils and fats, rubber and leather and printing industries have greatly increased their mechanical power since 1913, though the same is true in Norway of the metal industry.

In Australia, annual censuses of manufacturing production were initiated in 1911 and have been continued regularly excepting during the war years since that date. Amongst other details is shown the value added in manufacture. The branches of industry which, on this basis, appear to have achieved the greatest progress since 1912-13 are confectionery (376% increase), woollen and tweed mills to which allusion is made elsewhere (379%), electric light and power (260%), boots and shoes (260%) vehicles and fittings (250%), and drugs and chemicals (227%). It will be noted that, with the exception of confectionery, which has greatly developed on an industrial scale in a number of countries, and to some extent motor cars, these are in no sense luxury industries. In these newer industrial countries, it is in fact mainly the industries directly supplying the immediate needs of the great masses of the population which have developed the most. In South Africa, where an annual census of industrial production has also been taken since 1916, amongst the industries which have developed most are bacon-curing, boot-and-shoe manufacture, fruit-bottling, cheese-making, clothing and tailoring and cigarette manufacture.

It is indeed certain that industry as a whole, both in Europe and in the rest of the world, is more prosperous than the above table would indicate. In some countries production in almost all branches of industry is well above the pre-war. For a limited number of countries more or less complete statistics of manufacturing output are available. The Census Bureau of the United States of America has estimated that the quantum of manufacturing output in that country increased by approximately 60 per cent between 1914 and 1923, although the number of wage-earners only rose by 27 per cent. Since 1923 there has been a further development, the output of manufacturing industry in 1925, according to the Department of Commerce index, being 5 per cent higher and, during the first ten months of 1926, 4 per cent higher than in that year. In Canada the gross value of products manufactured amounted in 1910 to \$1,166 millions and in 1923 to \$2,781 millions. If these values be divided by the index of wholesale prices in order to obtain a rough measure of the change in the quantum of production, it will be found that that quantum increased by approximately 45 per cent in the period reviewed. In Australia the increase between 1913 and the commercial year 1924-25 on the same basis of calculation was approximately 38 per cent, while the added value was 33 % higher ; in New Zealand between 1910 and 1924-25, gross output grew by about 60 per cent and added value by over 88 per cent. But probably the most rapid growth has been in the Union of South Africa, where the gross value of factory output, after making allowance for price changes, has more than trebled. Of the European countries it is for Sweden that the most complete current industrial statistics are calculated. The quantum index of production in that country as stated above was 109 in 1924 and 112 in 1925. In view of the lack of data for other countries, the distribution of such depression as exists may be most easily shown by considering certain of the industries separately.

Thus the joint production of pig iron of Germany, France, Belgium, Luxemburg and the Saar in 1925 was exactly 3 million tons above the joint average annual production during the period 1909-13, and  $1\frac{1}{2}$  million tons less than in the boom year 1913. The joint production of the United Kingdom and Russia on the other hand was over 5 million tons less in 1925 than in the last pre-war quinquennium, the British production being 3.4 million tons down. The relative success of the Rhine countries is the more remarkable in view of the devastation of the war and the readjustments rendered necessary by the changes of frontiers resulting from the Treaty of Versailles ; but in 1925 Belgium, France and Luxemburg were deriving a temporary advantage from the fall in the external value of their currencies.

The European production of steel in 1925 exceeded the average annual production during the period 1909-13 by about 5 million tons, but was two million tons short of that in 1913. In the group of countries bordering on the Rhine<sup>1</sup> it was 5.9 and 0.7 million tons in excess of the two pre-war figures, and the falling-off in Europe as a whole is mainly attributable to the fact that the output of the Russian steel-works and rolling-mills was in 1925 only about half of what it had been in 1913. The difficulties with which the steel industry is faced, therefore, are mainly

<sup>1</sup> The output of present Polish Upper Silesia is here excluded from the pre-war German figures.

due to the excessive plant inherited from the war years. Although the new works which have been established in certain European countries less industrially developed tend to complicate the situation somewhat, they cannot be considered to constitute a factor of major importance.

In the coal-mining industry the general situation is widely different. Three countries, the United States of America, the United Kingdom and Germany (post-war frontiers) accounted in 1913 for 78 per cent of the coal production of the world, and in 1925 for but little less. The production of coal and lignite in Europe in 1925 was practically the same as the average annual production during 1909-13, and 94 per cent of that in 1913. But the output of the British mines was less than 91 per cent of that during the pre-war quinquennium considered and that of the Polish mines less than 81 per cent. While these two export countries have suffered from loss of markets, the output in all the importing production countries in Europe has increased, in certain cases greatly increased. The problem here is one of price, not of economic nationalism or protection. But the export countries have not suffered only from increased domestic supplies in certain of their former selling markets, but from the contraction of South-American demand due largely to the competition of oil fuels, from the growth of hydro-electric power and the general extension of the use of the internal combustion engine, from economy in the use of coal, learnt when coal prices were excessive, and from the falling-off in the demand for pig iron.

To what extent these causes will prove permanent it is impossible to judge, but particularly striking is the fact that in the United States of America, despite the magnitude of her recent industrial development, the average annual consumption of coal per head of population during the years 1923-25 was only 89 kg. higher than during the 1909-13 quinquennium (4,673 kg. compared with 4,584). In most of the countries in which industrialism is of more recent origin on the other hand, Japan, China, India, South Africa, Australia, the consumption of coal per head has increased rapidly in the last decade. But all these countries are practically self-supporting in coal. The remarkable industrial development of Canada in recent years, however, has been mainly based on cheap hydro-electric power. In Sweden and Italy, two of the European countries whose industrial production has grown the most rapidly in recent years, water-power is likewise being increasingly employed.

In shipbuilding, on the other hand, as Table I shows, the depression is almost worldwide, and in the United States, where capacity has been most increased, production has diminished the most. During the war, as stated above, capacity was greatly increased in order to make losses good. Many ships were in process of construction when the war ended, and with the post-war boom more keels were laid down. During the three years 1918-20 an average of 6,151,000 tons per annum were launched compared with 2,489,000 per annum in the last pre-war quinquennium. In 1925 world tonnage amounted to some 64½ million tons, while the probable effective demand is estimated at about 55 million tons. From the number of ships which remained laid up during the recent coal dispute in the United Kingdom when the demand for tonnage to bring coal to England leapt up, it is probable that not the whole of the existing tonnage is utilisable. But

the real surplus is none the less serious. Launchings in 1925 amounted to 2,194 million tons compared with an average of 2,489 million tons per annum during the last pre-war quinquennium and 3,332 in 1913. But certain countries, partly by specialising on branches of the industry less affected by the depression, have been able to increase their quota of world production. Apart from the U.S.A., whose quota of total launchings rose from 8.3 per cent in 1913 to 57 per cent in 1919 to fall to 5.9 in 1925, the United Kingdom, France and Norway have been the most seriously affected. In Germany, a great effort has been made to restore the pre-war mercantile marine, and this national effort has to some extent counterbalanced the effects of the general world depression on the German shipbuilders. In Italy, production has been specialised to some extent on the most modern types of oil-consuming vessels.

For the other big metal-consuming industries with their mixed raw materials and miscellaneous output, it is extraordinarily difficult, if not actually impossible, to summarise the situation in any quantitative terms. It has been estimated that the capacity of the engineering industry of the world has increased by nearly one-half owing mainly to the recent industrial evolution of the United States. Outside this country the increase in capacity is put at just over 25 per cent<sup>1</sup>. But these estimates may be too high. In any case production in the world to-day is well below capacity, the margin of unemployed productive power in Europe probably being from one-fifth to a quarter of total capacity. European production, however, is probably well within 85 per cent of pre-war.

In the electro-technical industry more favourable conditions obtain. But no estimate of capacity is possible and, therefore, no comparison between capacity and activity. As in the case of so many other industries, the greatest progress has been achieved in the United States of America and Japan, and within Europe in France and Italy. World production is believed to be nearly double what it was before the war, the share of the United States of America having risen from one-third to nearly a half. Germany's share has fallen from about one-third to under a quarter. The French production in 1925 is believed to have been nearly two and a-half times as great as in 1913, the Italian to be over three times as great and the British to have increased by over 40 per cent.

Measured by the mill consumption of raw cotton, the share of Europe in the total world production of cotton yarns has sunk more than her share in the production of pig iron, steel, or coal as the following figures show :

*Percentage of World Production.*

|                         | 1913     |       |      |                            | 1925 or 25-6 |       |      |        |
|-------------------------|----------|-------|------|----------------------------|--------------|-------|------|--------|
|                         | Pig iron | Steel | Coal | Cotton<br>( <sup>2</sup> ) | Pig iron     | Steel | Coal | Cotton |
| North America . . . . . | 41       | 43    | 43   | 26                         | 49           | 52    | 44   | 27     |
| Europe . . . . .        | 58       | 56    | 51   | 53                         | 47           | 46    | 47   | 41     |
| Asia . . . . .          | 1        | 0.5   | 4.5  | 20                         | 3            | 2     | 6.6  | 27     |

<sup>1</sup> German Memorandum on Mechanical Engineering (*The Mechanical Engineering Industry*, Geneva, 1927).

<sup>2</sup> Owing to lack of accurate data for China these percentages are approximate estimates only.

The world mill consumption of cotton in 1925-26 was 7.6 per cent greater than in 1912-13, that of Europe was 16 per cent less, that of India and Japan 78 per cent greater. The European depression is, however, extremely unevenly spread. The consumption in Poland is only just over half the pre-war, that of Austria was 67 per cent, of the United Kingdom 71 per cent, of Russia 74, of Czechoslovakia 80. In the Netherlands, on the other hand, the consumption was 78 per cent higher, in Belgium 37, in Italy 31 per cent, in Spain 14, in Switzerland 16 per cent higher. The 1912-13 consumption in Italy, however, was exceptionally low and the real increase over pre-war production is in the neighbourhood of 15 per cent. There has recently, however, been some over-production in Italy which has led to the adoption of short time.

The outstanding fact is that Japan and the United States of America between them are consuming nearly two million bales more than immediately before the war, and Europe nearly two million bales less. Unfortunately, pre-war consumption statistics for China and Brazil, the two other countries in which production of yarn has probably increased the most, are not available. Attention should be drawn to the fact that the raw cotton consumption in India has scarcely changed. As will be shown below, the development of the Indian cotton industry in recent years has been one of the main causes adversely affecting the Lancashire business, but the development has been mainly confined to the weaving mills. Whereas her production of yarns averaged only 305 million tons during the period 1923-25 compared with 309 million tons in 1913, her cotton piece goods production rose from 1,164 million square meters in 1913 to an average of 1,876 million square meters in the three years ending 1925.

While the United Kingdom has been particularly affected by the development in the Far East and Central European countries, not only by irregularity of trade resulting from currency instability, but also by tariff barriers, and to some extent in certain districts by the reduced purchasing power of the masses, the fact must not be overlooked that, both for piece goods and for hosiery, cotton has to some extent been replaced by artificial silk. Cotton conditions must in no sense be taken as representative of the textile industry as a whole.

Though the characteristics of the recent development of these three industries are in many respects widely different, there has been in all cases a relative lessening of the importance of Europe's contribution to world supplies, and in all cases such depression as exists, apart from minor and local exceptions, is confined to Europe or certain countries thereof.

The information relating to the woollen industry is defective. In a valuable memorandum submitted to the Preparatory Committee concerning conditions in the United Kingdom, the view is expressed that the actual production in the wool-combing and worsted-spinning branches is 20 per cent less than before the war, in woollen manufacturing 15-20 per cent, while the reduction in worsted manufacturing is believed to amount to 45-50 per cent. In France, it is believed that the spinning and weaving output is 80-85 per cent of the pre-war, although the consumption of raw wool has gone up. In the United States of America, on the other hand, the amount of wool retained for domestic consumption during the four years ending December 31st, 1925, averaged 598 million pounds

compared with 508 millions during the quinquennium ending December 31st, 1915. Likewise in Australia, the amount of greasy wool used in local woollen and tweed mills has more than doubled, being 20-24 million pounds now compared with somewhat over 10 millions in the years immediately preceding the war. The wool retained for consumption in Europe in 1925 may be very roughly estimated at about 87 per cent of the pre-war amount or, if Russia be excluded, at about 96 per cent. The most serious falling-off has therefore been in Russia.

As in the electro-technical so too in the chemical industry the share of the United States of America in world production has risen from about a third to nearly a half, while that of Germany has fallen from a quarter to a sixth. The industry is too composite, however, for such generalisations to have more than a limited interest or value, and of its various component parts detailed information is only available for a few. As Table 1 shows, the production of sulphuric acid was about 25 per cent greater in 1925 than in 1913, Europe's output being practically unchanged and America's doubled. Within Europe, France, Italy and Denmark are now all producing appreciably more, Germany and the United Kingdom less — a development partly due to territorial changes.

Both nitrates and superphosphates constitute exceptions to the general tendencies of recent world industrial development; the former because, as a result of the discovery of methods by which nitrates could be produced from the air, Europe's contribution to total production has gone up; the latter because the production of the United States of America has contracted slightly and to approximately the same extent as in Europe and the world as a whole.

Before the war over four-fifths of the coal-tar dyes produced in the world were manufactured in Germany. When these supplies were cut off, both belligerent and neutral countries were forced to lay down new plant and important industries have grown up in the United States of America, the United Kingdom, France, Italy and Japan. While the world demand has not increased, Germany's share has now fallen to under a half. American production has increased from about 3,000 tons to about 20,000, British from 5,000 to 12,000, French from 2,000 to 9,000.

The fact that the demand for dyes has not increased is due rather to a change in fashion towards lighter colours instead of the heavy blacks and dark blues than to lack of development of the textile industries. The woollen industry, it is true, has not expanded. The world production of wool is less now than before the war, but, as has been shown above, the world production of cotton has increased, that of silk and artificial silk has developed with very great rapidity.

Sugar is one of the several industries the production of which was stimulated outside the countries directly involved in the war. The production of cane was rapidly increased during the war and in 1925 exceeded the pre-war average by nearly 75 per cent. This rapid development must be in part attributed to prohibition in the United States of America. In Europe, on the other hand, many sugar refineries in the North of France and in Russia were destroyed, and production, save in the neutral countries, was greatly reduced. Immediately after the armistice, efforts were made in almost all ex-belligerent countries to

stimulate production, in or one two cases with the aid of high protective tariffs or direct Government subventions, and since 1924 the European crop, exclusive of Russia, has exceeded the pre-war. Meanwhile, those neutral countries which had developed their domestic industries during the war took steps to maintain their production. The most marked increases have been in the Netherlands, Spain, Denmark, Sweden and the United Kingdom. As is shown later, the world demand for sugar has increased, but production has now reached a point at which it is becoming increasingly difficult to get supplies absorbed.

#### INTERNATIONAL TRADE.

The changes in the frontiers of many European countries effected by the treaties of peace necessarily renders the interpretation of the international trade statistics a difficult task. Thus, as mentioned above, part of the steel-works and of the rolling-mills situated in the pre-war Customs area of Germany have been transferred to the Belgian, French and Polish Customs territories as a result of the allocation of Lorraine to France, the division of Upper Silesia, the Belgo-Luxemburg Customs union and the incorporation of the Saar Territory in the French Customs union. These changes clearly render any comparison of the pre- and post-war trade statistics of Belgium, France and Germany, relating to coal and heavy metals impossible, unless the object of the comparison be limited to measuring what in fact the trade of each country or Customs union happens to be without reference to the territorial or other changes which have affected them. Such a limited comparison is not, necessarily, without interest. Despite these difficulties, moreover, certain world tendencies of very considerable importance can be traced if a selection of certain of the trade statistics contained in the various memoranda on special industries in this series be considered together.

In the following table, therefore, are given the imports and exports and net balances by weight of iron and steel, coal, cotton yarn and thread, cotton piece goods, nitrogenous fertilisers, superphosphates, coal-tar dyes, raw wool and wool yarn and piece goods, silk yarn and piece goods and artificial silk, of Belgium, France, Germany, Italy, the United Kingdom, the United States of America, India and Japan for the years 1913-1925:

TABLE II.

|                                  | BELGIUM                     |         |         | FRANCE             |         |          | GERMANY |         |         | ITALY   |         |          |
|----------------------------------|-----------------------------|---------|---------|--------------------|---------|----------|---------|---------|---------|---------|---------|----------|
|                                  | Imports                     | Exports | Balance | Imports            | Exports | Balance  | Imports | Exports | Balance | Imports | Exports | Balance  |
|                                  | Metric tons (000's omitted) |         |         |                    |         |          |         |         |         |         |         |          |
| Coal . . . . .                   | 10,827                      | 7,109   | + 3,718 | 23,889             | 1,820   | + 22,069 | 12,939  | 45,682  | -32,743 | 10,834  | 44      | + 10,790 |
| 1924                             | 12,520                      | 3,639   | + 8,881 | 33,311             | 3,086   | + 30,225 | 13,946  | 26,857  | -12,911 | 11,170  | 191     | + 10,979 |
| 1925                             | 11,957                      | 4,394   | + 7,563 | 31,443             | 5,213   | + 26,230 | 8,242   | 33,703  | -25,461 | 10,517  | 182     | + 10,335 |
| Iron and Steel . . . . .         | 888                         | 1,575   | - 687   | 172                | 630     | - 458    | 305     | 6,309   | - 6,004 | 510     |         | + 510    |
| 1924                             | 569                         | 3,311   | - 2,742 | 695                | 2,818   | - 2,123  | 1,290   | 1,558   | - 268   | 383     |         | + 383    |
| 1925                             | 538                         | 3,112   | - 2,574 | 165                | 3,875   | - 3,710  | 1,200   | 3,263   | - 2,063 | 785     |         | + 785    |
| Nitrogenous fertilisers. . . . . | 52                          | 25      | + 27    | 55                 | 1       | + 54     | 136     | 25      | + 111   | 15      |         | + 15     |
| 1924                             | 31                          | 2       | + 29    | 72                 | 3       | + 69     | -       | 35      | - 35    | 16      |         | + 16     |
| 1925                             | 32                          | 2       | + 30    | 77                 | 2       | + 75     | 1       | 112     | - 111   | 20      |         | + 20     |
| Superphosphates . . . . .        | 28                          | 319     | - 291   | 101                | 145     | - 44     | 53      | 283     | - 230   | 21      |         | + 21     |
| 1924                             | 33                          | 266     | - 233   | 67                 | 130     | - 63     | 11      | 18      | - 7     | 15      | 7       | + 8      |
| 1925                             | 52                          | 270     | - 218   | 31                 | 228     | - 197    | 18      | 23      | - 5     | 25      | 20      | + 5      |
| Coal-tar dyes . . . . .          | -                           | -       | -       | 2.1                | 1.0     | + 1.1    | 3.2     | 109.0   | - 105.8 | 7.1     |         | + 7.1    |
| 1924                             | -                           | -       | -       | 2.4                | 6.0     | - 3.6    | 0.4     | 28.0    | - 27.6  | 2.7     |         | + 2.7    |
| 1925                             | -                           | 2.2     | - 2.2   | 1.5                | 5.0     | - 3.5    | 1.7     | 34.0    | - 32.3  | 2.2     |         | + 2.2    |
| Cotton yarn and thread . . . . . | 4.1                         | 7.8     | - 3.7   | 3.1                | 8.4     | - 5.3    | 33.5    | 16.5    | + 17.0  | 1.1     | 14.6    | - 13.5   |
| 1924                             | 2.9                         | 10.6    | - 7.7   | 4.2                | 16.0    | - 11.8   | 44.9    | 7.8     | + 37.1  | 1.2     | 17.8    | - 16.6   |
| 1925                             | 3.2                         | 11.5    | - 8.3   | 4.1                | 10.3    | - 6.2    | 62.9    | 7.9     | + 55.0  | 1.9     | 16.6    | - 14.7   |
| Cotton piece goods . . . . .     | 5.8                         | 28.2    | - 22.4  | 1.5                | 44.3    | - 42.8   | 3.4     | 39.2    | - 35.8  | 4.9     | 53.0    | - 48.1   |
| 1924                             | 4.8                         | 27.0    | - 22.2  | 1.6                | 57.0    | - 55.4   | 25.7    | 21.1    | + 4.6   | 3.7     | 56.2    | - 52.5   |
| 1925                             | 3.7                         | 30.5    | - 26.8  | 1.8                | 43.6    | - 41.8   | 22.9    | 20.5    | + 2.4   | 4.0     | 69.6    | - 65.6   |
| Wool, raw . . . . .              | 149.3                       | 99.0    | + 50.3  | 207.6 <sup>1</sup> | 35.7    | + 171.9  | 190.3   | 16.9    | + 182.4 | 16.9    | 1.9     | + 15.0   |
| 1924                             | 76.1                        | 27.2    | + 48.9  | 182.6 <sup>1</sup> | 17.0    | + 165.6  | 147.2   | 10.6    | + 136.6 | 35.5    | 2.7     | + 32.8   |
| 1925                             | 65.6                        | 22.5    | + 43.1  | 200.6 <sup>1</sup> | 15.3    | + 185.3  | 134.5   | 7.7     | + 126.8 | 34.9    | 2.4     | + 32.5   |
| Wool yarn . . . . .              | 1.1                         | 11.8    | - 10.7  | 1.2                | 13.1    | - 11.9   | 42.8    | 28.2    | + 14.6  | 6.8     | 1.6     | + 5.2    |
| 1924                             | 3.1                         | 7.4     | - 4.3   | 1.7                | 15.8    | - 14.1   | 29.9    | 15.3    | + 14.6  | 2.9     | 2.0     | + 0.9    |
| 1925                             | 3.2                         | 9.2     | - 6.0   | 1.4                | 14.5    | - 13.1   | 29.4    | 15.4    | + 14.0  | 2.4     | 1.6     | + 0.8    |
| Woollen piece goods . . . . .    | 4.5                         | 2.0     | + 2.5   | 3.4                | 17.1    | - 13.7   | 2.9     | 26.2    | - 23.3  | 3.5     | 2.2     | + 1.3    |
| 1924                             | 4.1                         | 2.7     | + 1.4   | 1.6                | 28.2    | - 26.6   | 4.2     | 12.1    | - 7.9   | 2.3     | 9.4     | - 7.1    |
| 1925                             | 2.6                         | 2.7     | - 0.1   | 0.9                | 26.0    | - 25.1   | 1.1     | 13.0    | - 11.9  | 2.3     | 11.5    | - 9.2    |
|                                  | Metric tons                 |         |         |                    |         |          |         |         |         |         |         |          |
| Silk yarn . . . . .              | 171                         | 1,814   | - 1,643 | 274                | 887     | - 613    | 2,324   | 994     | + 1,330 | 2,892   | 7,791   | - 4,899  |
| 1924                             | 163                         | 2,867   | - 2,704 | 1,592              | 328     | + 1,264  | 699     | 851     | - 152   | 1,010   | 5,490   | - 4,480  |
| 1925                             | 70                          | 471     | - 401   | 498                | 571     | - 73     | 1,682   | 641     | + 1,041 | 435     | 7,433   | - 6,998  |
| Silk piece goods . . . . .       | 363                         | 15      | + 348   | 443                | 4,849   | - 4,406  | 855     | 4,667   | - 3,812 | 296     | 1,582   | - 1,286  |
| 1924                             | 897                         | 198     | + 699   | 201                | 6,164   | - 5,963  | 553     | 2,258   | - 1,705 | 748     | 2,135   | - 1,387  |
| 1925                             | 564                         | 78      | + 486   | 192                | 8,348   | - 8,156  | 470     | 3,002   | - 2,532 | 776     | 3,030   | - 2,254  |
|                                  | Yarn                        |         |         |                    |         |          |         |         |         |         |         |          |
| Artificial silk . . . . .        | 5                           | 1       | + 4     | 3                  | 497     | - 494    | 1,569   | 797     | + 772   | 357     | 153     | + 204    |
| 1924                             | 8                           | 804     | - 796   | 1,782              | 138     | + 1,644  | 1,097   | 2,348   | - 1,251 | 607     | 4,583   | - 3,976  |
| 1925                             | 147                         | 3,334   | - 3,187 | 881                | 636     | + 245    | 2,052   | 3,797   | - 1,745 | 667     | 7,260   | - 6,593  |

<sup>1</sup> Excluding woolled skins.





Before considering the general lessons which may be learnt from even a cursory inspection of this table, it is desirable to consider briefly the characteristics of the trade of certain of the products mentioned above, and to add such supplementary evidence as may prove necessary in order to determine the direction and relative importance of recent tendencies.

By 1925 France had become the greatest exporter in the world of the products of the heavy-metal industry, her exports being over six times as great as before the war, and nearly twice as great as in 1923. Since 1923 a rapid growth has also taken place in the exports from the Belgo-Luxemburg Union. The United Kingdom, on the other hand, whose gross sales in 1925 were just exceeded by those of France, has suffered a loss of trade since 1913 of over a million and three-quarter tons. In 1923, the year of the Ruhr Occupation, her net exports were greater than before the war, and Germany had a net import balance of 431,000 tons. By 1925 Germany had so far recovered as to convert this negative into a positive balance of over 2 million tons. But this last-mentioned figure is only about one third of Germany's pre-war net exports. Like the United Kingdom, though for different reasons, however, the greatest falling-off has been not in finished products, but in pig iron. This fact is of importance when gauging the effect of the loss of trade upon the industry as a whole — more especially in the case of the United Kingdom as the capacity of her steel-works and rolling-mills has been increased more than that of her blastfurnaces.

During the three years ending with 1925, the aggregate trade in heavy metals of the most important producing countries has very appreciably increased, but the constant variations in the rate of flow of the various national streams which constitute that aggregate renders any judgment as to its probable future composition extraordinarily difficult to form.

An inspection of the annexes to the Memorandum on this industry will show that the inter-trade in iron ore between France and Germany has diminished in recent years and that between France and Belgium increased.

The condition of the coal trade in the world as a whole is primarily determined by the following facts : First, owing to economy in use and alternative forms of fuel and power, coal consumption has diminished in Europe and South America, has increased but slightly in North America, where the *per capita* consumption has sunk, and has increased very considerably in the Far East, Oceania and South Africa, where, however, total consumption is still relatively small. Secondly, the use of oil for fuel in ships has greatly affected the demand for bunker coal. Thirdly, almost every importing country in possession of coal deposits is supplying a larger proportion of its own needs from domestic sources. With this contradiction in their markets, the exports of the great exporting countries have necessarily been curtailed. Those of the United Kingdom fell from nearly 100 million tons in 1913 to 72 millions in 1925. The reduction in the exports of the United States of America on the other hand is negligible. Asiatic countries are trading more *inter se* and largely supplying their own needs. While the flow of exports from Europe to other continents has thus been checked and the demand of most European countries for foreign coal has contracted, the normal channels of internal European trade

have been modified by special circumstances. Thus the deliveries of German reparation coal have affected the power of the United Kingdom to sell in Italy and elsewhere, the termination of the Upper Silesian Convention under which Germany undertook to accept delivery of 500,000 tons of coal a month from the transferred territories in June 1925, obliged the Polish mine-owners to find fresh outlets. No equilibrium has yet been achieved. The British coal dispute in 1926 has postponed the final solution of the problem. Poland has found new markets, German exports have increased, stocks have diminished — but the export countries are still faced by the competition of other forms of fuel power and by the fact that excessive prices in recent years have resulted in the successful application of more economical methods of use.

Unlike coal, for cotton manufactures, Asiatic demand is of fundamental importance. Before the war, China was by far the largest importer of yarn, and China and India of piece goods. The revolution which has taken place in the trade in cotton goods may be judged from the following figures :

|                         | Metric tons (000's) |       |       |       |
|-------------------------|---------------------|-------|-------|-------|
|                         | China               |       | India |       |
|                         | 1913                | 1924  | 1913  | 1925  |
| Yarn :                  |                     |       |       |       |
| Net imports + . . . . . | + 162               | + 25  |       | + 6.5 |
| Net exports — . . . . . |                     |       | — 70  |       |
| Piece goods :           |                     |       |       |       |
| Net imports + . . . . . | + 180               | + 127 | + 249 | + 116 |

China therefore in 1924 bought on balance 53,000 metric tons less of cotton piece goods than in 1913 and India in 1925, 133,000 tons less. Japan's net exports, on the other hand, rose from 2,500 metric tons to 103,200 metric tons in 1925 and the bulk of those 100,000 tons went to China and India. In consequence, the British total exports were 207,000 metric tons less in the later than in the earlier year, nearly the whole of that loss of trade being in Asia.

The conversion of India's large yarn export surplus into a small import surplus should be compared with a similar phenomenon in coal. In both cases the change is indicative of her growing industrialism. More coal is required for domestic enterprises, and the yarn she previously exported she now weaves. But the change in the organisation of her cotton industry was forced upon her to a considerable extent by the pressure of Japanese competition in her main yarn market — China, and by the competition of the Chinese domestic industry. Her present equilibrium has been reached therefore after a period of difficult adjustment.

These developments in Asia have affected but little European countries other than the United Kingdom and the cotton goods exports of the United States of America have risen. Belgium, France and Italy are all likewise doing business on a larger scale. Germany's imports of yarn have doubled owing to the loss of the Alsatian spinning-mills and her considerable pre-war export surplus in

piece goods almost disappeared. Meanwhile, new textile mills have been erected in some of the newer States of Central Europe.

The European trade in superphosphates presents certain similar characteristics. The exports of France and Italy have increased, those of Germany are less than a tenth of the pre-war, those of the United Kingdom less than a half. On the other hand, the German exports of nitrates have quadrupled, and the British sales of dye-stuffs increased. The most important new competitor in the world's nitrate and dye markets, however, is the United States of America.

The essential characteristic of the world trade in raw silk is the great expansion of American demand and nearly equivalent growth of Japanese exports. The United States of America consumed over 60 per cent of the world silk production<sup>1</sup> in 1925 and 78 per cent of her requirements of raw silk were met by Japan. Although the American demand dominates the market, there has been a widespread increase in the utilisation of silk and the industry in Europe has passed through a relatively prosperous period in recent years.

The Italian exports of yarn were not far short of 50 per cent greater in 1925 than in 1913 and the sales of piece goods by both France and Italy nearly doubled, German exports of piece goods, although still well below the pre-war average, have increased in the last few years and the British market has not been materially affected by the imposition of the new duties for fiscal purposes in the summer of 1925. The only serious falling-off in demand has been in India.

By far the largest exporter of artificial silk is Italy, whose export surplus in 1925 amounted to 6,593 metric tons. Belgium and the Netherlands both export about 3,000 metric tons net. Trade has been affected to some extent in the last year or two by higher European tariffs, and during 1926 the industry found it increasingly difficult to market the whole of its output.

As has been mentioned above, the total production of slipe and clip wool is slightly lower now than before the war. The most important change which has taken place in its distribution is that the United States of America is consuming 50-70,000 metric tons more per annum, while her domestic supply has undergone little change, and the United Kingdom and Germany each import some 50-60,000 metric tons less on balance.

The net imports of France have remained practically unchanged; those of Italy have risen from 15,000 tons in 1913 to 32,500 in 1925.

According to the calculations of the International Institute of Agriculture, Oceania and South Africa have both increased their consumption by about 10,000 tons and Asia (excluding Russia) by about 20,000 tons. This increase in Asiatic consumption is mainly due to Japan, whose gross imports rose from 8,203 metric tons in 1913 to 36,998 metric tons in 1925.

The trade balances, though not the total turnover, of the different countries in yarn have changed much less than in piece goods. Italy has almost ceased

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<sup>1</sup> Exclusive of that part of the Chinese production which does not come into the world markets, the amount of which is variously estimated.

to be an importing country owing to the growth of her domestic mills, and there has been a slight all-round reduction in worsted consumption resulting from the competition of silk and artificial silk.

Unfortunately, the statistics of piece goods are given by some countries in square area, in others in weight, so that close international comparison is impossible. German net exports in 1925 were only about half of what they had been in 1913, and British net exports were 25 per cent down. The increase in French sales almost exactly balances the falling-off in the German, and Italy, which before the war had a net import balance, in 1925 sold 9,254 tons more than she bought. The most important markets were India, the Kingdom of the Serbs, Croats and Slovenes, Greece and the Near East.

The demands of both Japan and the United States of America have approximately doubled, both deriving their supplies mainly from the United Kingdom.

For the mechanical engineering and electrical industries, owing to the miscellaneous character of the products, it is extraordinarily difficult to obtain any general and reliable statistics indicating the drift of trade movements. In two special memoranda on these two industries, estimates have been made of the gold value of this trade which afford a certain basis for judging the course of events. But for obvious reasons value figures alone are not wholly satisfactory. In comparing the pre-war and post-war situation, an allowance of between 30 and 50 per cent must be made on account of price changes. Certain of the figures are reproduced below :

TABLE III.

TRADE IN ELECTRICAL AND MECHANICAL MACHINERY AND APPLIANCES.

|                       | Belgium                |         |         | France      |         |         | Germany |         |         |
|-----------------------|------------------------|---------|---------|-------------|---------|---------|---------|---------|---------|
|                       | Imports                | Exports | Balance | Imports     | Exports | Balance | Imports | Exports | Balance |
|                       | \$ (000,000's omitted) |         |         |             |         |         |         |         |         |
| Electrical . . . 1913 |                        |         |         | 7.4         | 7.2     | + 0.2   | 3.4     | 78.8    | — 75.4  |
| 1924                  |                        |         |         | 9.7         | 21.4    | — 11.7  | 2.2     | 69.5    | — 67.3  |
| 1925                  | 8.7                    | 4.2     | + 4.5   | 9.3         | 18.6    | — 9.3   | 5.2     | 84.8    | — 79.6  |
| Mechanical . . . 1913 | 21.0                   | 14.9    | + 6.1   | 53.2        | 18.3    | + 34.9  | 24.1    | 175.9   | — 151.8 |
| 1924                  | 32.0                   | 17.1    | + 14.9  | 50.8        | 40.4    | + 10.4  | 9.2     | 123.3   | — 114.1 |
| 1925                  | 22.8                   | 14.0    | + 8.8   | 50.6        | 40.4    | + 10.2  | 23.5    | 174.9   | — 151.4 |
|                       | Italy                  |         |         | Netherlands |         |         | Russia  |         |         |
|                       | Imports                | Exports | Balance | Imports     | Exports | Balance | Imports | Exports | Balance |
|                       | \$ (000,000's omitted) |         |         |             |         |         |         |         |         |
| Electrical . . . 1913 | 6.2                    | 2.0     | + 4.2   |             |         |         | 9.1     | —       | + 9.1   |
| 1924                  | 7.8                    | 2.6     | + 5.2   | 8.2         | 12.4    | — 4.2   | 3.2     | —       | + 3.2   |
| 1925                  | 10.4                   | 2.9     | + 7.5   | 11.1        | 12.6    | — 1.5   | 5.6     | —       | + 5.6   |
| Mechanical . . . 1913 | 24.1                   | 4.3     | + 19.8  | 19.9        | 8.9     | + 11.0  | 81.3    | —       | + 81.3  |
| 1924                  | 22.6                   | 6.0     | + 16.6  | 26.5        | 11.0    | + 15.5  | 10.7    | —       | + 10.7  |
| 1925                  | 36.5                   | 6.3     | + 30.2  | 29.8        | 14.0    | + 15.8  | 37.2    | —       | + 37.2  |

|                       | Sweden                 |         |         | United Kingdom |         |         | India   |         |         |
|-----------------------|------------------------|---------|---------|----------------|---------|---------|---------|---------|---------|
|                       | Imports                | Exports | Balance | Imports        | Exports | Balance | Imports | Exports | Balance |
|                       | \$ (000,000's omitted) |         |         |                |         |         |         |         |         |
| Electrical . . . 1913 | 2.8                    | 3.4     | — 0.6   | 12.9           | 37.2    | — 24.3  | 4.3     | —       | + 4.3   |
| 1924                  | 6.8                    | 8.2     | — 1.4   | 18.4           | 70.6    | — 52.2  | 12.7    | —       | + 12.7  |
| 1925                  | 6.4                    | 9.5     | — 3.1   | 24.5           | 83.9    | — 59.4  | 16.3    | —       | + 16.3  |
| Mechanical . . 1913   | 5.8                    | 11.6    | — 5.8   | 28.8           | 171.8   | — 143.0 | 33.2    | —       | + 33.2  |
| 1924                  | 9.0                    | 25.0    | — 16.0  | 42.7           | 181.7   | — 139.0 | 46.6    | —       | + 46.6  |
| 1925                  | 10.0                   | 21.5    | — 11.5  | 52.7           | 213.8   | — 161.1 | 53.6    | —       | + 53.6  |

  

|                       | Japan                  |         |         | Canada  |         |         | U. S. A. |         |         |
|-----------------------|------------------------|---------|---------|---------|---------|---------|----------|---------|---------|
|                       | Imports                | Exports | Balance | Imports | Exports | Balance | Imports  | Exports | Balance |
|                       | \$ (000,000's omitted) |         |         |         |         |         |          |         |         |
| Electrical . . . 1913 | 3.6                    | 0.4     | + 3.2   | 9.1     | 0.1     | + 9.0   | 1.1      | 26.8    | — 25.7  |
| 1924                  | 13.0                   | 2.1     | + 10.9  | 16.7    | 3.7     | + 13.0  | 2.8      | 79.1    | — 76.3  |
| 1925                  | 14.5                   | 2.6     | + 11.9  | 18.7    | 3.0     | + 15.7  | 2.4      | 84.1    | — 81.7  |
| Mechanical . . 1913   | 15.6                   | 1.0     | + 14.6  | 37.3    | 8.8     | + 28.5  | 6.7      | 162.1   | — 155.4 |
| 1924                  | 42.4                   | 3.1     | + 39.3  | 38.6    | 14.9    | + 23.7  | 12.0     | 241.1   | — 229.1 |
| 1925                  | 28.9                   | 2.9     | + 26.0  | 58.0    | 18.3    | + 39.7  | 13.7     | 304.5   | — 290.8 |

  

|                       | Argentine              |         |         | Brazil  |         |         | Australia |         |         |
|-----------------------|------------------------|---------|---------|---------|---------|---------|-----------|---------|---------|
|                       | Imports                | Exports | Balance | Imports | Exports | Balance | Imports   | Exports | Balance |
|                       | \$ (000,000's omitted) |         |         |         |         |         |           |         |         |
| Electrical . . . 1913 | 9.7                    | —       | + 9.7   | 7.0     | —       | + 7.0   | 8.9       | —       | + 8.9   |
| 1924                  | 10.2                   | —       | + 10.2  | 8.9     | —       | + 8.9   | 21.7      | —       | + 21.7  |
| 1925                  | 12.5                   | —       | + 12.5  | 8.9     | —       | + 8.9   | 33.1      | —       | + 33.1  |
| Mechanical . . 1913   | 21.6                   | —       | + 21.6  | 24.3    | —       | + 24.3  | 21.0      | 1.4     | + 19.6  |
| 1924                  | 30.6                   | —       | + 30.6  | 24.7    | —       | + 24.7  | 33.4      | 1.3     | + 32.1  |
| 1925                  | 34.0                   | —       | + 34.0  |         |         |         | 34.5      | 1.4     | + 33.1  |

Of the total imports of the electrical engineering industry, Europe took 53 per cent before the war and only 46 per cent in 1925, and Japan and British India have both materially increased their imports, but the most remarkable rise is that of Australia, who is now the most important importer of electrical goods in the world, her imports valuing \$33.1 millions in 1925 compared with those of the United Kingdom, the next biggest market, which amounted to \$24.5 millions. This increase in the purchases of Japan, India and Australia is, of course, the natural result of the growing industrialisation of those countries; a similar, though not quite so striking, development of the import of other machinery may be observed.

Three countries, namely Germany, United Kingdom and the United States of America, account for over 75 per cent of the export of electrical goods in 1925, the value of their respective sales being almost the same. As an inspection of this will show, however, the American and British trade has developed rapidly while Germany's has fallen off if price changes be considered. On the other hand, both the British and the German exports of mechanical engineering products

have diminished relatively to those of the world as a whole, while those of the United States of America, France, Switzerland and Sweden have increased. "In electrical machinery, Germany and Britain are practically on the same level and slightly higher than the United States; in insulated wires and cables, Britain is superior, accounting for 60 per cent of the total exports, while, in telegraphic and telephonic apparatus, it is still highest of all three, though yielding ground in wireless. Germany stands pre-eminent in the supply of meters, lamps and electro-medical apparatus, while the United States occupies first place in batteries and electrical specialities connected with domestic appliances and industrial heating apparatus. Specialisation has taken place to some extent, therefore, in each of the three countries".<sup>1</sup>

### PRICES AND TARIFFS.

The questions of prices and tariffs may with advantage be considered together as they are closely allied, and the degree of their interdependence has been enhanced in recent years owing to the abnormal monetary conditions which have obtained. Inflation may constitute for considerable, though irregular and varying, periods of time a form of protection supplementary to that afforded by the rates of import or similar duties. Such protection will be effective when the inflation results in the domestic price level being maintained at a lower level than the price levels in competitive countries. It will aid most those industries which are least dependent on foreign supplies of raw materials. The same inflation, however, may automatically lower the rates of import duties when those duties are payable in paper currency, and the coefficients by which such duties may be augmented do not keep pace with the rate of depreciation of the external value of the currency in question. In such circumstances, the fact that a duty on any commodity expressed as an *ad valorem* rate has fallen is no absolute proof that the protection afforded to the manufacture of that commodity has decreased. Precisely that cause which has reduced this rate may by another means have increased the protection. At the same time these phenomena of unstable prices and discrepancies between the internal and external purchasing power of certain currencies give an incentive to countries with stable monetary conditions to increase their duties. For if any given rate be adequate to afford the protection required when no inflation exists abroad, it may be found necessary, when inflation in any competitive country produces a temporary export premium, to increase that rate by some estimated compensatory amount. Prices and tariffs are further inter-related in all circumstances inasmuch as a change in tariff upwards or downwards is likely to produce a similar movement in prices.

The extent to which tariffs are likely to constitute an obstruction to trade depends not only on their rate but also on the frequency with which they are modified. The whole period since 1918 has been characterised by extreme instability of prices and constant and frequently irrational tariff changes. These changes of tariff have often been effected not in order to protect any particular industry, but with the object of "righting the balance of trade" or improving

<sup>1</sup>See British Monograph on Electrical Industry (*The Electro-Technical Industry*, Geneva, 1927).

the exchanges, with the object of restricting trade, not of promoting production. Neither in 1925 nor in 1926 had price stability been achieved. It is therefore extremely difficult to estimate the effect which tariffs have had on trade and production or, in certain cases, to determine whether any apparent decrease in the rates of duty represents a real reduction of trade barriers.

In an accompanying memorandum, an attempt has been made to measure approximately the level of tariffs in a number of countries, which shows that there has been a material increase in the average rates imposed on industrial products in most Central European countries — Austria is an exception — in Spain, in the United States of America (compared with 1914), in Japan and in Australia. The Russian foreign trade is subject to Government monopoly. The rates of duty in the Scandinavian countries are generally lower, in France and Belgium the maximum rates have been raised and the minimum and conventional lowered. But, at any rate until the spring of 1926, the internal purchasing power of the French, Belgian and Italian currencies was frequently over considerable periods greater than their external purchasing power, a fact to which the relatively high industrial output of these countries in recent years must in part be attributed. In this connection it should be remarked that inflation may frequently result in great industrial activity and large exports of manufactured articles without any corresponding profit to the exporting country. In certain stages of inflation a net loss on export may actually be incurred, and it is extremely difficult to determine at what point an apparent gain conceals a real loss.

In this connection the fluctuations in the general gold price indices in certain countries may with advantage be shown.

| Country.                      | 1923 | 1924 |     | 1925 | 1926 |     |
|-------------------------------|------|------|-----|------|------|-----|
|                               | XII  | III  | XII | XII  | VI   | XII |
| Poland <sup>1</sup> . . . . . | —    | 111  | 118 | 82   | 86   | 104 |
| France . . . . .              | 123  | 127  | 141 | 120  | 109  | 134 |
| Germany . . . . .             | 134  | 127  | 143 | 140  | 132  | 137 |
| Austria . . . . .             | 126  | 133  | 144 | 125  | 124  | 127 |
| Hungary . . . . .             | —    | 143  | 149 | 129  | 122  | 126 |
| Belgium. . . . .              | 129  | 125  | 146 | 133  | 117  | 124 |
| Spain. . . . .                | 119  | 119  | 143 | 138  | 145  | 147 |
| Czechoslovakia. . . . .       | 140  | 145  | 154 | 142  | 137  | 143 |
| Finland. . . . .              | 141  | 143  | 149 | 147  | 140  | 143 |
| Italy . . . . .               | 129  | 128  | 141 | 149  | 134  | 160 |

<sup>1</sup> The official figures were for the end of the months of March, June, September and December 1925 : 122, 119, 110 and 95 respectively.



| Country.                 | 1924 |     | 1925 |     | 1926 |                  |
|--------------------------|------|-----|------|-----|------|------------------|
|                          | III  | XII | XII  | IX  |      |                  |
| S.H.S . . . . .          | —    | 131 | 164  | 150 | 137  | 132 <sup>1</sup> |
| Danzig . . . . .         | —    | —   | 158  | 150 | 145  | 149              |
| United Kingdom . . . . . | 146  | 146 | 164  | 152 | 147  | 146              |
| Netherlands . . . . .    | 146  | 143 | 160  | 155 | 144  | 146              |
| United States . . . . .  | 151  | 150 | 157  | 156 | 152  | 147              |
| Sweden . . . . .         | 157  | 159 | 168  | 156 | 150  | 150              |
| Switzerland . . . . .    | 165  | 162 | 170  | 156 | 145  | 147              |
| Denmark . . . . .        | 140  | 133 | 153  | 163 | 155  | 157              |
| Canada . . . . .         | 150  | 150 | 160  | 164 | 156  | 151              |
| Peru . . . . .           | 159  | 160 | 168  | 165 | 155  | 146              |
| Norway . . . . .         | 137  | 134 | 157  | 167 | 160  | 174              |
| Japan . . . . .          | 199  | 177 | 165  | 169 | 167  | 167              |
| Russia . . . . .         | —    | 182 | 170  | 181 | 186  | 178              |

It is necessary, when considering these figures, to distinguish between (1) those countries such as Germany, where gold prices are slowly mounting toward the world level after stabilisation, and (2) those like the United Kingdom, Denmark and Norway, etc., where an enhancement of the external value of the currency forced domestic and gold prices down, and (3) such countries as France and Belgium, where until the early summer of 1926 the exchanges were depreciating.

By the end of 1926, the influence of the price factor on tariffs had become restricted to a relatively small area, and it became more possible to judge the probable effect of tariffs on the various industries. In the case of iron and steel, the available evidence points rather towards a reduction than an increase of rates in Europe as a whole. They are higher in Spain than before the war, in Roumania and in the Kingdom of the Serbs, Croats and Slovenes on certain products. But in the majority of European States they were lower. Cotton duties, on the other hand, were generally higher, though Austria, the Scandinavian countries and Roumania are exceptions to the rule. The duties on chemicals have been raised, more especially in those countries such as France, Belgium, Italy and the United Kingdom in which the industry was greatly expanded during the war and in Czechoslovakia and Spain, and the same group of countries with the exception of the United Kingdom have raised their rates on a number of the products of the electrical and mechanical engineering industries. For the engineering industry, the minute subdivision of headings which is a marked feature of post-war tariffs makes it difficult to estimate the changes in the average value of duty. In a number of countries, however, in which the industry is not highly developed, an effort has been made to expand the industry by means of highly protective rates. But it is outside Europe that some of the most remarkable changes have been made and some of the highest rates are in force. Thus, according to the calculations of the German

<sup>1</sup> August.

Federation of Industries, the average rate of duty imposed in Japan on chemical products has been increased almost four and a-half fold and the Indian more than fivefold. The Australian tariff on certain products of the electrical engineering industry has also been very considerably increased.

The Indian duty on cotton piece goods has been increased on the average from 3½ per cent to 11 per cent. The Japanese duties have been raised in many cases by 50 per cent or more, as, too, have those in the Argentine.

The situation to-day is no doubt somewhat more favourable than it was in 1924 or 1925. In 1924 the currencies of five countries were definitely stabilised, in 1925 of thirteen, in 1926 of two. The probability of great price discrepancies from country to country is therefore greatly diminished. Secondly, a very large number of Customs conventions tending to reduce the average rates of duties on industrial products have been signed in the last few years and many are still in course of negotiation. Thirdly, such measures as the arrangement of the International Steel Agreement may have an influence on tariffs and lessen the pressure to have higher rates imposed, at any rate in those countries which are parties to the agreement. On the other hand, tariffs in the world as a whole are, on the average, distinctly higher than before the war, while the number of independent countries, and consequently the number of barriers across trade routes in Europe, has increased from 20 to 29. Moreover it so happens that a number of the industries considered have been less subjected to higher duties than have those with which we are not here so immediately concerned. The evidence given above with reference to them must not, therefore, be accepted as typical of general conditions.

#### GENERAL CHARACTERISTICS AND TENDENCIES.

From the rapid survey of these industries which has been made in the preceding paragraphs, certain salient characteristics of the situation to-day would appear to emerge and certain causes have shown themselves to be of predominant importance.

In the first place, there has been a marked change in the relative industrial importance of America, Japan, India, Australia and other Pacific countries on the one hand and Europe on the other. This change has affected the equilibrium of the whole commerce of the world<sup>1</sup> and the trade in the specific commodities here considered.

Within Europe, France, Italy and Sweden have maintained or increased their production in the particular industries under review, while the German output, despite certain important exceptions (steel, potash, nitrate of lime), is down on balance, that of the United Kingdom is generally lower and that of Russia is generally very materially lower than in 1913. France, Italy and Germany have of course been affected by territorial changes, but these changes do not

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<sup>1</sup> See *Memorandum on Balance of Payments and Foreign Trade Balances*, Vol. I, Part II.

alone account for the alteration which has taken place in their relative industrial importance at the moment.

Certain of the major causes which have contributed to these results are enumerated below. They are not given in the order of their importance and, indeed, on the question of their relative importance opinions are likely to differ. Those which relate to production and productive capacity and the effect on production of changes in demand arising from causes other than legal Government action, are considered first; those which relate to the movements of goods and persons and the media of exchange second, while, finally, brief reference is made to the peculiar difficulties which Europe has had to face.

1. Industry, more especially in Europe, has been hampered by a mal-distribution of fixed capital and the financial and other difficulties which result from the existence of an equipment for production in excess of immediate market requirements.

A number of different causes which have contributed to the laying-down of excessive plant discussed above may be distinguished. The most important was the necessity imposed on belligerent States to increase their plant during the war for war needs. This is the main cause in the case of steel-works and rolling-mills, shipbuilding yards, plant for the manufacture of coal-tar dyes, and an important cause in the case of certain branches of mechanical engineering. Secondly, new plant was laid down in neutral countries which could not obtain their supplies from elsewhere. Thus the high price of coal stimulated the installation of hydro-electric plant in Sweden and Switzerland, the manufacture of artificial fertilisers in Norway and elsewhere was encouraged, new cotton mills were started in China and Brazil, the cultivation of sugar was stimulated in the fringe of neutral European countries. Thirdly, since the war, a policy of industrial nationalism has been pursued in certain countries which has resulted in new plant being erected behind high tariff walls. The cotton industry in Hungary and the metal industry in Roumania may be quoted as examples. Fourthly, the impossibility of finding outlets for their surplus population has induced certain of the more prolific nations in Europe to extend their plant with the object of providing occupation for their increasing working population. Finally, inflation produces a change in the relative strength of the demand for different commodities and services which does not continue to operate, once stable currency conditions have been restored. In Germany and elsewhere, therefore, plant was erected during the inflationary periods which was found to be of no permanent value.

These causes have not of course worked independently of each other or of still other forces. The development of shipbuilding yards in certain countries, though mainly a necessity of war, was not unaffected by ideas of economic nationalism. The threatened over-supply of sugar is due at once to the development of the cane industry in America and Asia, and of the beet industry in neutral Europe and to the restoration of the beet crop since the war in other European countries towards its pre-war level by means of protective import duties. Similarly, the dye industry which was created during the war in France, England, Italy and elsewhere is now supported by protective duties or other forms of Government assistance.

But it is important to distinguish between these causes, for, whereas the first and the second, though not their effects, are now past, the third remains an active force, and the fourth, if relatively quiescent at the moment, cannot be considered extinct until all currencies are stabilised.

2. The general impoverishment of Europe immediately after the war reduced the margin of national income over immediate human requirements and hence the volume of savings. In addition, the will to save and the confidence in the future on which that willingness so largely depends have been sapped by inflation and the losses of past savings which inflation involved. This abstention from saving produced in its turn an automatic increase in the demand for immediately consumable commodities as the national income grew and so rendered realisable the desire begotten by the war and bred in the wilderness of post-war uncertainty for greater immediate comfort. Industries producing goods intended for immediate consumption have accordingly prospered, excepting when they happened, as in the case of cotton, to depend also largely upon extra-European markets. On the other hand, the smaller capital savings in Europe have affected the demand for iron and steel, for coal, to some extent for machinery and for fertilisers. It is possible, indeed, that the contraction in the demand in recent years for products of the heavy-metal industry, despite all the reconstruction work which has been accomplished, has been greater than the contraction in savings, because during rapid inflation a great deal of direct saving takes place not only in the form of plant put down by companies out of concealed reserves, but also by the construction of small privately owned houses, farm amelioration, etc., while the flow of monetary savings to a central reservoir and their utilisation for large enterprises and the export of capital, and hence more particularly of capital goods, to undeveloped countries were seriously checked. Indeed, such export of capital from inflationary countries as did take place necessarily took the form of concealed capital flight in defiance of legal restrictions. Capital was thus transferred from those countries in which savings were smallest to those in which the conditions for saving were most favourable. It is not surprising in these circumstances that the exports of the United Kingdom and other lending countries have contracted. Further, as just mentioned, a large proportion of the capital goods actually created during inflation will prove useless. With stable monetary conditions and the re-growth of confidence, it may well be that the demand for the products of those industries mainly producing goods not intended for immediate consumption will greatly increase. Such saving as did take place in Austria, Germany, Poland and elsewhere immediately after the stabilisation was achieved or attempted was mainly absorbed by the demand for floating capital — in the form, that is, of stocks of consumable commodities, goods in process of manufacture, etc. — and could not benefit at once the industries manufacturing goods not intended for direct consumption.

3. The war reinforced the tendency which always existed for raw materials to be manufactured in the countries in which they are produced instead of being sent to Europe for treatment and further shipment in the form of finished goods.

Thus the growth of the cotton industry in China, India, Brazil and Mexico is based on indigenous supplies of raw cotton; the amount of wool retained by Australia has greatly increased. The heavy-metal industry in Asia and Oceania is no artificial growth.

4. In certain cases recent scientific discoveries have changed the type of raw materials used and hence tend to change the seat of the industry. Thus sulphuric acid can now be manufactured from gyps, which is widely distributed, instead of from pyrites, the main deposits of which are concentrated in Spain.

5. Quite apart from the sources of raw materials, the development of industries in semi-industrial States outside Europe which will prove partly competitive with those in Europe is inevitable. Domestic works for the manufacture of machines, or of electrical requirements grow up automatically from the repair shops. Where yarn is spun, weaving and knitting will sooner or later be undertaken.

6. The demand for the products of certain industries has fallen off, not on account of any general impoverishment, or because of a change in the division of personal income between savings and expenditure, but because it has, for technical reasons, been directed into other channels or, which is in effect almost the same, because an alternative article is offered at a lower price. Thus the demand for coal has been affected both by the development of hydro-electric power and by the increased production of petroleum, which in 1926 was nearly three times as great as in 1913. The demand for ships has been reduced by the increased average speed now attained; the demand for pig-iron by the increased utilisation of scrap; the demand for cotton yarn and to some extent also woollen yarn and piece goods by the greater use of silk and artificial silk hosiery and fabrics. On the other hand, the manufacture of fine cotton goods has benefited by the reduction in the use of linen.

7. Tariffs outside Europe and more especially in Japan, the United States of America, Australia, India and the Argentine have been raised considerably higher than they were in the first years of the war. In Europe, tariffs are likewise generally appreciably higher, though there are a few important exceptions to this rule. The number of tariff barriers has increased automatically with the number of sovereign States and the average size of the domestic markets been diminished. Not only are tariffs higher, but security is reduced and trade hampered by the frequency with which rates are modified, by the shortness of the periods for which commercial treaties are concluded, by the system of enforcing a maximum schedule before conventions reducing the amounts of the so-called bargaining rates have been concluded, by discriminatory Customs classification, prohibitions, etc.

8. While the movement of goods has been hampered by tariffs and prohibitions, that of persons has been restricted even more seriously by immigration laws, passport regulations, restrictions on the right of foreigners to establish business or conduct their professions in other countries, etc. These restrictions

and the less favourable economic conditions obtaining in certain of the countries where labour is still admitted free have, as we have seen above, given an incentive to additional efforts to foster industry in countries with a superabundant population.

9. Meanwhile, unstable monetary conditions have led to an irregularity of prices and abnormal variations in the cost of production which have themselves constituted the worst form of trade barriers. In the countries suffering from inflation, the normal calculations of costs on which business necessarily depends were rendered impossible, energy and effort were absorbed in almost hopeless accountancy problems, monetary savings were prevented, banks deprived of their normal functions and all security was undermined. But no countries were unaffected by the reactions of the monetary instability of the last few years. The constant changes in relative price levels, the wild movements of the exchanges have hampered all trade, prevented the preparation of anything of the nature of a definite business policy, and made business a matter of speculation. Though a great improvement has taken place in the last few years, currency reforms have still to be carried out in a number of countries, and the dearth of capital which inflation brings about cannot be made good at once.

10. Finally, within Europe, special causes almost too well known to enumerate have made themselves felt, for all these forces have been at work while Europe was occupied with reconstruction, with necessary readjustments to meet changes in the political and hence the economic frontiers, while one country after another was endeavouring to maintain its balance on the see-saw of inflation or deflation, and all were affected by the instability of prices and the constant changes in competitive power which inflation or deflation involved. The changes of frontier have produced changes in the trade routes, some of which may prove permanent in character. But currency stability is still insufficient, and such stability as exists has been enjoyed for too short a period for trade to have been able to cut anything of the nature of permanent new channels. The course of events in the years which have just passed afford, therefore, little evidence for judging the probable directions in the future.

Of these various causes which have been considered, some are no longer operative though their effects may live after them, while others are still vital. The danger of great immediate additions to equipment in industries where plant is already excessive is slight; the will to save is being revived and the supply of capital grows steadily; the number of countries in which currency stabilisation has not yet been achieved is now relatively restricted, though among that number are certain States of world economic importance. On the other hand, the deep-lying economic tendencies — the growth of industries in countries with important supplies of raw materials, the substitution of one commodity for another, etc., continue in being and are only within restricted limits subject to direction. The causes resulting from Government action, the control of the free movement of goods or persons, etc., are of course always operative and always possible of deliberate modification.

Moreover the tendencies considered, as was stated at the beginning of this section, have affected certain countries much more adversely than others. At the particular stage which has now been reached, the industrialisation of Asia, Oceania, etc., is directly competitive with several of the major European industries — more especially the British — and has brought about a serious reduction in demand. Asiatic countries are tending to trade more *inter se*, more with the United States of America, more with Oceania and less with Europe.

Partly owing to monetary factors, partly owing to the degree of industrial specialisation, largely in the case of the United Kingdom to the particular reactions of the drop in the Asiatic demand, that country and Germany have been particularly adversely affected by the post-war economic forces, while Belgium, France and Italy have countered them with a considerable measure of success.

The establishment of new industries in certain European countries (coal-tar dyes, various textiles, superphosphates, etc.), generally with some form of Government protection, has reduced the selling power of the older producers and lessened the trade in these commodities, both absolutely and relatively to production.

The growth in the demand for certain products such, for instance, as paper and pulp has benefited the countries from which they are mainly derived. But all countries have suffered by the instability of currencies, of prices, of tariffs and from the irregularity of the demand for goods which this instability has entailed.

#### SUMMARY OF CERTAIN OF THE PROPOSALS PUT FORWARD FOR INTERNATIONAL ACTION.

With the object of promoting the general interests of these various industries or of overcoming the special difficulties with which they happen to be faced at the moment, various forms of international action have been taken or proposed. In the other memoranda in this series some account will be found of the proposals for action which have been put forward by the organisations and individuals with which the Preparatory Committee of the Economic Conference has been in touch ; but it may be useful here to summarise these views and to recall at the same time the character of certain of the international agreements which have already been reached.

International action up to the present has taken two essentially different forms, excellent examples of which are afforded by the cotton and by the iron and steel industries respectively. The International Federation of Cotton-spinners' and Manufacturers' Associations, which was founded in 1904, represents a form of international co-operation for the study of problems connected with the industry and the promotion of common interests under which each co-operating unit preserves complete and untrammelled liberty of individual action. The

Federation investigates all questions connected with, *e.g.*, the sale of raw cotton, the technical progress of the industry and insurance ; it publishes detailed statistics concerning crops, mill consumption, prices, short time, etc. ; it collects and issues reports concerning the state of industrial activity in different countries. Further, it affords facilities for arbitration in the event of lawsuits between parties of different nationalities ; it sends delegations from time to time to new cotton-growing countries to advise on technical questions connected with the cultivation of the soil and harvesting of the crop. But it in no way controls the production or sale or price of the products of any of the associated mills.

Several similar international associations of a permanent character exist, among which may be mentioned the recently founded International Tanners' Federation, and the International Federation of Motor-car Manufacturers.

The Steel "Agreement" which has recently been reached between the Metallurgical Federation in certain countries<sup>1</sup> is wholly different from these permanent associations both in object and character. Its essential object is to control output in such a way as to adapt it to immediate requirements in an orderly manner and to avoid the constant recurrence of crises. In order to achieve this end a production quota is allotted to each country. The ratio of these quotas to one another can only be modified by unanimous agreement, but at the end of each quarter the total tonnage for the next quarter is fixed and therefore the absolute amount of each quota. Any country producing less than its quota receives a compensation and any country producing more pays a fine.

Unless renewed, the present Agreement terminates on April 1st, 1931, subject to certain special provisos. But up to May 1st, 1929, any party to the Agreement is entitled to give notice of withdrawal as from October 31st, 1929.

Obviously an agreement of this sort has an important bearing on the question of tariffs, for the quota system affords a special and distinct form of protection to each individual Federation. This particular Agreement, moreover, contains a special reference to the tariffs which is of considerable interest :

" Article 10.

"The present Agreement was concluded on the assumption that, throughout its duration, the tariff rates applicable to iron and steel products imported into Germany would not be increased. If Germany should proceed to increase the said rates, the present Agreement may be denounced at any time by each of the Contracting Parties at three months' notice, and each of the Parties shall then recover full liberty of action in relation to its Government as regards tariffs."

Between the extremes of these two types of international industrial co-operation represented by the cotton and the iron and steel industries respectively,

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<sup>1</sup> The original Agreement was signed on September 30th, 1926, by the Federations representing Belgium, France, Germany and Luxemburg. In January 1927 Austria, Czechoslovakia and Hungary adhered.



fall naturally many variations or adaptations of the one or the other. But the two do not tend easily to coalesce, though the *Compagnie industrielle pour le développement de l'éclairage* at once controls output and promotes technical progress. This company was established in conformity with a convention concluded by all electric lamp manufacturers, except those of the United States of America. Under this convention each manufacturer agreed to adhere to a system of sale contingents. At the same time measures were adopted for improving the technique of production, the most important of which was that every member is entitled to visit the factory of every other and ascertain what methods of production are employed. It is also the object of the convention to standardise products and to establish a limited number of types of lamps.

The proposals for international action which have been put forward frequently refer to action not by the industries themselves, but by Governments, and cannot therefore be classified under these two heads. But, in considering the proposals, it is desirable not to lose sight of the distinction which has been made.

Before recapitulating these proposals, it is necessary to state emphatically that no importance whatever should be attached to the fact that proposals for international action happen to have been received with reference to one industry and no proposals with reference to another. It was not the function of the Preparatory Committee or of the Secretariat to anticipate the Conference by endeavouring to seek solutions of any problems which obtain. It was therefore a matter of chance whether any individual or association, when asked to supply information with reference to the condition of an industry, added to the statement an expression of opinion concerning desirable action. These proposals are recapitulated here, therefore, because and only because they afford certain illustrative and not exhaustive evidence of the direction in which representatives of certain industries in certain countries are thinking to-day.

The textile industries may in this instance perhaps with advantage be considered first. In a memorandum submitted by the *Comité de Laine* (Paris) support is given to the proposals put forward by M. Dubrulle before the Wool Growers' Committee at Bradford in 1926 :

“It is plain,” said M. Dubrulle, “that conferences of wool-growers afford admirable scope for experiments in technical co-operation as regards raw wool. They are particularly important because they bring together those who supply the public with the finished article.”

M. Dubrulle enumerated the various questions which might be considered by international wool conferences, viz. :

(a) Grazing, cross-breeding (*i.e.* the conflict of aims between meat and fleece, and methods of avoiding the sacrifice of one to the other).

(b) Packing of raw wool — this is a technical question of very great importance, in view of the difficulty of removing the jute fibre used in packing during the successive processes of manufacture <sup>1</sup>.

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<sup>1</sup> An “all-wool packing” is at present being tried, but there are technical difficulties which may prevent its general adoption. International conferences may, however, succeed in solving the problem.

- (c) The branding of animals with tar and the need for a solvent which will remove all traces of it <sup>1</sup>.
- (d) The elimination of coloured hairs which will not take dye.
- (e) The standardisation of the various categories of raw wool, advocated by Mr. Willingmyre, of the United States Ministry of Agriculture <sup>2</sup>.
- (f) Lastly, the establishment of international statistics concerning production, consumption and stocks.

In this connection, M. Dubrulle said :

“This is a case in which international action is indispensable ; in all countries statistics of production have always been independent of those for consumption. A large output of wool may readily be absorbed by the world market, if stocks are low and if the wool is consumed gradually. On the other hand, a small consignment arriving in an overstocked and stagnant market may precipitate a crisis.

“Just as an accountant must square his accounts by debit and credit columns, the difference showing the profit or loss — so steps should be taken internationally to provide statistics of consumption to set against those of production. The difference between these two, giving stocks, would provide a regulating figure showing the exact tendency of the market.

“It must not be thought that a comparison between consumption and production statistics would be a universal remedy which would protect us in future from fluctuations in prices, but it is quite certain that this method would prevent the sharp movements in either direction which paralyse markets and benefit professional speculators to the detriment of those who make an honest living out of the wool trade.”

With these proposals may be compared those which have been put forward frequently with reference to cotton by Sir Charles Macara and the action actually taken by the International Cotton Spinners' and Manufacturers' Associations Federation.

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<sup>1</sup> The Germans are investigating this question.

<sup>2</sup> Mr. Willingmyre has promised to submit to the Central Wool Committee an Anglo-American-French scheme of standardisation.

Already, in pursuance of the agreement arrived at between the British and American organisations, a Conference has been held at the American Ministry of Agriculture of representatives of all branches of the American woollen industry, and has unanimously approved the various types of wool proposed.

These “standards” will not be compulsory, but will be considered as official by the United States and Great Britain. They will become universal as soon as they have been adopted by Europe and South America.

Although the former classification must be retained for a time, the new one will serve as a basis for the establishment of the rates quoted by the Ministry of Agriculture for the wool market.

The new numerical standards are similar to those of the British system and have been fixed so as to secure the closest possible approximation of the British types and the official American types at the present time.

They include 12 types graded from 36's to 80's.

In the same report on the wool industry mentioned above, the following list of suggestions for international action by Governments is put forward :

“(a) *The drawing up in each country of an alphabetical index and explanatory notes to the Customs tariff.* The International Chamber of Commerce advocated this plan on the occasion of the Congress on Customs Regulations at Rome in March 1923, and urged the importance of making these alphabetical indices as widely known as possible, in order that traders might know beforehand, and quite definitely, the duties they would have to pay upon the entry of their goods into any country.

“(b) *Simplification of the issue of certificates of origin* in order to avoid the inconvenience caused to exporters when countries adopt hasty decisions (as Turkey has done recently).

“(c) *The abolition of all measures contemplating import or export prohibitions, or modification in their application.* These measures are often not brought to the knowledge of the parties concerned until it is too late, as recently happened when the prohibition of the import of wool and goats' hair, decreed by the British Government for sanitary reasons, was not brought to the knowledge of certain French merchants until after the ships containing the goods had put to sea.

“(d) *Organisation of the regulations concerning commercial travellers and samples :* in particular, a definition of samples is necessary for their exemption from Customs duties.

“(e) *Free entry of returnable goods.* This question is highly important for the woollen industry, as its products are essentially articles of fashion, chosen from samples, and are often rejected if they do not conform to the pattern or contain defects of texture or colour, etc.

“(f) *Abolition of the Customs search* practised by certain countries in the country of origin of the goods.

“(g) *Conditions for the denunciation of agreements,* as the period of notice is often too short to permit of long-term transactions.

“We were glad to see that the majority of these questions had already been included in the report on the suggestions made by the Economic Committee drawn up by M. Vandervelde at the request of the Council of the League of Nations. We urge that a satisfactory solution should be found as soon as possible.”

Reference should be made in connection with these points to the various pamphlets in this series published under the general heading of Commerce.

Both the *Comité de Laine* and the French Silk Federation lay stress on the

desirability of reducing protectionist tendencies both in Europe and in the world as a whole.

“It would be desirable — and here the intervention of an organisation like the League of Nations might be most useful — that nations not only in Europe but throughout the world should consent to abandon the rigid protectionist attitude which seems to have been the general rule in recent years. It is not by working behind insurmountable Customs barriers that industry makes progress. A continued defensive has never proved to be a solution. Industries do of course require protection, but it should be carefully thought out — adequate but moderate. Excessive protection fosters inertia and leads to ruin. The stimulus of foreign competition is indispensable to any industry if it is to prosper.”

The Silk Federation attaches particular importance to the conclusion of commercial treaties for a long term of years. Reference is also made in the memorandum on artificial silk prepared by the *Associazione Nazionale Italiana della Seta Artificiale* to the danger which the new tariffs on the commodity involve of cutting up the European market into a series of unconnected lakes. But it is suggested that action by the industry itself, both national and international, is required.

“It is indeed with a view both to exportation and to the development of internal consumption that the different countries are continuing, though at a slackened rate, to increase their production, but, in the present state of the market, those recent developments of productive capacity obviously have not the same certainty of success as formerly when all the artificial silk produced found a quick and profitable sale.

“Whether with the object of expanding abroad or of intensifying internal consumption, it seems to a careful observer of the situation essential that the several producers, instead of operating separately and ruining each other, should endeavour to co-operate and so avoid a useless waste of effort and capital.

“The possibility of intensifying the total consumption is beyond doubt, but in developing production in proportion to increased consumption care must be taken not to create parallel conflicting activities when those same activities can carry on profitably in different fields.

“The tendency towards concentration in the industry to which we have already called attention and which, led by Germany, has spread to the British and American industries, seemed destined not to remain an isolated phenomenon, but to be the first step towards a policy of agreements between the principal producing groups. Such a policy should tend to establish a relation as nearly constant as possible between consumption and production.

“If the producers of the world work along these lines, it seems highly probable that the artificial silk industry will continue to thrive without traversing any of the crises which hinder the regular development of other

productive activities not regulated by a policy of close industrial collaboration.”<sup>1 2</sup>

A very similar view is expressed by M. Duchemin, President of the *Union des Industries chimiques*, with reference to the heavy chemical industry :

“If, disregarding frontiers, similar industries get in touch and conclude mutual agreements for the rationing of their products, in conformity with national and international requirements, taking into account the new situations which have arisen ; if they succeed, first by national agreements and then by international agreements, in diminishing general expenses, improving output and eliminating second-rate factories or factories whose geographical situation is unsuitable ; if they co-operate in organising their sales : they will obtain a diminution of cost prices and greater regularity in production, two results which would be a source of satisfaction to all and which would engender a mentality favourable to a long reign of peace.

“In short, the first step is not to conclude inter-State agreements, but agreements between the industries themselves which would render the subsequent conclusion of inter-State agreements possible.

“To prepare the way for these agreements, the International Conference might, so far as the chemical industry is concerned, accomplish most useful work by enlightening public opinion throughout the world on the difficulty of the problem....”

He suggests later in the same memorandum that the Economic Conference should draw the attention of States to the danger involved at a time of latent over-production, in the creation of new undertakings, and to the desirability of a liberal commercial policy, both with reference to the import of manufactured products and the export of raw material. Finally, emphasis is laid on the desirability of industrialists substituting for a policy of exaggerated protectionism that of co-operative action and the conclusion of agreements for the rationing of the product and the specialisation of production. In the British *Monograph on the Chemical<sup>3</sup> Industry*, the view is expressed that “no attempt should be made at present to regulate the nitrogen industry by inter-State agreements. Both the scientific and economic basis for any such regulation are lacking. As soon as equilibrium on a new price-level is attained, the chief nitrogen-producing groups in the world will be able to meet and take suitable steps for the future development of the industry.” Elsewhere in the same memorandum, when reference is made to the chemical industry as a whole rather than to any particular branch of it, it is suggested that “a solution can be found for the difficulties which have arisen... and will probably be found along the lines of international agree-

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<sup>1</sup> Since this was written, an agreement has been reached between *Messrs. Courtauld, Ltd.*, *Snia Viscosa* of Turin, and the *Vereinigte Glanzstoff Fabriken A.-G.* with the object of bringing about commercial and technical collaboration between the three companies.

<sup>2</sup> See *The Artificial Silk Industry*, Geneva, 1927.

<sup>3</sup> See *The Chemical Industry*, Geneva, 1927.

ments concluded between the individual national industries when they have sufficiently amalgamated their own interests.”

International specialisation of production, and the reorganisation of the industries necessitate, of course, as is pointed out in the *Memorandum on Artificial Silk*, anterior national action. The German potash industry, to which allusion has been made above, affords perhaps the best example of the economies which can be effected by a concerted action with a view to what is sometimes called industrial rationalisation.

The *Federation nationale des Travailleurs du Sous-sol* (France) puts forward a recommendation which would appear to involve the application of a system of rationing in the coal industry. The mining group of the Association of German Industries also considers some international action desirable and expresses the opinion that, “in view of the depression in European coal markets which does not seem to be of a merely transient character and of the acute price-cutting which was waged in these markets by the coal producers, there is much to be said in favour of some international agreement being reached”<sup>1</sup>. In opposition to this view, the Mining Association of Great Britain believes that, with the restoration of normal financial and economic conditions in Europe and the abandonment of a vigorous policy of “economic nationalism”, no remedy will be necessary.

As has been stated, the proposals summarised above have not been deliberately canvassed or culled by the Preparatory Committee. The majority of them, however, will be found to consist of the application to some particular industry of measures which have already been adopted in others. They fall naturally into four classes :

- (a) The establishment of international federations for the promotion of the general interests of particular industries and the study of technical and commercial problems, the publication of reports and statistics — possibly the organisation of a system of arbitration.
- (b) The arrangement of international agreements with a view to steadying production and adapting it to demand.
- (c) The specialisation of production and “rationalisation” of industry and commerce ; establishment of standard types, etc.
- (d) The freedom of markets from legal or administrative restrictions.

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<sup>1</sup> See *Memorandum on Coal*, Vol. II, Geneva, 1927.