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PREFACE

At its first session in April 1926, the Preparatory Committee for the International Economic Conference decided that it was necessary to submit to the Conference a series of memoranda describing the present position in certain major industries. The Committee at the same time outlined the general scheme on which these studies were to be carried out.

The Secretariat was instructed to prepare for the Committee's second session, in November 1926, memoranda on certain key industries. With regard, however, to the other more important industries, among them the natural silk industry it was thought better to obtain memoranda from the competent organisations in certain countries. Consequently, at its second session, the Committee was placed in possession of two memoranda, the one drawn up by the Fédération de la Soie of Lyons and communicated by M. de Peyerimhoff de Fontenelle, and the other by Dr. Arimattei on behalf of the Associazione Serica Italiana and communicated by H. E. M. de Stefani.

Eventually the two associations consented, at the request of the Preparatory Committee, to collaborate in the preparation of a single memorandum which should be transmitted by the Secretariat through the members of the Committee to those countries to which a study of it might be of interest and which might desire to offer observations upon it.

In regard to the joint memorandum thus prepared and circulated observations were subsequently received from Germany and Italy. In addition, a note on the German Silk Industry was submitted by Dr. C. Lammers.

At its meeting in Paris on February 23rd, 1927, the Documentation Committee of the Sub-Committee B of the Preparatory Committee for the International Economic Conference decided that the observations received should be taken into account in the French-Italian memorandum which should be published, together with the note on the German Silk Industry, in one volume.

Geneva, March 1927.

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Communicated by Dr. C. LAMMERS.

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INTERNATIONAL ECONOMIC CONFERENCEThe Natural Silk Industry.

The Economic and Financial Section of the League Secretariat has prepared a number of documents on the World economic position, commerce, agriculture, industry, etc., for the use of the International Economic Conference meeting at Geneva on May 4th.. The industrial section of these publications includes a series of memoranda describing the present position in certain major industries such as iron and steel, coal, ship-building, chemical and potash industries, electro-technical and mechanical engineering, cotton, silk and artificial silk.

The memorandum on the natural silk industry has just been published and consists of a report on the natural silk industry presented by the Milan Silk Association and the Silk Federation of Lyons, together with a note on the German silk industry.

The report contains chapters on the production of natural silk, conditions of the development of the silk industry from 1919 to the end of 1925, prices, schappe silk (produced from silk waste), the international silk trade, the situation of the world's silk industries, measures taken by the various States for the promotion of the silk industry, and various statistical appendices.

The German note contains a survey of the general conditions of the industry in recent years, statistics bearing on the subject, a chapter on industrial organisation, and an annex on the sewing-silk industry.

REPORT ON THE NATURAL SILK INDUSTRY.

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REPORT ON THE NATURAL SILK INDUSTRY.

1. PRODUCTION OF NATURAL SILK.

Sericulture is a small agricultural cottage industry requiring no special skill or muscular strength. In countries where there is an annual harvest, it meets with severe competition from other industries, *e.g.*, vine-growing in France. But, where the worms are multivoltive and there are several crops of mulberry leaves annually, it becomes a staple and national occupation, as in China and Japan.

The area in which sericulture is at present carried on consists of a wide belt of territory stretching from Japan, across Asia and Europe, to the Iberian Peninsula on the shores of the Atlantic, between 25° and 48° of latitude, and projecting further southwards at some points in Asia. The silk-growing area is thus more extensive than the cotton area, but silkworm rearing might be extended over much wider areas. Broadly speaking, the map showing the production areas would include the following : France, Spain, Italy and Hungary, forming the West European group ; the Danubian countries, the Balkans, Turkey, the Caucasus, Persia and Turkestan forming the Eastern European, Near and Middle East group ; and India, Indo-China, China and Japan the Far East group.

The following figures for the years 1912 and 1925 will give some idea of the rapid development of contemporary production :

Production 1912 Kilos	World percentage	Production 1925 ¹ Kilos	World percentage	
Western Europe				
France 505,500	1.9	Spain 100,000	} 4,740,000 11.9	
Italy 4,500,000	16.8	France 265,000		
		Italy 4,380,000		
Eastern Europe and the Levant		1,065,000		2.6
The Far East :				
India and Indo-China ¹		90,000		} 34,055,000 85.5
China ¹ 8,655,000	32.3	China ¹ 8,120,000		
Japan ¹ 10,620,000	39.6	Japan ¹ 25,845,000		
		39,860,000		

¹ Exportations.

It should be pointed out that, as regards the Far East (China and Japan), the statistics given for production represent the quantities of silk exported to Europe or America ; the figures do not include home consumption and do not therefore represent the actual total production.

The home consumption of silk in China and Japan is considerable. It is estimated that Chinese exports only represent 55 per cent of the total production, home consumption accounting for the other 45 per cent. In the case of Japan the proportion of exports is 70 per cent, home consumption being 30 per cent.

If we assume that these figures are correct for 1925, the total production of China would amount to 15,000,000 kilos, and of Japan to 37,000,000 kilos. The total world production would thus be 58,000,000 kilos, valued at 18,000,000,000 gold francs (830,000,000 dollars or £175 million sterling).

In 1923 the world production was estimated at 30,465,000 and in 1924 at 39,100,000 kilos.

Thus Western Europe, which in 1875 accounted for 46 per cent of the world production, furnished less than 12 per cent in 1925. The figures for the Far East during the same period increased from 54 per cent to 85 per cent. Japanese production has increased by leaps and bounds — from 10,620,000 kilos in 1912 to 25,845,000 in 1925.

If the average price realised in 1925 be taken, the value of the world silk production was 12½ milliards of francs, or 575 million dollars (reckoned at the rate of exchange prevailing at the time), or £120,000,000 sterling.

One of the chief causes of the decline of sericulture in certain countries has been the liability of the silkworm to diseases conveyed by microbes. These diseases had disastrous consequences in France about 1860. Their origin and dissemination are understood to-day as a result of the work of Pasteur, and the conditions for the successful rearing of silkworms have now been established on scientific lines.

2. CONDITIONS OF THE DEVELOPMENT OF THE SILK INDUSTRY FROM 1919 TO THE END OF 1925.

In 1919 the silk industry was still feeling the effects of the war-time system, which was only slowly being done away with, the process being exactly contrary to that of its establishment : minor encumbrances were first removed, the bases and superstructure of the war emergency regime being allowed to remain. 1919.

It was only towards the end of May, in Italy, that there was a timid manifestation of freedom on the silk markets, which were beginning to recover and were no longer supported wholly by the minimum price guaranteed by the State Office.

The first indication of movement on the silk market was due to the rapid improvement in the Chinese exchange, the rise in the cost of Asiatic silks, and the increasing scarcity of stocks on the Lyons market, which, acting promptly and with breadth of vision, had been the first, despite the fact that it was not well covered, to send its own silks to the empty warehouses in the Rhineland.

Such was the position of the market at the end of the spring of 1919, when, owing partly to the poor harvest and to the high price of oriental silks, and partly to an unexpectedly heavy demand from the American market and the gradual rise in the exchange, silk prices began to show a marked and steady upward tendency. The looms were constantly demanding raw material, European factories became busy again, and from July to December silk prices experienced a steady rise.

It is true that the profits made by individuals in 1919 were not general. The timidity dating from 1918 dissuaded manufacturers from building up stocks of

raw material, so that when it became necessary at the first signs of weakness to resort to remedies, any profits that might have been obtained had already been seized by the seller. This goes to prove once more that in the silk industry one of the factors in profit-making is undoubtedly to be found in measured boldness based upon a scientific study of market conditions.

1920. 1920 offered a complete contrast to the previous year, the silk market showing strength during the first half-year, especially during the spring months, and weakening from then onwards, particularly during the second half-year.

The reaction to high prices was sudden and unexpected, and occurred when the purchase of cocoons was already well advanced.

Meanwhile, the expected heavy drop in consumption led to a total cessation of demands from America and a virtual cessation from Europe, including the home market. This diminution of consumption was aggravated by the disparity in the exchanges. Producing countries with depreciated currencies found some protection in it, while to those with stable currencies, such as the United States and Switzerland, it constituted a bar to exportation.

This crisis had even more marked effects in Japan.

Taking everything into consideration, the movement of the market in 1920 proved once again the uncertainty of the whole silk market from one year to another.

1921. 1921 represents a complete change from the position of 1920 and a reversion to that of 1919, which demonstrates, if further proof were needed, the continual swing of the economic pendulum on the silk market.

The depression during the early months — which was quite inconsiderable — showed signs of recovery towards the end of March, being later succeeded by a more serious drop, which reached its lowest point about the end of May.

The American demand gradually decreased, being replaced by a European call for thrown silks, which had till then been almost neglected. This situation was consolidated in October and strengthened the confidence of spinners, so that in the following month cocoons and thrown silks were quoted at continually increasing prices, this being partly due also to the scarcity of thrown silks consequent upon restricted output.

This was the position when speculators began to reduce purchases of cocoons, thus bringing the cost up to or higher than that of raw silks, and preventing the silk mills from covering the whole cost of filature operations.

At this point may be noted — a fact deducible from and confirmed by statistics and perfectly clear from statistical graphs — the exact correspondence between the movement of silk prices and that of the exchanges. The curves of silk quotations and rates of exchange respectively are absolutely parallel, which proves their strict and essential interdependence; price is conditioned also to a limited extent by supply and demand and even by the influence of speculation, which may count for something if it follows the trend of the exchange, but has no weight and may even fail entirely if it neglects this most important factor and ends in disaster if it deliberately goes against it.

In addition to these influences, there is that of Asiatic competition, more or

less keen according to the behaviour of silver as compared with gold, and another influence, perhaps more serious, namely, the reduced power of absorption of all markets.

It this problem is analysed and the varying conditions of the consuming markets are realised — Switzerland with her sound currency, Germany weakened by the general economic prostration, America entirely absorbed in her effort to return to normal conditions — it is possible to understand how, in these markets, conditions then arose which were, so to speak, transitory, while in Italy symptoms of decadence were appearing which imperatively directed attention to the vital problem of the silk industry.

The causes of this decadence are easily enumerated : sericulture neglected in favour of more remunerative cultivations ; increased well-being of the rural population who turned from silkworm breeding as being too complicated and requiring too much care ; the high prices obtained by the industry for obsolete machinery ; the higher standard of living ; wages ; and Customs protection.

In May 1922 the situation changed. European and Asiatic silk merchants became active again, and there was a demand for raw silks for delivery during the early months of the season, which marked the beginning of the movement on the cocoon market. 1922.

The keen demand for high-grade silks for fabrics and the manufacture of *crêpes*, together with the favourable trend of the exchange, led to a steady rise in silk prices, which at the end of September automatically accelerated the movement of the market, which grew stronger during October.

Prepared silks, however, did not meet with the same fortune as raw silks, which were almost exclusively used for fabrics owing to the prevailing fashion.

The rise in the lira in November as the result of the abrupt and decisive change in policy, and the drop in the value of silver, led to a downward tendency in silks, which had already been foreseen and noted by holders of cocoons.

The stagnation of the market at the end of 1922 persisted during the early months of 1923. American manufacturers alone were somewhat active, without, however, having any determining influence on the market. Asiatic silks were much more in demand, and remained at much higher prices than Italian silks. Holders of cocoons and speculators in general adopted an arbitrary attitude on the ground of the strong position of Asiatic silks, especially in February and March 1923. 1923.

This holding-up of supplies of dry cocoons led to the expected closure of many mills in Venetia, Lombardy and Central Italy, while of the few that remained active nearly all worked at a loss. Thus between the winter and the spring the silk-throwing factories were in an unsatisfactory condition.

At the opening of the cocoon season, there appeared to be a revival of the buying fever, which had suddenly dropped at the prospect of a super-abundant harvest and of difficulties in the silk market.

Speculators bought up cocoons eagerly, raising the prices to heights that even the most optimistic of sericulturists had never dreamt of.

The high price of cocoons and the small yield of the silkworm led to higher demands from spinners and produced a dull and slack market. Japan, however, gave it a certain impetus by reducing her production by one-third and prohibiting transactions on the Stock Exchange in order to prevent the creation of heavy stocks of unsold goods; consequently, the Italian market again showed a steadier tendency.

But, as if the advantage resulting from this state of affairs in the Far East were not to be thus limited, the tragic earthquake which struck Japan in the early days of September caused the silk markets to soar to amazing heights, followed by a fall in August, when more accurate and detailed particulars were to hand as to the damage suffered by the distant Eastern market. Reelers experienced enormous losses; they were the victims of the excessive speculation caused by an exaggerated view of the Japanese disaster.

The exceptional rise in the cost of silks at that moment of speculative excitement resulted in a greater consumption of substitutes, thus definitely opening the way for the employment of artificial silk, which was largely used on the looms.

1924. The beginning of 1924 was marked by a movement following the trend of the exchange and due to activity on the exchange market rather than to causes inherent in the silk market. The rise in the price of Asiatic silks and the absence of any reaction of silk prices to the upward tendency in the price of dry cocoons were not sufficiently powerful factors.

1925. 1925 was a fairly good year for silk.

Gold prices were not high, the development of luxury among the masses led to an increase in the demand, and fashion showed itself more favourable to silk than to wool or cotton. But even before this year, world production and consumption had risen to high figures — and this notwithstanding the development of the artificial silk industry, which definitely held its place side by side with the other important textiles, its production exceeding that of natural silk by 50 per cent.

Lyons derived high profits from the vogue of *crêpe*, which is one of her specialities and the Conditioning House recorded entries 10 per cent higher than in 1924 and 35 per cent higher than in 1923. This increase would have been even more marked but for the enormous difficulties encountered on this market: shortage of labour, fluctuations in the exchange, exorbitant and varying fiscal charges, and the uncertainty of the political situation in France.

In the United States, the confidence which was beginning to be felt during the second half of 1924 was strengthened and increased in 1925. The silk-weaving industry, which reflected the general prosperity, was further favoured by the low and stable dollar quotations for silk and the keen public demand for printed *crêpe*, while the *knitted goods* industry profited by the return to fashion of short skirts. Many establishments began to work day and night in three shifts, and the consumption of silk rose to unexpected heights.

This movement of the market, however, suffered a check in April. A reaction of the New York Stock Exchange quotations, which had gone up too rapidly, resulted in a sudden drop of 5 per cent on the Yokohama market, which is

particularly sensitive to American news ; a considerable number of uncovered sales took place in New York. Europe also suffered from this depression, and in May the British Government unexpectedly imposed a duty on imported silk goods. In June the situation improved. Owing to American confidence, Japan had no difficulty in disposing of the unexpected surplus for the year 1924-1925. European manufacturers, who, in view of the approaching introduction of the British Customs duty, had taken steps in good time to get rid of their old stocks of silk fabrics in London, were well off, and were prepared to renew their stocks of raw materials, which were almost exhausted.

This improvement occurred at an unfortunate moment, just when the purchase of cocoons was in full swing in Europe. In Italy, where the harvest showed a reduction of about 18 per cent, the result was that spinners paid excessive prices for cocoons, losing sight of the fact that the world supply of raw silk for the season 1925-1926 was already secured to a large extent.

Japan, which produced nearly two-thirds of the total output, announced for the first harvest — the most important — an excess of 5 per cent over the good harvest of 1924. News from Shanghai pointed to a slight increase in the production of Chinese filatures. Canton alone announced a deficit on the first two harvests. About that time, political troubles occurred in Shanghai and Canton, causing fears — which subsequently proved to be unfounded — in regard to deliveries on contracts concluded in those districts. During the summer, demand continued to be active, and the consumption of silk in the United States continued to increase. This increase applied almost exclusively to Japanese silks, and also to some extent to Chinese filatures : Italian silk prices were considered too high, and the Canton market was closed. It was only in September that contact was re-established to some extent with this last source, through the Shanghai market. At Lyons, *crêpe* was occupying throwsters and weavers to an increasing extent, but the market did not become really active again until the end of August after the holidays. There was a call for rapid deliveries, and the stocks of Eastern silks, which had been so long neglected, showed signs of becoming quickly exhausted. Japanese silks were neglected by European buyers, who imported only 12,000 bales between July 1st and December 15th.

As silk was still very much in fashion, the state of business at the close of 1925 gave good promise for the year 1926.

3. PRICES

The best index of the movement of raw silk quotations on the world market is obtained from the United States import prices, which, being expressed in gold, allow of easy and accurate comparison with the past. The average price during the five years 1909-1913 had been \$7.10 per kilo, and in 1913 \$6.95. Passing over the vicissitudes of the war period, we find that the price for 1919 (\$16.21) is 133 per cent and the price for 1920 (\$20.9) 201 per cent higher than for 1913. During 1920 the general average price level was only 139 per cent higher than the average

for 1913 : the big increase in the demand for silk thus led to a particularly big rise in its cost.

In 1920, however, the United States demand already began to weaken to such an extent as to produce a serious crisis on the Japanese market ; the import price, which fell to \$12.59 in 1921, rose again to \$15.90 in 1922 and \$17.44 in 1923. The index number for silk prices in 1923 was 251 and the average general price index 165. This still represents a considerable discrepancy.

The increase in imports which had resulted from the radical reduction of prices in 1921 was maintained and further improved in 1922, but was succeeded by a drop in 1923. Owing to this drop, the price of silk fell to 14.09 in 1924 and 13.45 in the first quarter of 1925. This latter price is 94 per cent higher, while the average general price level is only 65 per cent higher, than that for 1913. The reduction gave a vigorous impetus to imports, which reached unprecedented figures ; the fresh increase in demand has already brought about a considerable rise in prices : 13.75 during the four months July-October 1925.

The discrepancy between silk prices and the general average price level has decreased rapidly during the last two years ; it is still sufficient, however, to show the considerable increase in the demand for silk which has occurred during the last few years. Of the primary textile fibres — silk, wool, cotton — the first is the only one in regard to which consumption increased in the industrial countries of Europe and America between the pre-war and post-war periods. The improvement is entirely due to increased demands from America, for consumption has been reduced in Europe.

The extraordinary growth of the output of artificial silk has caused, and is still causing, considerable uncertainty as to the future of the silk market. At the same time, considering the present technical position as regards the production of artificial silk, there appears to be no possibility of the latter's completely ousting natural silk, while every day combinations of the two fibres prove their utility and their popularity with the public. Despite the fact that the manufacture of artificial silk is expanding by leaps and bounds — perhaps, indeed, partly because of this very expansion, which favours a reduction in price — the consumption of natural silk is also tending to increase.

4. SCHAPPE INDUSTRY.

The reeling of "bourre de soie" (silk waste), which gives a thread called "schappe", and the spinning of "bourrette" (a product of "bourre de soie" waste) are closely connected with sericulture and silk-reeling and use up all kinds of waste.

For a long time these industries were confined to Europe. They were first started about a century ago, and since then they have been concentrated chiefly in Eastern Switzerland and in the south-east of France. The most important centres of production are still to be found in those districts, but large factories have also been established in North Italy. Geographical conditions or resources

of labour have also led to the establishment of filatures in the east and north of France, and of combing works in the south and centre.

During the same period, several factories of some importance were established in England to carry on these industries. Later, a few were opened in Germany, and, finally, some branches of Italian or French companies were set up in Russia because of the Customs barriers. It was not until the end of the last century that these industries crossed the Atlantic and that a number of them found a footing in the United States. The industry was next taken up in Japan, and there are a few small factories in China. Western Europe, however, remains the chief centre of production, more especially Switzerland, North Italy and the south-east of France.

Since the schappe industry uses the waste from silk reeling as its raw material, its activity and possible development depend primarily upon facilities for forwarding this waste and the extent of the available supplies.

The French schappe industry has no great difficulty in obtaining raw material, in spite of its distance from the chief centres of production — China and Japan, and, to a lesser degree, Asia Minor, Persia, the Caucasus, etc. In Europe, Italy alone produces silk waste in appreciable quantities, the French and Spanish output being insignificant.

Among the various centres of silk production referred to above, those in the Far East are rapidly increasing their output of silk, and hence of silk waste. However, during recent years, the Japanese schappe-spinning industry has developed to such an extent that the quantity of waste available for export, far from increasing, has been considerably reduced.

The quantity of waste of all kinds supplied annually to factories spinning schappe and "bourrette" is estimated as being equal to the quantity of raw silk thread produced by the filatures.

The total world figures for this waste or "bourre de soie en masse" in 1925 may be estimated therefore at 40 million kilos.

The various processes of washing, combing, reeling, twisting, etc., moreover, reduce the material treated by about two-thirds. The output of schappe and "bourrette" thread may thus be estimated fairly accurately at a third of the total quantity of silk supplied yearly for consumption, *i.e.*, 13 million kilos for 1925.

5. INTERNATIONAL SILK TRADE.

The distribution of silk throughout the world has led to the creation of a powerful and intricate commercial organisation.

The silk merchant represents the type of great merchant who must have a thorough knowledge of Customs, communications and exchange questions, and also display a spirit of initiative at once bold and prudent.

The silk trade calls for highly trained and quick-witted agents. The conditioning of the silk requires skill.

From 1871 to 1880 Lyons was the principal distributing centre for Asiatic

silks, and is again becoming the great European silk market. About that time, competition was met with from Milan, as a result of the increase of sea communications and the development of Italian sericulture. In 1914 the two markets were of equal importance, and have remained so until the present day. But, as a result of the phenomenal progress of the silk-consuming industries in the United States, New York now holds the foremost position in the world.

In France and in Italy the cocoon harvest was formerly a great annual event. Prices were fixed in June and July, and these months were always a period of feverish activity.

In the Far East, where there are several harvests in the year, the market is always active, and to-day China and Japan determine the world's prices. The international silk trade is strongly organised in those countries.

In China, silk intended for export is first collected by native merchants grouped in two powerful associations — the Canton Guild and the Shanghai Guild. Strongly backed by their Governments, these merchants must be employed as intermediaries in the silk trade.

Export houses form a second series of intermediaries. These in turn are grouped into two associations : the Canton Foreign Silk Association and the Shanghai Foreign Silk Association.

They have offices equipped for the purchase, warehousing and testing of raw material. Chinese agents maintain the necessary connection with the native merchants.

At Shanghai, 37 large offices shared the export business during the 1921-22 season. Of these :

11	were	French
9	„	English
5	„	Swiss
3	„	Italian
3	„	Indian
2	„	American
2	„	Japanese

10,600 bales (of 60 kilos) out of a total of 67,000 were exported by the French firms, and 14,500 by the English and Indian firms.

In Canton, there were 27 offices :

9	French
9	English
3	American
3	Japanese
2	Swiss
1	Italian

53,000 bales were exported, 15,000 by the French and 16,000 by the English firms.

Silk merchants, who thus constitute the third line of intermediaries, apply

to these offices. But merchants often have an interest in the filatures and in the offices.

The Japanese have created a Raw Silk Exchange at Yokohama, where there is a standard type of silk, the "No. 1 Shinshin filature".

The procedure for export is the same as in China. Foreigners are obliged to apply to Japanese intermediaries, "commission merchants", who receive consignments of raw silk from the filatures. Commission agents sell to the exporters, who belong to the Association of Foreign Raw and Waste Silk Merchants of Yokohama, which in 1922 included :

- 10 Japanese
- 8 French
- 5 Swiss
- 3 Italian
- 2 English
- 1 American

The Japanese firms are a great financial force. In 1921-22, one of these firms sold 80,000 bales, *i.e.* 4,800,000 kilos, which, at an average price of 250 francs, represents a turnover of 1,200,000,000 francs, or £16,400,000 or \$75,000,000.

The silk trade is often conducted on principles calling for a high standard of honourable dealing. For instance, at Lyons, the methods of sale are as simple as the methods of purchase throughout the world are complicated. Business is done by word of mouth. The merchant writes the order on a counterfoil note-book, and often remits the sale note several days afterwards, without requiring an acknowledgment. The vast amount of business in connection with the silk trade obviously cannot be transacted without the help of the banks.

Purchases are made in the Far East by means of drafts. As transactions are effected in the currency of the country, the local banks act for the importers and supply the necessary sums against drafts on the foreign firms. Each draft is accompanied by two documents of guarantee — the shipping company's bill of lading and the maritime insurance certificate. The silk is thus carried for the account of the bank which has advanced the money.

There are many kinds of banks in the Far East. The chief are :

For France, La Banque industrielle de Chine and la Banque d'Indo-Chine ;
For England, the Hong-Kong and Shanghai Banking Corporation; and
For Japan, the Yokohama Specie Bank.

The drafts are presented to the importers, who, on payment of the sums due, receive the bills of lading and take delivery of the goods from the shipping companies. The European banks hold the silk on deposit until the drafts are paid, but authorise delivery against advances which, before 1914, used to amount to 75 per cent of the value of the goods but are now reduced to 50 per cent.

The conditioning of silk, which is a costly raw material, is, as we have said, a delicate operation, generally carried out by a public institution known as a conditioning house. As raw silk readily absorbs moisture, it is put through a process

of desiccation, and to the resultant weight 11 per cent is added, which is considered the normal coefficient of humidity. The density of the silk is measured by an operation called "titrage", which consists of weighing a length of 450 metres of silk and estimating its bulk in "deniers" of 5 centigrammes. The determination of the titre allows for 15 per cent of elasticity in the thread.

Insurance amounts to a large figure in transactions in silk. It varied from $\frac{1}{4}$ to $\frac{1}{2}$ per cent before 1914. During the war, it reached 10 per cent and has now fallen to from 0.30 to 0.35 per cent.

Orders are generally transmitted by cable.

6. SITUATION OF THE WORLD'S SILK INDUSTRIES.

From the preceding statements it will be inferred that, generally speaking, the silk industry is passing through a period of activity and prosperity. We have seen that the world production of natural and artificial silk is constantly increasing. But consumption is increasing with equal rapidity, and the use of silk is extending in so many different directions that during 1925 the world market was able to absorb the enormous quantity of natural and artificial silk — 123 million kilos (not including the domestic consumption of China and Japan). A striking comparison can be made by going back 50 years. For the period 1871-1875, the average annual production of natural silk was 9,546,000 kilos; artificial silk was unknown. Increase in production, and consequently in consumption, has been in the ratio 1 : 13 $\frac{1}{2}$.

The United States annually consumes almost the entire Japanese output of natural silk. The proportion was 92 per cent in 1923-24 and 95 per cent in 1924-25. By adding silk from other sources (principally from Italy and China), we obtain the figure of 29 million kilos (63,764,361 lbs). The United States consume all the artificial silk that they produce, and in 1925 even imported more than 2 million kilos of that textile. It may be estimated that American factories consume 56 million kilos of natural silk (excluding schappe) and of artificial silk, which is 45 per cent of the world production.

In addition to the fabrics thus produced there are :

1. Those manufactured from schappe thread — 5,000,000 kilos produced in the country and 626,000 kilos imported ;
2. Those imported from abroad (1,243,000 kilos).

These figures give an idea of the purchasing power of the American consumer and explain why the United States predominates in the silk industry.

Lyons, which was formerly the principal market for this textile, has had to give place to New York, and has now to rest satisfied with the rank of chief European market.

Consumption in other countries, though it has not advanced at the same rate as in America, has nevertheless increased appreciably. Silk is in demand

everywhere, and is becoming more popular every day not only for dresses, which have never been so luxurious, but also for underclothing, where it is tending to replace linen and cotton.

Silk is also being used in the men's underclothing industry.

Silk fabrics are being bought more and more by all classes ; owing to their high price, they were originally only within the reach of a small number of purchasers ; they are now increasingly in demand, more particularly since it has become possible to mix silk with less expensive textiles (cotton, wool, artificial silk, etc.), thus producing materials which are within the reach of even persons of limited means. Yet another factor must be taken into consideration : the hand loom, with its slow and toilsome processes, has gradually been replaced by power looms working at high speed. This has considerably reduced the cost of the labour component in the production costs.

There is yet another factor which explains the popularity of silk. Silk is intrinsically an expensive raw material, but its price has been less affected than that of the other great textiles, cotton and wool, by the economic upheavals consequent upon the war.

The Institute for the study of the economic situation (Institut für Konjunkturforschung), which has been at work since the beginning of 1926 in Berlin, has compared the world production of the chief raw materials before and after the war (1913 and 1924).

Any figures given can only be rough approximations, but it may be interesting to mention some of the data with regard to textiles. The calculation of the average price per ton shows the following increases :

	Percentage of increase in prices in 1924 as compared with 1913 (basis of 100).
Textiles in general	197
Wool	193.9
Cotton	207.5
Silk.	169.8

The gold value of silk has not increased to the same extent. Silk was worth 48-50 francs per kilo in 1913 ; the average price *in gold* was 73 francs in 1924 and 75 francs in 1925 and 1926.

The rise would therefore be only 50 per cent, equal to or even below the increase in the wholesale prices in the United States.

In any case, it is proof that silk is a cheaper material — all conditions being equal — than cotton and wool.

As regards artificial silk, one of the chief aims of producers has been to guard as far as possible against movements in price due to fluctuations in the exchanges. In this they have been perfectly successful. For instance, in France, in spite of the violent rise and fall in foreign currencies during 1923, 1924 and 1925, the prices of artificial silk in francs remained practically the same. This steadiness in price, by enabling manufacturers to make contracts in advance without incurring

undue risk, has undoubtedly contributed to the success of the new textile, at all events in countries with unstable currencies.

Silk manufacturers feel the immediate and direct consequences of all exchange fluctuations. As they deal in a commodity which finds its principal market in the United States, a country with a gold currency, and are obliged to pay for their purchases in the East in yen or in pounds sterling — currencies which are equal or very close to the gold parity rate — they suffer severely from the instability of the exchanges, which renders credit operations risky or even impossible. French manufacturers and dealers engaged in the production or trade of silk thread and fabric are therefore unanimous in hoping that the currency may be stabilised as soon as possible, because the development, and even the continued existence, of their industry depend upon it.

China and Japan, which are the principal producing countries, sell to the United States, France, Italy, Germany and Switzerland, and buy manufactured fabrics from these countries.

The United States, in addition to the raw materials obtained from the East and from Italy, buys fabrics in France, Italy and Switzerland. Italy sells raw material to the United States, France, and Switzerland, and exports her fabrics to these countries and to England, Egypt, South America, etc. Switzerland buys in Italy and in the East, and sells her fabrics in England and a number of other countries. France buys her silk in the East, in Italy, in the Levant, and exports her fabrics throughout the world, chiefly to Great Britain, the United States, South America, Belgium, Australia, etc. These are only a few examples to show how far the activity of the trade in silk and silk goods depends upon unimpeded international relations.

Since the war, obstacles have been put in the way of the industry on all sides, and these have greatly increased the difficulties of silk merchants. The number of Customs barriers has been multiplied, duties have been increased, and at the same time Governments have adopted measures of prohibition, quota systems, etc. This economic nationalism, which certain countries have pushed to extremes, is a continual source of dispute, and fosters distrust between nations.

Without going so far as to suggest the chimerical solution of economic equality, we may at least hope that all nations will resolutely aim at a reasonable and moderate protectionist policy, adapted to individual needs by means of commercial treaties entered into for a long term of years.

In a report on the silk industry, special reference must be made to the attitude taken up by two nations whose importance cannot be over-estimated and who are the greatest consumers of silk fabrics, namely, the United States and Great Britain.

In the United States the regime of high protection imposed by the Fordney tariff, which has now been in force for many years, has imposed very heavy duties on silk goods, amounting to from 55 to 90 per cent *ad valorem*. The Americans have thus erected a veritable wall round their country. The only goods which can effect an entrance are the luxury fabrics which the American industry cannot yet produce, and for which wealthy customers are willing to pay the highest prices.

But manufacturers of standard piece goods, which constitute the main output of the silk factories, have had to give up the idea of finding a market in the United States. American manufacturers, in fact, enjoy complete protection.

Since July 1925, England in turn has placed heavy duties on silk and silk fabrics. These are described as duties for revenue purposes, and theoretically they are only imposed on the fabric as being an article of luxury ; in reality, they give protection to local manufacturers, who receive drawbacks on export and who make no attempt to conceal their satisfaction with the new system.

Duties are very high, amounting to 7s. 3d. per lb. on pure silk fabrics, *i.e.* nearly 20 per cent of the value, and 33 ¹/₃ per cent *ad valorem* on made-up goods.

England is the chief market for the European silk trade, and the new state of affairs has naturally had serious consequences, which are seen in a falling-off in business.

7. MEASURES TAKEN BY THE VARIOUS STATES FOR THE PROMOTION OF THE SILK INDUSTRY.

A notable fact which emerges from any consideration of the vicissitudes of the silk industry throughout the centuries in the various countries that have gradually come to engage in it is the constant assistance of the Governments in promoting the industry.

Whereas most of the other human industries progress and become perfected, and increase and improve their products under the encouragement of private initiative alone, a feature of the history of sericulture and of the silk industry is the continual intervention of the authorities, but for whose help the industry might be destined to fall into inevitable decay. The reasons for this are inherent in the very nature of the industry, since success and profits are bound up with a comprehensive general study of factors of a most varied, obscure and complex character, which must all be maintained at a high level, if the quality and quantity of the product are to be preserved and the industry not to be abandoned.

Of all these factors, the most important is that of raw material, in this case in the form of a particularly delicate living organism and dependent in the last resort on human labour, which is supplied by the social classes least fitted to assess the importance of all the remaining factors.

Hence, in countries where sericulture is in a flourishing condition, this state of affairs is due largely to the support of the authorities, to the continual care of all those bodies which have recently been created with the object of promoting agriculture by every possible means, to students, technical experts — in a word, to the leading elements in the nation. On the other hand, we find the industry declining where it remains entirely in the hands of the lower agricultural classes, who cannot grasp or take steps to ward off any danger that may threaten its future.

France. — In 1892 France instituted a special system of bounties for silkworm culture and silk manufacture, which was as follows :

Bonus of	0.60	frs.	for every kilo of cocoons.
„ „	400.00	„	for every basin constructed for reeling more than three threads.
„ „	400.00	„	for every “batteuse” (beating machine) (1 to every 2 basins).
„ „	400.00	„	for every accessory basin used.
„ „	400.00	„	for every basin reeling double threads.

It was calculated that, between the years 1892 and 1910, the State had paid about 60 million francs in bounties for sericulture and about 80 million francs in bounties for the silk industry, that is, 140 million francs in the space of nineteen years.

The system of bounties, subject to certain amendments, was always prolonged by Parliament at its expiry, and is still in force. In 1908, the law came up again for discussion and was again sanctioned, as amended, for a further period of twenty years, beginning on June 1st, 1909, and expiring on May 31st, 1929. The results, however, were not particularly successful, as the cocoon harvest, except in the year 1920, when it reached three million kilos, has not risen during the last seven years above an average of about two and a-half millions per annum ; the number of basins (about 10,000 when the law came into force) rose to about 13,000 in 1896, but dropped again in 1906 to about 12,000 ; the output of silk dropped during these ten years from above 800,000 kilos to about 500,000 kilos per annum.

Italy. — A decree of December 16th, 1926, provided for the establishment in Italy of a National Sericultural Organisation, the first State measure for the encouragement of sericulture.

The Organisation proposes :

(1) To encourage the cultivation of the mulberry and the silkworm rearing in the mother-country and in the colonies, and to endeavour to spread the adoption of rational methods of fighting the diseases which attack mulberry trees and silk-worm cocoons ;

(2) To facilitate study, research, experiments in equipment intended to secure the progress of the silk industry in all its branches, even encouraging, where necessary, the creation of special courses of instruction ;

(3) To collect direct information regarding the world silk markets ;

(4) In general, to take all necessary steps in the interest of the national silk production.

The revenue of the Organisation is composed as follows :

(1) A single contribution of 2,000,000 lire, and an annual sum of 750,000 lire from the State ;

(2) An annual contribution of 8,000,000 lire, which will be paid by the agricultural, industrial and commercial classes interested in silk.

Austria. — From 1904 onwards Austria gave a bounty of 133 crowns for every reeling basin, this corresponding to a State contribution of about 1.20 lire

for every kilo of silk produced. The Trent Institute for Sericulture was granted a subsidy of 12,000 crowns per annum, and distributed large numbers of mulberry-trees free of charge ; in order to promote the extension of the silk-weaving industry in the country, it allowed it free hydraulic power and exempted it from taxation.

The Trentino filatures have now become part of the Italian industry. They suffered severe damage owing to the war, but now, thanks to the valiant efforts of certain Lombard industrialists, who owned them, they have been partly restored and fitted with the most modern equipment. An admirable spirit of patriotism was displayed by those who took steps to assure the maintenance of this industry in order to bring home to them the solicitude which Italy feels for the sister regions now restored to her.

The industry naturally feels the loss of the subsidy in aid of wages which it received from the Austrian Government.

Hungary. — In 1885 the State Silk Inspector of Szegzard took over the charge of cocoons and silk production. He introduced measures for the production and free distribution of silkworm eggs, and saw to the rearing, in ninety nurseries, of young mulberry-trees, which were also distributed free of charge. There were about 3,000 communes engaged in sericulture, and in each of them a reliable official was made responsible for the supervision of silkworm-rearing under the direction of the central authority. The latter succeeded in exercising effective control by means of a rational system of inspection.

The State Inspector appointed an inspector for every twenty or twenty-five communes, and placed an inspector-in-chief over every ten inspectors, so that this simple organisation ensured the regular execution of the instructions issued by the central body.

This naturally applied throughout the silkworm-rearing season. During the rest of the year the inspectors were engaged in propaganda, instruction, and the judicious distribution of young mulberry-trees.

New weaving-mills were exempted from taxation for fifteen years and were given an annual subsidy of from twenty to thirty thousand francs, according to size, during the first ten years.

This organisation was broken up by the war. It may, however, be useful to describe it, as no other European nation has created a State organisation so perfect in its conception or so strict and efficient in its working.

The Hungarian Government had taken over the work of sericulture and watched over it in every detail ; with wonderful intuition it had entrusted to the officials of this important State enterprise duties of the strictest — one might almost say disciplinary — character, and had entrusted the technical side to technical experts, thus obtaining results worthy of admiration and imitation in every silk-producing country.

The system conceived by the Hungarian Government represented an example of organisation, logic, and harmonious adjustment, which proved most convincing.

The cultivation of mulberry-trees was gradually introduced by means of the institution of schools for that sole purpose in more than 5,000 communes ;

instruction was given to silkworm-breeders, first by masters in the elementary schools and later by sericultural experts ; silkworm eggs were produced at the National Sericulture Institute, which procured eggs of the best stocks from Italy and China in order to strengthen and perfect the breeds, first acclimatising these imported stocks by cultivating them in the most suitable parts of Hungary and then distributing the eggs produced in the following year to sericulturists, after a triple process of microscopic inspection for purposes of selection ; silkworm culture was organised in the manner just described ; cocoons were purchased by Government agents at a guaranteed minimum price fixed before the harvest, but liable to be raised in the event of increase in cocoon prices on the foreign markets ; drying out and preserving were done with modern drying apparatus in national sericultural establishments built on the most up-to-date lines. All these measures, down to those applied to reeling, established with real breadth of vision, on an almost extravagant scale and with true and profound industrial judgment, constituted so sound and comprehensive a scheme as to form an ideal organisation for silk production.

The Hungarian Government did not itself manage the numerous filatures employing the thousands of basins which it owned (wonderful establishments fitted with the most up-to-date machinery, supplied by the firm Battaglia, of Luino), but leased them to the best French, Italian, Austrian and English firms, acting strictly on the principle that the State is not fitted and does not possess facilities for engaging with success in industry.

The filatures were leased on the following terms :

- (1) Exemption from taxation for fifteen years ;
- (2) Allowance of 50 cent. per dry cocoon. Cocoons were obtainable from the State Inspectorate of Sericulture at the average price for cocoons yielding 4 to 1 according to the official tests of the Milan Conditioning House quoted during the preceding month in the *Bollettino di Sericoltura* of the Associazione Serica Italiana (Milan) for first-grade Italian cocoons ;
- (3) Every acting filature undertook to take delivery of a twelfth part every month, or a sixth part every two months, of the annual quantity specified, namely, 60,000 kilos of dry cocoons per 120 basins ;
- (4) Payment was to be effected thirty days after delivery ;
- (5) The annual rent was fixed at 60 francs per basin.

The Hungarian Government had retained control of one filature (at Tolua) with the object of training a good native managing staff to be distributed subsequently among the other filatures.

The Government made it a rule, however, on opening a new filature, to introduce a certain number of skilled hands from Italy, for the instruction of the local operatives.

These last details further illustrate the brilliancy of an organisation which neglected no means of securing the utmost possible degree of perfection.

Turkey in Europe. — 250,000 mulberry-trees a year were distributed by the big Government nurseries in the districts of Adrianople, Salonika, etc. The Government instituted competitions for model rearing and kept a close watch over the quality of the eggs. It established a model spinning-mill at Guevgheli. At Broussa it created a Sericultural Institute under the Ottoman Public Debt Administration, to supervise the production of good silkworm eggs and to give technical and practical instruction in silkworm-rearing and silk-reeling.

Special inspectors were appointed to supervise rearing.

Other Balkan States (Bulgaria, Kingdom of the Serbs, Croats and Slovenes, Roumania, Greece). — These have adopted different measures, all of them sound, for the promotion of mulberry cultivation and silkworm-rearing.

Russia. — In addition to the high protective tariff on silks, the Government refitted and maintained the Sericultural School at Tiflis for the distribution of mulberry-trees and silkworm eggs and scientific instruction in silkworm-rearing.

To this institution is due the remarkable development of silkworm-rearing in the Caucasus and Turkestan, which before the war exported large quantities of white cocoons for our own and other markets.

Kashmir. — In India, again, it was the State that introduced and promoted sericulture and set up filatures.

China. — This is a silk country *par excellence*. The building of new filatures is encouraged by a bounty system. The State allows four francs for every kilo of silk reeled for the first four years and a bounty of three francs for the fifth year, two francs for the sixth, and one franc for the seventh.

Japan. — The important Japanese silkworm-rearing industry owes its creation and progress entirely to the Government and the Imperial House.

The inspiration came from the Imperial Family, the Empress herself and the Crown Princess encouraging sericulture by their direct influence and personal interest in special experiments in silkworm-rearing.

There are a great number of Government regulations regarding sericulture. All those relating to silk are the concern of the Department of Agriculture and Commerce, which has a special Central Silk Office.

The following Government silk institutions are under the personal direction of the Minister :

1. The Silk Conditioning House, which was established on April 1st, 1896, after the publication on July 3rd, 1895, of the Imperial Edict, in virtue of which the Minister for Agriculture instructed the Japanese Consul at Lyons to place orders there for all the material required.

The Yokohama Conditioning House, which was opened in 1896, is constituted on completely European lines.

2. "Sangioshikenjo" (Japanese Government Experimental Silk Station). In April 1884 the Japanese Government founded in Tokio, under the Ministry of Agriculture and Commerce, the first experimental sericultural station for research into pebrine. In 1886 the programme of research was considerably extended.

In March 1896 the station assumed the title of "Silk Institute", with a further enlargement of programme.

In 1905 seven stations were established — one Central Station (at Tokio), and six subordinate stations which keep closely in touch with it by means of a common programme of work, as set forth in Imperial Edict No. 913 of June 17th, 1914.

This programme covers chiefly: research and experiments on problems affecting sericulture and the silk industry, and production and distribution of silkworm eggs.

In addition to the Director, the staff of the Central Sericultural Experimental Station comprises twenty-four experts, forty-nine assistants, and thirteen clerks. The officials required for the subordinate branches are drawn from this staff.

The annual cost of the whole organisation is about 3,000,000 yen.

Silkworm eggs are distributed directly to the special sericultural institutes set up in each province by the prefectural authorities or the regional co-operative societies.

Since 1915 the Central Office and its branches have periodically arranged special practical courses on mulberry culture, silkworm-rearing, etc.

In addition to this official Government action, private enterprises are from time to time established and receive warm support from the public authorities.

One such enterprise is the Imperial Sericultural Association, which has its headquarters in Tokio and branches in the various prefectures, with agencies in every small district and village.

It consists of three sections: silkworm-rearing, reeling, and weaving, and numbers over 100,000 members. It is directed by representative Japanese statesmen, and has a very powerful moral and material backing.

8. STATISTICAL APPENDICES.

Italy.

*Prices of Cocoons and Silks at Milan*¹.

		Cocoons, classical	Raw silk, Italian, classical (Lire per kilo).	Classical organ- zines, Italian, Size 19-21
1913	(Average for the year) : . .	11	48	55
1920	"	97	412	443
1921	"	61	290	317
1922	"	82	369	432
1923	"	93	392	417
1924	"	77	337	383
1925 :	January	72	315	377
	February	72	317	375
	March	72	321	372

¹ From "Prospettive Economiche 1925", by Professor Mortara.

		Cocoons, classical	Raw silk Italian, classical (Lire per kilo).	Classical organ- zines, Italian, Size 19-21
1925 :	April	71	314	372
(Cont.)	May	70	317	365
	June	80	356	388
	July	90	398	437
	August	93	409	445
	September	90	401	435
	October	91	389	408
	November	89	381	408
	December	85	365	390

United States.

The Average Annual Prices per lb. on the New York Market for Raw Silk from Various Sources during the Fiscal Years 1915-16 to 1924-25.

Fiscal year	Italian Extra, [classical	Japan Best, No. 1.	China Extra, Three Dancers	B. Canton Filat. XX A. Cracks
Yearly average	\$	\$	\$	\$
1924-25	6.66	6.07	6.49	5.64
1923-24	8.11	7.11	8.24	7.10
1922-23	8.84	8.23	8.94	8.12
1921-22	7.30	6.57	7.41	6.82
1920-21	6.67	5.91	6.85	5.45
1919-20	12.53	11.22	12.49	9.35
1918-19	nominal	6.88	7.65	5.07½
1917-18	nominal	6.01	7.08	5.52
1916-17	6.26	5.09	5.95	4.28
1915-16	4.77	4.20	4.69	3.71

France.

*Average Prices of Silk at Lyons.
(Francs per kilo).*

Quality	1913	1921	1922	1923	1924	1925
<i>Raw :</i>						
France	48.50	187	230	333	300	330
Italy	49.—	179	237	336	310	340
Spain	48.—	182	224	334	295	325
Levant : Broussa	45.—	160	211	304	281	290
„ Syria	45.—	165	219	301	282	295
„ Greece, etc.	44.50	153	204	300	275	285
Japan, European filature	44.—	181	223	325	285	315
Canton, European filature	39.25	160	211	313	266	285
Kashmir	—	150	195	288	244	250
China : tsatlee filatures	32.—	164	179	228	190	220
„ yellow silks	21.75	—	104	148	129	155
„ tussore	8.50	60	85	102	101	95
„ tussore filature	16.75	110	120	160	150	145
„ European „	47.50	180	235	330	310	340

	1913	1921	1922	1923	1924	1925
<i>Prepared organzines and weft.</i>						
France	51.—	197	253	339	330	350
Italy	51.25	201	258	344	335	355
Syria and Broussa.	49.—	200	243	325	319	335
China	43.—	191	239	345	331	345
China tussore	15.—	112	135	168	170	171
Canton	44.50	179	238	325	299	320
Japan.	47.—	190	253	339	335	362
Kashmir.	—	180	224	313	275	290

China.

Average Prices of Silk at Shanghai during the Year 1924-25.

The average prices of silk on the Shanghai market during the year 1924-25 were approximately as follows :

Quality of silk.	Taels.
Tsatlee filatures and common new style	745
New style.	815
Steam filatures.	1,114
Minckew.	845
Tussore	540

SILK PRODUCTION OF THE WORLD.

	1924		1923		1922	
	Fresh cocoons kilos	Raw silk kilos	Fresh cocoons kilos	Raw silk kilos	Fresh cocoons kilos	Raw silk kilos
<i>Western Europe :</i>						
Italy	56,984,845	5,592,304	55,624,088	5,223,133	41,735,100	3,989,800
France	4,180,466	335,000	3,355,126	255,000	2,571,821	198,000
Spain.	1,118,300	95,000	871,000	70,000	910,000	77,000
Total	62,283,611	6,022,304	59,850,214	5,548,133	45,216,921	4,264,800
<i>Eastern Europe, Levant and Central Asia :</i>						
Bulgaria.	1,700,000	—	1,300,000	—	1,100,000	—
Kingdom of the Serbs, Croats and Slovenes.	490,000	—	375,699	—	242,268	—
Turkey	1,200,000	—	842,000	—	—	—
Total	3,390,000	900,000	2,517,699	760,000	1,342,268	700,000
<i>Total for Europe and Central Asia</i>	<i>65,673,611</i>	<i>6,922,304</i>	<i>62,367,913</i>	<i>6,308,133</i>	<i>46,559,189</i>	<i>4,964,800</i>

	1924-25		1923-24		1922-23	
	Raw (bales)	Silk kilos	Raw (bales)	Silk kilos	Raw (bales)	Silk kilos
Bring forward	—	6,922,304	—	6,308,133	—	4,964,800
<i>Far East</i> — China :						
Exports from Shanghai . .	79,695	4,781,700	74,275	4,456,500	79,781	4,786,860
Exports from Canton . . .	61,405	2,947,440	56,420	2,708,160	66,098	3,172,704
Total	141,100	7,729,140	130,695	7,164,660	145,879	7,959,564
Japan :						
Exports from Yokohama. .	408,719	24,523,140	288,035	17,282,100	314,051	18,843,060
India :						
Bengal		35,000		50,000		75,000
Kashmir.						
Indo-China.		45,000		40,000		25,000
Total for the Far East.	549,819	32,332,280	418,730	24,536,760	459,930	26,902,624
Grand Total.		39,254,584		30,844,893		31,867,424

(Statistical Office of the Italian Silk Association.)

The Istituto Centrale di Statistica (Rome) observes that periodical reports on the national production of cocoons and raw silk are prepared by the Ministry of National Economy on the basis of information supplied, obtained by the travelling instructors (*calledre ambulanti*) in agriculture. The results obtained are substantially less than those obtained by the Associazione Serica Italiana. They are as follows :

Italian Production of Cocoons.

(In millions of kilos.)

(Statistics of the Agricultural Statistical Office of the Ministry of National Economy.)

192232.6
192342.6
192449.9
192540.4

The figures of the Associazione Serica are worthy of attention as being sufficiently in accord with actual production. The defect in the official figures is due to the reticence of producers on the subject of their harvest.

SILK PRODUCTION OF THE WORLD DURING THE TEN YEARS 1913-25.
(In thousands of kilos.)

Year	Western Europe	Eastern Europe, Levant and Central Asia.	Far East	Total
1913	4,245	2,315	20,760	27,320
1914	4,840	1,785	15,595	22,220
1915	3,215	1,040	19,410	23,665
1916	4,070	1,040	22,015	27,125
1917	3,245	1,040	22,480	26,765
1918	3,165	1,040	21,335	25,540
1919	2,235	1,040	24,040	27,315
1920	3,655	750	16,440	20,845
1921	3,500	550	23,285	29,335
1922	4,264	700	26,950	31,867
1923	5,548	760	24,480	30,844
1924	6,022	900	32,332	39,254
1925	4,740	1,065	34,055	39,860

RAW AND THROWN SILK
CONDITIONED AT LYONS, SAINT ETIENNE, BASLE, ZURICH, CREFELD, ELBERFELD,
MILAN AND TURIN, FROM 1905 TO 1925.

	LYONS		ST. ETIENNE		BASLE		ZURICH	
	Raw	Thrown	Raw	Thrown	Raw	Thrown	Raw	Thrown
	kilos		kilos		kilos		kilos	
1905	4,787,115	2,223,032	260,626	691,565	148,908	398,202	384,310	1,135,297
1906	5,071,921	2,099,936	360,096	807,329	141,101	471,694	387,153	1,153,860
1907	5,258,161	2,395,455	279,543	733,091	170,969	501,591	344,458	1,126,565
1908	5,039,027	2,333,725	396,687	690,266	170,016	381,349	380,325	1,077,938
1909	5,477,320	2,413,785	527,929	824,771	176,831	546,170	362,942	1,131,216
1910	5,836,124	2,508,442	561,497	777,767	165,631	550,031	356,890	1,180,813
1911	5,083,068	2,507,377	535,873	755,928	162,293	531,602	354,118	1,049,347
1912	5,600,996	2,621,673	586,561	777,319	175,713	620,274	326,346	1,179,540
1913	6,073,664	2,340,677	579,520	928,788	144,525	674,996	365,584	1,045,952
1914	3,709,431	1,445,383	294,602	495,647	92,886	443,914	252,791	915,944
1915	2,850,510	908,183	324,874	440,546	173,770	647,427	507,029	1,243,073
1916	2,912,237	1,049,291	244,724	439,034	115,684	608,897	465,516	1,510,410
1917	3,186,483	1,153,844	222,130	376,466	22,288	590,067	77,200	1,225,068
1918	3,556,395	1,164,276	271,991	497,983	33,174	349,778	52,392	708,940
1919	4,893,413	1,509,550	313,696	768,550	75,605	418,349	197,278	820,456
1920	3,952,093	1,565,834	174,882	555,205	66,571	323,332	277,834	765,287
1921	3,080,372	875,696	118,461	338,192	52,771	344,987	241,948	670,983
1922	4,549,034	1,256,989	197,450	375,038	93,400	404,050	361,543	712,684
1923	3,747,621	961,236	94,515	293,119	37,042	266,315	222,727	508,459
1924	4,844,138	992,734	128,963	277,236	80,395	242,310	595,640	484,522
1925	5,294,039	1,265,202	99,625	329,951	58,497	139,227	420,633	417,229

	CREFELD		ELBERFELD		MILAN		TURIN	
	Raw	Thrown	Raw	Thrown	Raw	Thrown	Raw	Thrown
	kilos		kilos		kilos		kilos	
1905	86,223	431,182	170,102	448,191	6,588,335	2,850,820	264,146	340,608
1906	110,582	425,333	172,622	486,890	7,097,510	3,050,850	293,029	322,013
1907	107,417	355,086	168,306	495,375	7,195,935	2,905,530	301,068	263,865
1908	134,802	346,938	152,858	377,835	6,852,855	2,676,415	262,311	228,682
1909	155,838	409,402	217,945	497,089	7,722,485	2,681,895	274,202	257,944
1910	147,515	423,367	217,058	540,486	7,398,710	2,899,805	261,120	280,535
1911	137,391	366,254	221,028	483,023	6,012,780	2,858,250	249,722	264,912
1912	158,460	428,559	258,067	514,723	6,928,655	2,894,535	253,499	286,870
1913	193,589	386,893	273,670	487,773	6,734,805	2,762,180	249,963	250,348
1914	97,781	293,999	155,221	276,796	2,854,645	2,138,065	160,986	179,637
1915	99,327	238,660	71,376	248,491	6,061,945	2,497,120	189,216	218,397
1916	—	—	59,880	131,416	4,732,147	2,352,700	159,151	237,863
1917	—	—	58,107	49,509	4,226,199	3,057,057	125,158	240,063
1918	—	—	98,877	104,842	2,455,957	1,730,881	144,522	210,989
1919	83,436	137,880	38,893	52,444	5,087,896	2,198,068	297,939	270,408
1920	7,580	38,268	20,669	80,877	3,444,609	1,932,898	178,005	192,473
1921	17,898	70,495	21,987	101,423	4,572,912	1,427,144	293,494	192,240
1922	11,028	33,347	17,038	63,855	4,440,293	1,654,483	179,271	219,034
1923	5,466	11,052	25,554	47,021	4,831,719	1,010,882	213,989	159,783
1924	6,545	18,595	29,601	70,200	5,418,356	1,379,156	203,370	152,889
1925	7,521	19,889	36,099	55,928	6,165,157	1,432,069	157,673	124,135

THE GERMAN SILK INDUSTRY.

Transmitted by Dr. G. LAMMERS.

THE GERMANY SILK INDUSTRY.

I. STATEMENT OF THE CONDITIONS OF PRODUCTION AND SALE IN THE INDUSTRY IN RECENT YEARS.

The conditions of production in the German silk industry in recent years (1923 to 1925) were influenced on all sides by difficulties experienced as a result of the war. The devastating consequences of the inflation of the mark affected production just as much as the enormous burdens imposed on German industry, after the mark had been stabilised, in connection with currency reform measures and reparation obligations. Technical adaptation could only follow slowly on modern developments, because not only was the capital necessary to bring the machinery up-to-date not available as a result of inflation but also the acquisition of expensive machinery from abroad was prevented for a time by German import prohibitions.

The last few years were characterised by a very much diminished buying capacity on the part of the German population, whilst, on the other hand, the sale of German fabrics and ribbons in foreign markets was hampered by the Customs duties charged on German goods being higher than those applied to other competing countries. There is no doubt that in this respect a certain improvement has been effected in recent years, especially in 1925, by the conclusion of numerous commercial treaties, but the burdens on industry already mentioned made themselves particularly felt immediately after the currency had been stabilised. For this reason, tremendous efforts had to be made in regard to price, quality and design before German textiles gradually won their place in the export market.

In spite of these efforts, however, the industry was unable to work to anything like full capacity. As shown by the figures set out below, machinery has been permanently idle to a lesser or greater extent in recent years.

II. STATISTICS.

(a) *Number of looms available and number working, classed under fabrics and ribbons.*

	Fabric weaving	Ribbon weaving	Total
Number of looms existing in the year 1925	29,277	2,402	31,679
Number of looms working in the year 1925	22,443	4,230	26,673

(b) *Quantities produced in the years 1924 and 1925, classed under fabrics and ribbons, on a gold currency basis.*

	1924	1925
	Gold Marks	
Turnover: Fabric weaving	207,555,215	265,185,836
Ribbon weaving	57,607,708	59,291,693
Total	265,162,923	324,477,529

(c) *Number of workers employed, classed under fabrics and ribbons, male and female.*

	Fabric weaving	Ribbon weaving	Total
(1) In mills:			
Male workers	6,860	1,846	8,706
Female workers	17,302	2,298	19,600
(2) Home weavers.	1,544	3,513	5,057

(d) *Working hours.*

The hours of work are eight as a rule in silk-weaving concerns, but may be increased by one hour in special cases, by permission of the authorities.

(e) *Wages, classed under male and female workers.*

Amounts paid	Fabric weavers	Ribbon weavers Reichsmarks	Total
To factory workers	30,827,674	5,177,890	36,005,564
To home workers	1,569,036	6,357,556	7,926,592

(f) *Consumption of raw material by weight.*

	In fabric weaving	In ribbon weaving Kilos	Total
Raw silk, organzine, trame, crêpe and other natural silk.	1,213,235	142,141	1,355,376
Schappe.	342,616	9,762	352,378
Artificial silk	1,394,798	420,929	1,815,727
Cotton	1,429,663	630,240	2,059,903
Wool	422,628	571	423,199
Other material.	19,251	5,157	24,408

(g) *Customs tariff, schedule and rates.*

Customs duties are levied in Germany on silk fabrics and ribbon by weight.

(h) *Imports and exports in the years 1924 and 1925.*

	1924	1925
	Reichsmarks	
Exports.	76,945,000	92,426,000
Imports.	51,687,000	39,370,000

(i) *Consumption per capita of the population.*

The *per capita* consumption in the year 1925 was 4.35 marks in Germany.

III. INDUSTRIAL ORGANISATION.

The firms engaged in spinning silk fabrics belong to the Verband der Seidenstoff-Fabrikanten Deutschlands, with headquarters at Crefeld, which settles questions of delivery and payment common to all the members. A similar union exists for the firms weaving umbrella fabric, in the shape of the Vereinigung deutscher Schirmstoff-Fabrikanten, Crefeld, whilst the tie fabric and ribbon

weavers are banded together in price combines : Verband der Krawattenstoff-Fabrikanten, Crefeld, and Verband der Seidenbandindustrie Deutschland e.V. Barmen. These four unions in their turn form part of the Verein deutscher Seidenwebereien, Crefeld, which is entrusted with the care of the common interests on matters of economic policy. Over and above this, there is an organised union of the whole silk industry (silk throwing, schappe spinning and weaving) in the silk section of the Reichsverband der deutschen Industrie.

Annex.

SEWING SILK.

The German sewing-silk factories are the largest in the world ; they are principally concentrated in South Germany and employ about 5,000 persons. Their products consist of sewing silk made from natural and artificial silk and from schappe silk. Seventy per cent of the output was exported before the war ; to-day the proportion exported is 50 per cent. The exports go mainly to Sweden, the Netherlands, Czechoslovakia and Denmark, as well as to all European and extra-European countries, and amounted to :

	Quantity in kilos	Value in Reichsmarks
1913	257,300	7,460,000
1924	272,800	9,692,000
1925	198,600	9,215,000

Imports in 1925 amounted to about 1.7 million marks and came for the most part from Switzerland.

The industry is organised in a union called the "Verband deutscher Schappe-Nähseiden-Fabriken", Berlin.