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SILK AND SILK PRODUCTION ✓

IN ✓

SYRIA AND LEBANON ✓

by

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@@
@ To Mr. Norman Burns @
@ this thesis is respect- @
@ fully dedicated. @
@ JFK @
@@

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SILK PRODUCTION IN SYRIA AND
THE LEBANON

I. Survey of the Problem

- a. Introduction: The problem of improving the silk industry in Syria and the Lebanon is a vital one; for it means the utilization of much uncared-for lands and hence the creation of an important source of revenue for the people that will help them to raise their standard of living and to improve the economic conditions of the country. This in turn will check emmigration, a cause of serious deficiency in labor supply. When such industries as silk, which can be carried on profitably, are developed, then and only then will the prosperity of the country be assured, and the country will be carried a very long step on the direct way to economic, social, political development.

This thesis attempts to disclose the present situation of silk production in Syria, with recommendations for future improvements in methods of production and increasing of output.

- b. Chemical Composition:¹ Silk fibre consists of two parts, (1) a center or core, made of fibroin, and (2) a covering of silk albumen. Between these two parts lies a little waxy and

¹ L. Heeper--Silk, its Problem and Manufacture

coloring matter. Fibroin constitutes about 75% to 82% of the entire mass, and has a composition represented by the formula $C_{15}H_{23}N_5O_6$. It is analogous to horn and hair. Sericin, which has the formula $C_{12}H_{25}N_5O_8$; is a gelatinous body covering the fibers, and dissolves in warm soapy solutions and water.

Silk is a most perfect non-conductor of electricity, and in it's dry state the fibres frequently get so electrically excited as to seriously interfere with their working so that it becomes necessary to moisten them with glycerine and soapy solutions. The fibres are rod-like in appearance and have no markings if they are carefully examined under a microscope.

- c. Importance of Syrian Silk²: The Syrian silk has been considered for a long time an important item on the French Market. From it were worked the fine silken clothes in Lyon, and would have been looked upon with greater esteem, had the natives been more careful in working it. The quantity of the Syrian product before the War was about 2% of the World's product, the latter being about twenty five million kilos, valuing about 70 million pounds, of which the Syrian product was worth about £1400000.³ The Syrian product for the years before the War is shown by the following table.³

² L. Hooper, Silk, It's Problem and Manufacture, pp.1-4

³ G. Ducouso, L'Industrie de la Soie en Syrie et au Liban, 1913
p. 148

F. Shedid, La Soie au Liban
PERSONAL EXPERIENCE
M. Tabet, The silk in Syria

TABLE A. SHOWING THE SYRIAN PRODUCE OF SILK

<u>Year</u>	<u>Amount in kilos</u>
1901	410000
1902	424000
1903	424000
1904	453000
1905	480000
1906	452000
1907	517000
1908	474000
1909	472000
1910	527000
1911	524000

At present the Syrian silk holds it's prewar position but not to the same level. For when the World's product of silk for the years 1920 and 1921 was 20830000 and 26960000 kilos respectively³, the Syrian produce was for the same two years 800000 and 1100000 kilos going up to 3460000 in 1929.

The silk industry is , however, very important to Syria. The sericulture was before the War the most important agricultural industry in the country. This was introduced into Syria shortly after the year 552 A.D. by Justinian, emperor of the Byzantians. It took root quickly in Beirut, Homs, and Hama, where it flourished and spread. The Byzantians, seeing

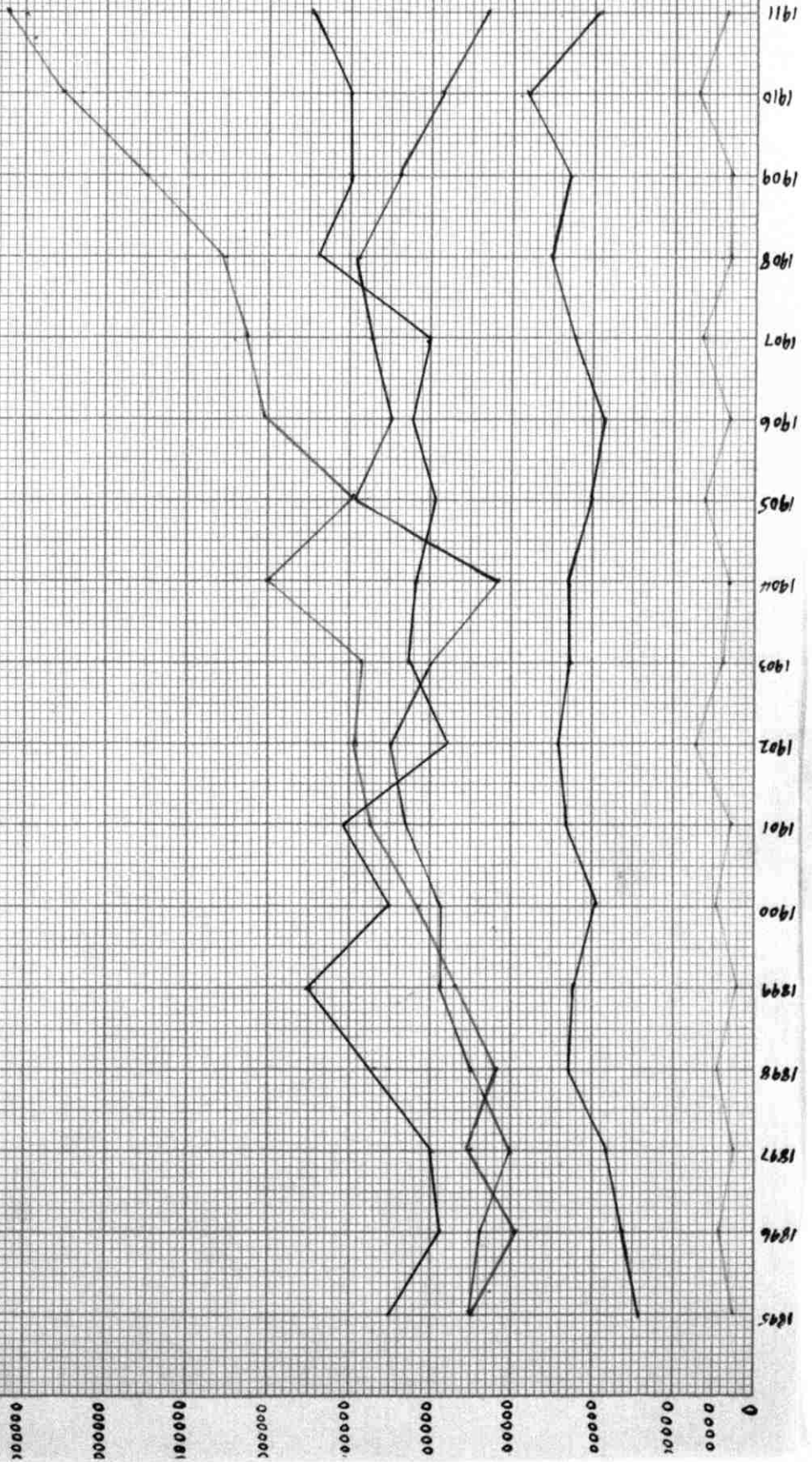
³ ~~Sarruf~~ ~~Zaidan~~ S., Al Muktataf, vol. 63, (1923), p. 74

Fig. I

Chart showing the production of Silk of five different Countries for many years

Japan
Syria
China
Italy
Canton

each big square horizontally represents a year. Each square vertically represents one million kilos.



this, taxed the industry very heavily and made the dyeing and weaving of silk a government monopoly. This, however, did much harm to the industry and in 633 at the time of the Arab invasion, the only factories were those of Beirut, Sidon, and Antioch.

The Arabs gave a great impulsion to the sericulture and in 665 MO'AWWYA founded a silk weaving factory in his palace in Damascus that he might have some of the highly prized Damascus cloth for himself and for use in diplomatic presents to neighboring potentates.⁴ In the 8th and 9th centuries, Tyre and Aleppo exported much silk to Europe.

In the 15th century raw silk in the form of threads and cocoons began to be exported to Europe, mainly to France. In 1535 a treaty was signed, giving France the monopoly of the European trade in the Levant.⁵ The most important item was silk cocoons and French merchants were distributed in all the principal costs of Syria and Palestine, with their headquarters at Sidon, loading about twenty boats each year.

Towards the end of the 18th century a retrograde movement set in because much of the Syrian cocoons were exported in their raw form, and matters improved only after the middle of the nineteenth century. During the first decade of the twentieth century, the industry grew to unheard of proportions only to be wrecked by the World War.

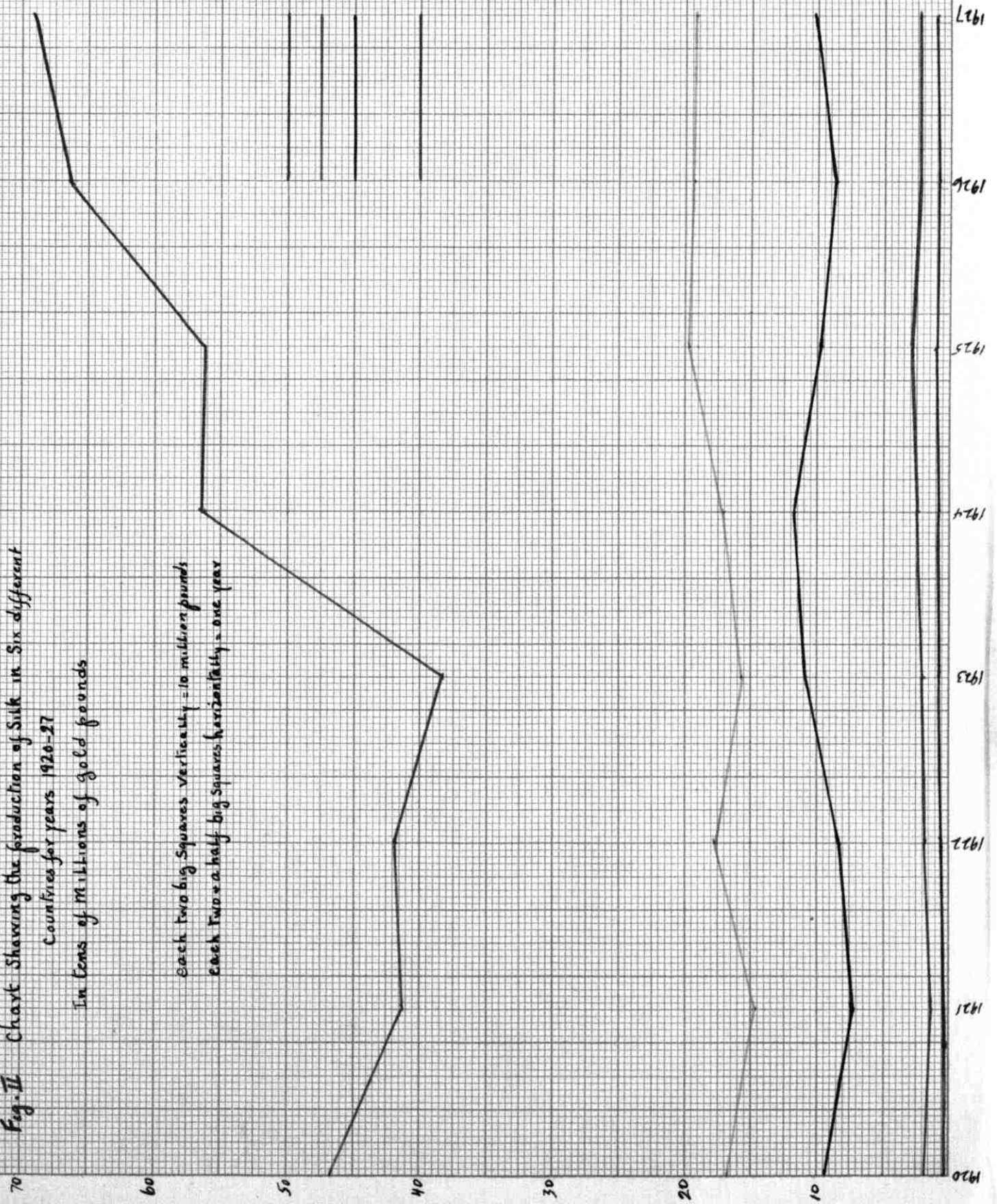
Sericulture still remains the largest industry of the

⁴Gaston Ducouso, l'Industrie de la Soie en SYRIE et Liban; p. 30
⁵ibid, p. 51.

Fig. II Chart Showing the production of Silk in Six different Countries for years 1920-27
 In tons of millions of gold pounds

Each two big squares vertically = 10 million pounds
 Each two a half big squares horizontally = one year

Japan
 China
 Italy
 Levant
 Syria



region to which the natives have adapted themselves for a long time. At present the industry is regaining foothold in the country rapidly under the control of the present government, though in the year 1928 the total crop was only slightly more than half of what it was in 1910. The causes for this decline are probably the research for a higher standard of living which enforces the peasants to preposses advantageous and more profitable work than the breeding of silk-worms⁴. Another cause for this diminish was partly due to the destruction of a considerable numbers of mulberry trees during the World War, and partly due to lack of labor. This latter reason seems the principal one. Indeed the standard of living in the Lebanon was maintained after the war to a very high level so that the high^{er} priced silk no more supplied the fellahin with sufficient resources. To satisfy the need of his existence, the peasant of the mountains abandons his home for towns where he finds more advantageous work than the raising of silk-worms, or else to emmigrate to foreign countries. Other causes are want of capital and competition of Chinese silk on the French market because of its cheaper price.

⁴Just after the War a great change took place in Syria. People had a new idea of life because of the many hardships the experienced during the War. Many moved to cities where they thought they can get better means of living, looking at agricultural as a mean one. This in turn affected the silk industry, for they began to look at it as a minor source of revenue; so that only a small per cent of the inhabitants continued raising silk-worms.

d. Grains Used for Syrian Produce⁵: Until 1840 only one variety of grains was in use, namely the "Beledi". From that year onward new varieties were introduced and in that year a French company opened a spinning mill in Lebanon and its example was followed by others; thus creating a new demand for silk. As a result of such companies, great quantities of grains were needed each year, the demand increasing rapidly, and soon importation from France, Italy, and Egypt began to take place. After the year 1855, the European grains began to be diseased by "Muscandine" and "Flacherie"; and following that year, namely 1863-1865, more and more Japanese grains were imported.

In the year 1927 too many grains were imported and in the following spring, out of the 134 thousand boxes imported, only 115-120 thousand boxes were incubated in the country. The following table shows the imports of grain and source for the last four years in boxes of twenty five grams each.⁵

TABLE B. SHOWS SOURCE OF GRAINS USED IN SYRIA IN
BOXES OF TWENTY FIVE GRAMS EACH.

Country	1926	1927	1928	1929
France	81955	99138	108247	96105
Italy	510	821	854	740
Greece	4750	3515	1680	22034
Bulgaria	.....	1120	.....	.....
Lebanon	15013	15569	19861	25439
Antioch	6501	5623	3760	
TOTALS	108733	125786	134400	144318
		Exported to Persia		20294
				124024

⁵M. TABIT, The Silk Industry in Syria

G. DUCOUSSO, l'Industrie de Soie en Syrie et au Liban

Of the many grains which are imported from the above mentioned countries, two kinds of cocoons^{are raised} which are different in form and bulk. Some are ovale and convex (bulged), resistant to touch, and the others, which present near the center a tiny depression, are softer and less voluminous. The greatest number of the Lebanese cocoons are of a beautiful pale-gold color; while the smaller number which is less sought for, is of whitish snow color. The yellow cocoons are products of the French grains while the white cocoons are from the Italian seeds.

e. Uses of Syrian Silk⁶: At present a very small per cent of Syrian silk is used in the country. The great part of it, about 85% of the cocoons produced ~~w~~^are turned into raw silk and sent to France and Italy, while the remaining 15% are worked in Damascus, Homs, and Hama. This portion worked in the country is the inferior quality. Works consist of "crèp maroquin", "crèp de ohine", and "crèp georgette". Other works are shirts, neckties, slippers (in Zouk in the Lebanon), kafiés, chales, and many other kinds of works which are either used by the natives or exported to neighboring countries like Egypt, Palestine, Turkey, and Iraq.

f. SUMMARY: The following quotation from the "Handbook of Syria" gives a clear impression of the silk industry in Syria:

"A considerable part of the raw silk manufactured in Syria is spun in villages by means of spinning mills. But duly

⁶Interview with Mr. TOPOUSIAN, Contrôleur Séricicole
Interview with Mr. KHLAT, Ingenieur AGRICOLE

injured and inferior cocoons and the waist of the factories are available for these small spinners. The product is coarse and usually not good enough for export.....The first spinning factory was established in the Lebanon in 1840 by a Frenchman, M. Nicholas Portalis. In 1912 there were 194 such factories in Syria having 10866 pans. One hundred and fifty five with 8669 pans were in the Lebanon. The industry is said to employ 10000-12000 workers of whom five sixths are women and children.

Syrian silk is famed for it's elasticity and for the good results with which it can be dyed. It has also the advantage of coming early on the European Market. Faults of manufacture (unevenness and lumpiness) are common and the thread is allowed to absorb and retain too large a proportion of moisture."

II. Silk Production in Syria and Lebanon

a. Chief Producing Centers: Silk production in Syria and Lebanon has for many years adapted itself to the coastal plains and the slopes of the mountains of Lebanon where the mulberry trees flourish most, on account of good soil and favorable weather. The high mountains are barren lands where the mulberry tree can not grow and the weather does not favor the silk worm. The districts engaged in the production of silk in the Lebanon are⁷:

	<u>No. of Spinning Factories</u>	<u>Basins</u>
Beirut	9	483
Tripoky	6	325
Zahleh	1	12
Deir-el-Kamar	3	110
Sidon	...	...
Chouf	22	1276
Meten	56	1885

But according to government reports, both districts of Chouf and Meten prove to be the most important districts, in both, the quantity and the quality of the produce⁸. In 1927 when the total product of silk in the Lebanese Republic was 2000000 kilos of cocoons, the production of the different districts was as follows⁹:

⁷See Appendix, p. 84

⁸See p. 10 (top)

⁹Mr. Khlat with J. Kanan, (interview), December 11, 1929

	<u>Kilos of Cocoons</u>
Lebanon Proper	1070000
Lebanon of the South	210000
Lebanon of the North	620000
District of Beka'a	100000

And in the following year when the produce of Lebanon alone was 1800000 kilos, the production of the differernt districts was as follows¹⁰:

	<u>Kilos of Cocoons</u>
Lebanon Proper	960000
Lebanon of the South	224000
Lebanon of the South	493500
District of Beka'a	34100

In the state of Syria, the chief producing centers are those of Alexandretta and Antiock(2 spinning factories with 65 basins). In the year 1929 when the total product of Syria and the Lebanon was 3460000 kilos of cocoons¹¹, the combined product of these two centers was 580000 kilos¹², and the product of the independent state of Alouites, with it's capital Latakia, for the year 1929, was 434000 kilos of cocoons, of which 200000 kilos were worked into Arabic silk¹³.

Within the localities described above, the following places deserve special mention. For example Akkar in the North of Lebanon, some places in the neighborhood of Aleppo, and the

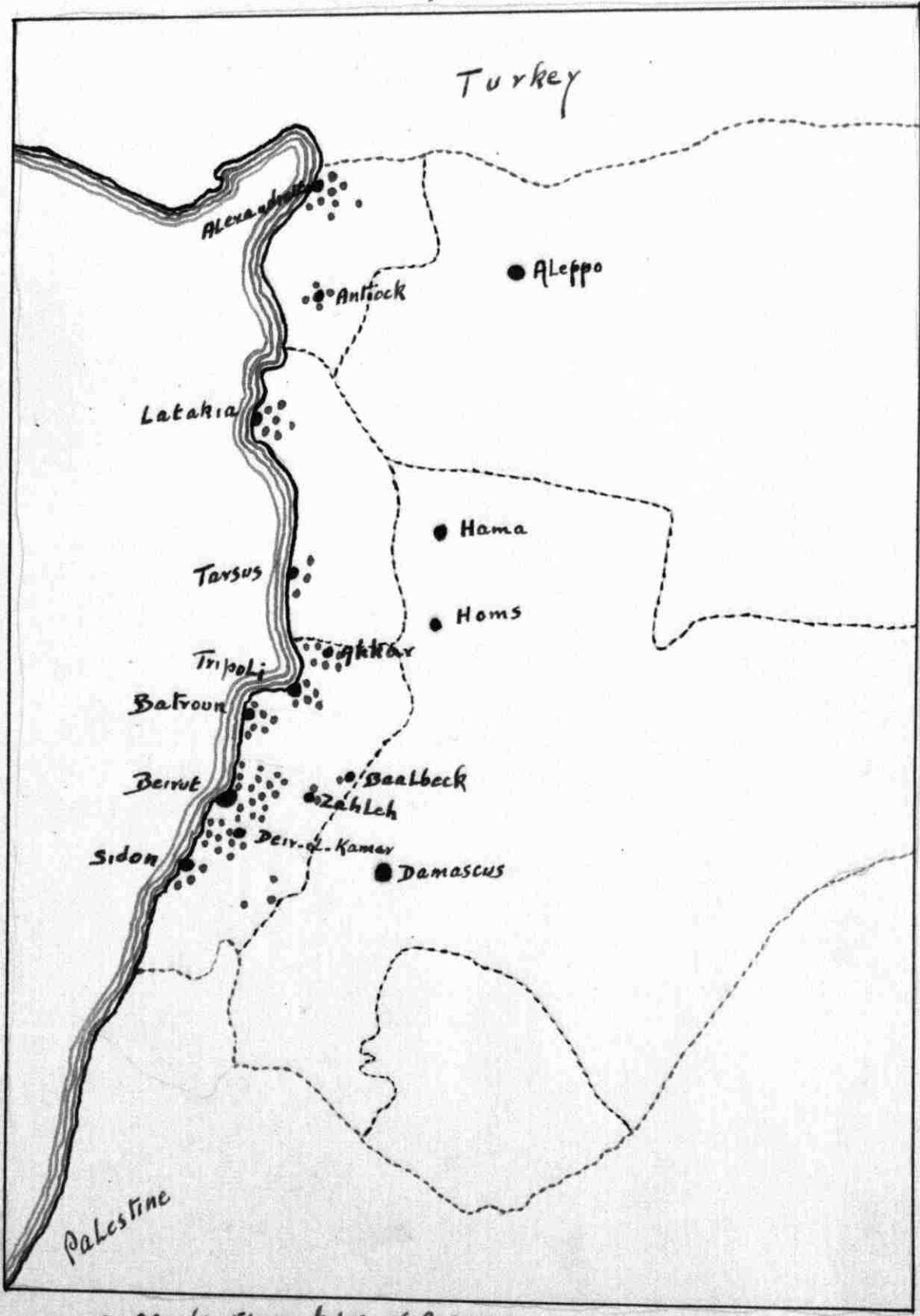
¹⁰Mr. Khlal to J. Kanan, (Government Report), Dec. 11, 1929

¹¹See Table I, p. 41

¹²"Silk Crop", Al Ahrar, October 1, 1929, p. 1

¹³ibid, p. 1

Fig. III. Map of Syria and Lebanon showing Chief Silk producing centers



• equals 51000 kilos of Cocoons

district of Marj-Uyun in the South of Lebanon. Among the cities famous for their silk may be mentioned Damour, a place in the Chouf District. On the accompanying map, showing the chief producing centers, we have not shown many places which engage in the silk industry for the fact that only a small portion of the cocoons they use in their product is raised in their district. Among these places may be mentioned Damascus, Homs, and Hama; cities which have engaged in the weaving of the product for hundreds of years. The districts of el-Batroun (7 factories with 360 basins), in the North of Lebanon is also important for the silk it raises, for the product, after it has been spun into raw silk, supplies the Zouk market, a village in Lebanon, for the fine silken works that are carried on there, a proportion of which is exported to foreign markets and the other part used for local consumption.

- b. Method of Production¹⁴: When the silk worm seeds are bought by the breeders for the coming silk season, they are emptied from the boxes into small bags of thin cloth that are divided into compartments, with the seeds divided equally in them. These are kept in cold places, usually uninhabited houses and churches, to prevent the seeds from hatching before the proper season comes when the mulberry tree begins to give it's leaves. When the proper season comes, in the latter part of April and the first part of May, differing with the different parts of the districts, the plains and the lower slopes beginning first, these seeds ~~are~~

¹⁴Personal Experience because I have seen how they do it and have done it myself.

are taken from where they have been kept during the winter, and are taken to a special place in the village or the neighboring one, where they are kept for five or six days, depending upon the temperature of the place. In that special room, the seeds are not exposed to cold at all but heating goes on day and night. When the seeds hatch, they are taken by the owner, upon the payment of a special charge, and put in an equally warm room, which contains scaffoldings and wooden trays. There the bags are opened and thin and fresh mulberry leaves are put on the worms for them to feed on. These worms stick to the leaves and so the breeders separate the leaves on the wooden trays, preventing much crowdedness. In that place they are kept for about fifteen days, being fed by thin small pieces of mulberry leaves, until they pupate for the first time. At the end of the fifteen days, these trays are moved to another place which is less warm than the previous two, and the silk worms are separated on wooden scaffoldings, after they have pupated the second time and have shown signs of the third stage. At that time they begin to increase their food, both in quantity and intervals, being fed three times in twenty four hours, and fire will no longer be kept. By that time the silk worms pupate for the fourth time and grow in size to a considerable extent. The breeders begin to feed them more and more, throwing the leaves to them in large quantities and feed them four times in twenty four hours. Meanwhile, the rearer will be preparing some branches of pines, heath, or moor, which they use for aiding the silk worms in finding suitable places where to spin their cocoons.

When the silk worms are fed for about forty days, they reach the period of transformation. At this period, about June 10, in order to help the production of cocoons, the natives who are occupied in this industry, place branches of heath or moor near the worms. The silk worms climb on the branches, find some favorable places, and spin around them a net-work of threads. With a sufficiently high temperature the cocoons are finished at the end of the third day. After being kept for about six or seven days untouched, the cocoons are cleansed from waste silk, and are bought from the rearers by some middle-men, who pack the cocoons in baskets or sacks and send them to the spinning factory.

After being sent to the spinning mill, the cocoons are put in a warm place, having a high temperature, where the larva is killed to prevent it from cutting it's way through the wall of the cocoons and spoiling it by cutting the threads. After this operation have been made, the cocoons will be ready for spinning.

Spinning of cocoons¹⁵ remains one of the principal Lebanese industries. The majority of the employees in the spinning mills are composed of women and young girls. The supply of labor is decreasing to an alarming extent being but three fourths as large as it was in 1914¹⁶. The operation of spinning includes the thrashing and spinning proper. Thrashing is accomplished by heating the cocoons in the water up to the temperature of 90° in special basins. Spinning itself is made by passing the purified cocoons made by thrashing in other basins in bundles of four

¹⁵ Spinning of new cocoons begin in July 1 and may continue to next July.

¹⁶ Faris Shadid, La SOIE au LIBAN? p. 5

to ten cocoons each. The spinner makes the bundles pass in a draw-plate, which reunites the threads and aggregates them. The process of thrashing and spinning, as described by Al-Muktataf, Vol. 27 is as follows:

"The cocoons are put in hot water which softens them and makes it easy to separate the threads. Then some of these threads are united together and are stuck to a wheel which turns with a great velocity. The cocoons, being still bubbling in the hot water, while the threads are being separated slowly. The thread from each cocoon is joined with other threads from other cocoons on the wheel until one single thick thread is formed. When these cocoons are spun, others are put into the hot water, and the process continues!"

The silk is spun into either one of the following kinds: 1. Silk on the Arabic Wheel--The cocoons spun on the Arabic wheel are of two kinds. The first consists of a third choice product which troubles the furnishers of a good quality of silk. The second consists of chiques cocoons for which the sericulturer does not pay much attention. The Arabic silk, after being picked up, furnishes five different kinds of thread: thin thread, very thin thread, moderate thread, thick thread, and very thick thread. The prewar annual product was from ten to eleven thousand okes¹⁷. Exports to Egypt of this silk was then considerable, but actually remarkable diminution comes from the heavy custom duties into Egypt.

¹⁷Gaston Doccusso, l'Industrie de SOIE en Syrie et au Liban; p. 146.

2. Silk Skandarani: The Skandarani silk is spun according to European methods. It is in fact the most important from the exporting point of view, varying in its quantity with the advantageous variations in the European market. Like the Arabic thread, the Skandarani is either of thin thread, very thin thread moderate thread, thick thread, and very thick thread¹⁸.

3. Silk Doupion: The doupion silk is the product of double spun cocoons in European basins. This kind of silk is being spun by all the factories which are adapted to the spinning of such a kind of silk. Prewar statistics show that Beirut was the chief market for this silk, the yearly sales amounting from 10000 to 12000 okes¹⁹.

These kinds of silk are imposed by their solid quality, their great power of dyeing absorption, and their great elasticity. But in general, due to insufficiently trained labor, the product of the factories is an uneven thread, thin in one place and lumpy in another--to the great disappointment and loss of weavers who use the Syrian thread.

In regard to the methods of production, one finds that the process of spinning and of even raising the product are carried on in a rather primitive way.

¹⁸The silk Skandarani is of the fineness of either 35/40 or 40/45. These two sizes are worked according to the demand for them.

¹⁹Gaston Ducouso, l'Industrie de Soie en Syrie et au Liban, p. 148

It is very hard indeed to get a certain rearer to follow a modern method because he does not believe in it, thinking that in the "Good Old Days" things were carried on better than today. Though the government is trying much to educate the people for raising the product, not much success has been met with and the rearer believes what he has been taught by his fathers is best.

In regard to spinning not much progress seems to have been accomplished, though here and there some improvements have been made in the way of spinning, and in some instances some modern machinery has been installed in factories in the Lebanon for the same purpose. There newly started two factories in Bhandoun in the Lebanon, in the year 1927-28, having modern ways for killing the crystallides, for spinning the silk, and for drying it²⁰. There are two other factories under construction in Ain-Himadah, Lebanon, with same modern means and facilities²¹.

To quote Leon Duran²² "The Syrian(Libanon)filatures have been engaged for years into reeling fine sizes(9/11, 10/12, 11/13 12/14) exclusively for Lyons manufacturers...In Syria there were about one hundred filatures before 1914. Thirty of them are still standing but are not working at all the time. During the War the filatures which had not been destroyed by the Turks were operated under the supervision of German business men but no attention was paid to the quality or size and it became a rule to reel a sort of 14/17, size of which ran from nine to twenty four."

²⁰Gedeon, B., Indicateur Libano Syrien, 1928-29, p. 47

²¹ibid, p. 47

²²Duran, L., Raw Silk, p. 88-89

c. Cost of Production: 1. To Rearers. The silk worm rearers in the country do not find it profitable to raise silk in the country. Their expenses are numerous; they have to plough the ground, sacrifice their time, pay the cost of seeds, and for the mulberry leaves, and when they come to sell their product, they find themselves left with a very narrow margin of profits. To make it clear, let us give an example: Let us suppose that a rearer is going to use two boxes of seeds of twenty five grams each, and the season for that year is going to be a fairly good one. He first pays for the boxes which cost £S 3. To raise the seeds, he needs about 16 loads of mulberry leaves (480 rottles), costing about £S 40, to which he has to add the cost of ploughing the earth, which amounts to £S 6. To this he has to add some minor expenses (ex. charge for hatching the seeds etc.) of £S 2.

These expenses amount to about £S 51, not allowing for the work of the breeder, which he uses with his family during the forty to forty two days needed for raising the cocoons. On the other hand, as returns, are mentioned the returns of the product--if fairly good gives £S 60, to which is added about £S 25 as returns from waste of pupa which is called "Jizzie". Add these returns and they amount to £S 85 of which the silk rearer has to pay his costs of £S 51, Leaving him £S 34 to cover the cost of his labor and that of his helpers for the forty to forty two days used for the raising of the product.²³

²³It is the practice that all the family works. The men supply the mulberry leaves and help in taking them from the stems, and the women feed the worms.

The following table summarizes what we have said:

TABLE C. SHOWING THE EXPENSES OF REARERS IN
RAISING THE RAW COCOONS²⁴

<u>Costs in Syrian Pounds</u>	"	<u>Returns in Syrian Pounds</u>
Mulberry leaves.....	40 "	Returns from Cocoons...60
Ploughing.....	6 "	Returns from Waiste....25
Cost of Seeds.....	3 "	
Other Costs.....	2 "	
Return to Cover labor	"	
of Owner and Helpers ²⁴	"	
	<u>85</u>	<u>85</u>

Let us suppose that if the rearer were to be employed in another kind of work, he would get total returns of £S30, at the rate of 75 Syrian piasters a day. Deduct these from his returns from the silk industry and it leaves him a profit of £S 4 over what he receives²⁵.

But if the crop proves to be bad for that year the raiser of silk is put at a critical situation because, he not only finds himself without any profits, but that he has to suffer a great loss. As I have experienced it myself, I give the following example: Incurring the same amount of expenses given above, namely £S 51, we had only a return of £S 28 to cover them, giving no

²⁴Personal Estimation based on Personal Experience

²⁵One man can care for one box of grains, if he works alone. But if he is helped by his children and wife, he can care for two. This what we have supposed and we have not allowed for the labor of these helpers, because they not usually employed in any other occupation.

allowances for the labor used. This is typical of every one when the crop fails, but when it is a fairly good one or an extra good one, then expenses could be met, leaving a very narrow margin of profit.

2. To Spinners: The cocoons are either bought directly from rearer or from middlemen. The average price of an oke of cocoons from the time it is bought from the rearer to the time it is ready to be turned into silk, the cost of manufacturing one kilo of raw silk, and the total cost until it is placed on the foreign market, are shown by the following three tables²⁶.

TABLE D. SHOWS THE TOTAL COST OF ONE OKE OF COCOONS
UNTIL IT IS READY TO BE SPUN

	<u>Syrian Piasters</u>
Cost of oke paid to rearer.....	100
Cost of delivery to factory.....	2.50
Commission of Middleman.....	2.50
Cost of killing crystallides.....	5
Cost of separating different kinds.....	1.50
Cost of packing silk fibre.....	0.75
Total cost of one oke.....	<u>112.25</u>

TABLE E. SHOWS THE COST OF SPINNING ONE KILO OF RAW
SILK IN A FACTORY OF FORTY BASINS.

	<u>Syrian Piast.</u>
40 women for spinning @ 50 Syrian Piasters.....	2000
8 " for connecting threads @ 50 ".....	400
20 " for boiling cocoons @ 30 ".....	600

²⁶"Saadeh REPORT in Silk Conference", Al Ahrar, Feb. 18, 1930, p. 2

Table E (continued)

	<u>Syrian Piaster</u>
4 women for cleaning @ 50 Syrian piasters....	200
1 " for twisting fibres @ 30 "	30
3 men supervisors @ 100 " "	300
1 Driver @ 100 " "	100
1 mechanic @ 100 " "	100
2 men servants @ 50 " "	100
	<hr/>
	3830
Loss by waste.....	76
	<hr/>
Cost of running the factory of 40 basins.....	3906
(for one day spinning 20 kilos of silk)	

TABLE F. SHOWS TOTAL COST OF ONE KILO OF SILK UNTIL
DISPOSED OF IN FOREIGN MARKET

	<u>Syrian Piasters</u>
Cost of cocoons (8½ okes) @ 112.25.....	954
Cost of production only.....	270
Cost of carrying one kilo to Beirut.....	5
Interest on money invested in production of one kilo for 6 months @ 5% (exclusive of rent).	47
Commission on sale of one kilo.....	25
Insurance on export.....	4
Freight.....	10
Insurance of factory.....	6
Depreciation on machinery.....	20
	<hr/>
Total cost of one kilo.....	1341

In table D on page 19, we have shown the cost of one oke of cocoons from the time it is bought to the time it is ready to be spun, to be 112.25 Syrian Piasters. We have supposed also that a silk dealer has a factory having 40 basins, giving a daily product of 20 kilograms of silk; 500 grams being the turnover of one single woman. We have shown by table E on page 19-20 the total cost of running the factory for a day and producing 20 kilograms of silk to be 3906 Syrian Piasters. Dividing the total cost by the daily output, the quotient will be 196 Syrian Piaster, the cost of production of each kilo of silk. Add to this miscellaneous expenses of 75 Syrian Piasters and the final cost of production of one kilo will amount to 270 Syrian Piasters.

These, however, are not the only costs for the product has to be delivered to the foreign market where it is disposed of. To these is ^{added} the depreciation on the machinery and many other expenses which we have shown on page 20, and have shown the total cost of the one kilo to be 1341 Syrian Piasters, exclusive of rent, in case the factory is rented.

Since our product depends upon the foreign market for its consumption, namely that of Lyon mainly and of Italy and the United States partly, naturally the profit depends upon whether the demand for our product is normal or whether it is not intensive because of the competition of other producing countries, namely, China and Japan.

Under normal demand, the kilo of our silk sells on the

foreign market for about Pr 3, making a total of £S 16.50, of which is deducted the total cost of one kilo, which amounts to £S 13.41, leaving a return of £S 3.09 which is to compensate the producer for his own work and to leave him a little of profits.

To follow our example of table E on pages 19-20, a factory producing twenty (20)kilos of silk, selling each at a net return of £S 3.09 makes a daily profit of £S 61.80 . But ~~if~~ the demand for our product is not normal, the profits are cut down to a narrower margin, sometimes leaving very little profit to compensate the producer for his own work, thus not appealing to him to run his silk factory the coming year.

In our example we have also taken for granted that the producer owns the factory, and have not allowed, in our example for it's rental value. But where the producer rents the factory, then we have to allow for the rent he pays; which in turn eats up a great deal of his profits, and the figures will show a lesser amount than we have shown in our illustration.

To summarize, in general, both the silk worm rearer and the silk spinner and exporter do not find it very profitable, and in some cases it hardly covers the expenses, to practice the profession of silk production.

III. Consumption of Syrian Silk

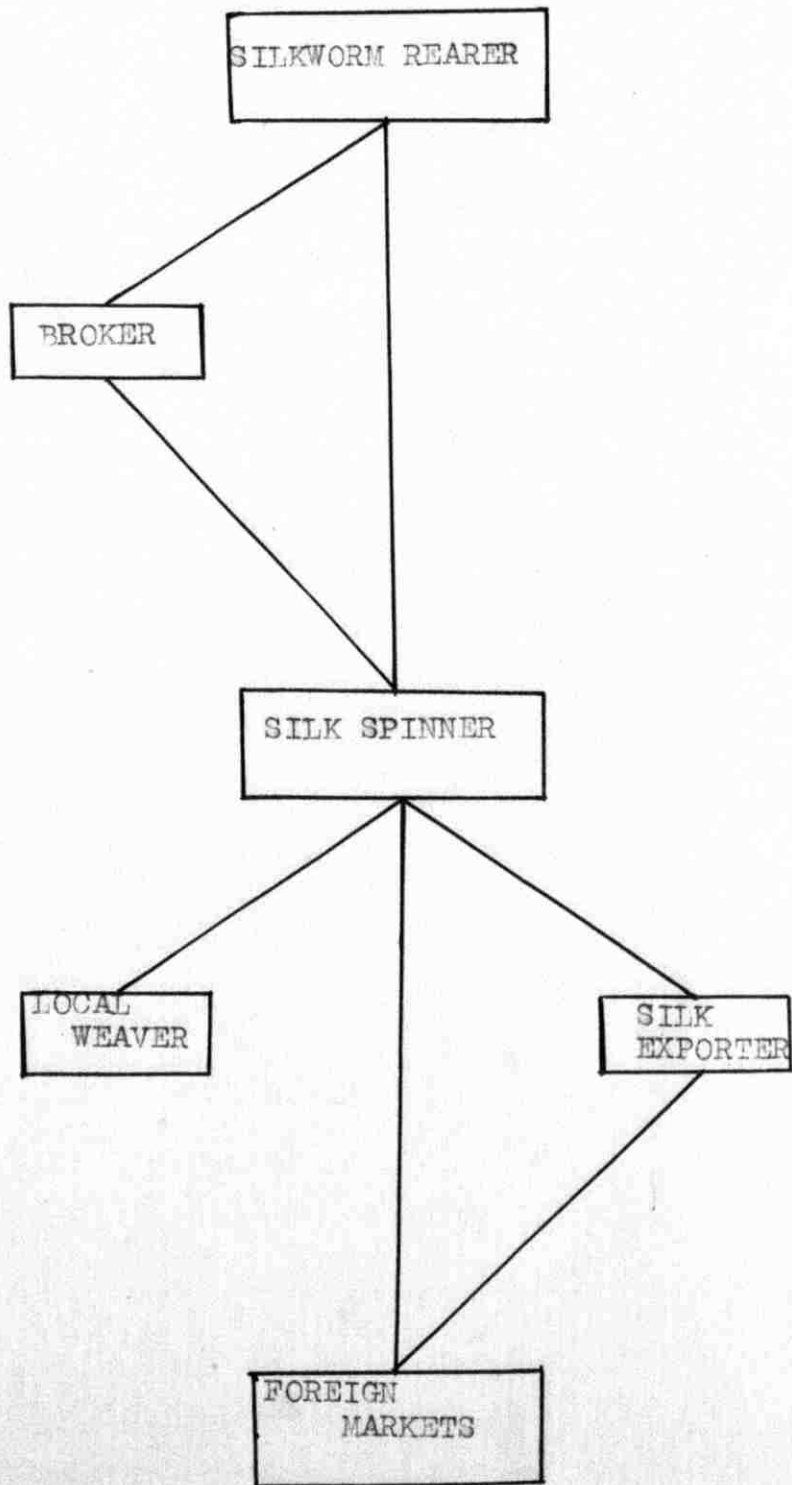
Under consumption of the Syrian silk we shall discuss the process of the marketing of the product, the locality of it's consumption(local and foreign), the uses of the Syrian silk in countries where it is used, and we shall give some statistics of export.

- a. Marketing²⁷: The process of marketing in Syria has not been given much attention, and seems not to have attracted many to it, because of the fact that we do not have organized companies, who have specialized along this line, to forward the products of the country to markets where they are best sought for. This weakness manifests itself most in the silk industry.

The product, while it is still in the form of cocoons, is bought from the rearers, either by factory owners themselves, or is bought for them by middlemen on commission. These middlemen, in most cases, do not know much about marketing principles. They know nothing about the art of packing, of the best means of transporting the product, neither do they know much about prices and their laws. Their purpose is to buy much, for their aim is to make profits from the commission they charge, and do not care about the economies of buying. So it is not rare at all to find

²⁷Data for this section on the marketing of the Syrian product is based on personal experience. This is helped greatly by the fact that I had personal dealings in the industry.

Fig. IV. Marketing Process in Syria



two or three of these middlemen in intense competition for the purchase of cocoons. One starts by paying a certain amount per oke, then the second pays a little bit more than the first, the third pays more than the second, and the first in turn pays more than the third, so it goes until the one who pays most buys the cocoons. In some cases, these middlemen buy for their principals so that they can not pay more than they are instructed to do, for the maximum price to be paid is determined for them. In other cases, they buy on their own account, so that they may be attempted to pay a little bit more, but of course, restricted by the price that the spinners will be willing to pay to them.

Suppose the product has been bought from the rearer and wants to be taken to the factory. The most common way is to put the cocoons in bags or in big baskets and load them on a mule, which carries them to the factory. The former way of putting them into bags is the most common way. When the cocoons have been weighed, in the place where they have been raised, price is paid in cash at the time of loading, but in very rare cases, credit of a day or two is allowed to the buyer, when he is a near friend. It is also bought by paying a small portion of the price, when they have come to an agreement--buyer and seller in form of earnest. When such earnest is made, the cocoons become the property of the buyer, the title being passed to him.

There is, however, a great change taking place in the methods of transporting the cocoons to the factory. With the in-

roduction of automobiles, means of transportation became easier, and the automobiles are being used to a great extent, in places where roads are good. There are no special companies doing this work, but it is chiefly done by private individuals who have either an old Ford passenger car, or an old Chevrolet truck to convey the product to where it is to be spun.

The cocoons have been taken to the factory and have been spun into silk threads. After they have been spun and cleansed, they are packed into bales of different size and form, each bale weighing (100) kilos. They are properly packed and wrapped in very thick cloth to help it's safe transportation without any injury or damage caused to the goods. These bales are well shaped, and when the factory has spun enough to make a bale, this bale is packed and transported to Beirut, the chief silk exporting port in Syria. To be conveyed to Beirut, the spinner himself arranges for that on his own account and it is either sent by a truck, by a carriage typical of Syria called "tumbur", which is dragged by a mule, or is conveyed on mule-back. But nowadays, the first mean of transportation is coming to be used more and more.

The silk now has reached Beirut and is to be exported. For the period prior to its exportation, it is stored either in the custom house or in the stores of one or two of silk exporting dealers, whose business is carried on a comparatively large scale. The silk, to be exported to the foreign market, is either sold by the spinner himself on his own account, directly to fo-

reign localities or sold to the exporting middlemen, whose business is to buy from spinners and sell outside the country, on his own account, and in some cases sell for commission on account of the spinner. But of these three ways the second is the most common, namely the process of buying from the spinner and selling on the account of the middleman, the direct method of exporting is the least method used. It must be remembered also, that in Syria there exist no such things as silk exporting companies or corporations, using the best methods of marketing and delivering the product at the most favorable markets and at the most favorable time. Most of the sales are made during the Spring and the beginning of summer, as the silk season begins, taking no account of the laws of economics, forwarding when supply from the other parts of the world is great, not caring to store the product for times when they can get most returns for it. Indeed the lack of such cooperative works is to the detriment of the producers themselves. Manufacturers and producers in the other parts of the world have realized the importance of such cooperations and have united for the common welfare of all. But in our country single enterprises prevail and the spirit of cooperation has not yet been given full consideration, all exportation being effected under competitive conditions. Because of the lack of such a system, the exporters lose even in extending credit to the buyers of our product. Credit of three months is the common custom prevailing in exporting the product and the exporter has to finance the transaction himself for that period. Such losses, no doubt are

the result of a bad unsystematized marketing process. It is hoped that because of the efforts that are made by the government, not much time will pass when the exporters, not of silk alone, but of all products, will become to realize the pressing need ~~of~~ for corporations to do such business, if they want to remain in business. Because of intense competition of other countries on the market, if our producers are not going to devise means for the wise disposition of the product, the day will come when they will ~~not~~ be able to sell their product and will be forced out of business. In my opinion, to face foreign competition, organizations of exporters are essential, if these exporters are to survive.

b. Locality of Consumption: The Syrian silk has been consumed in different localities. It has been used mainly on the French market (Lyon), and partly on the Italian and United States markets, being sent to these markets in its raw form, namely, in silk threads. Silk exports to the Near East, i.e., Turkey, Egypt, Palestine, Iraq, and Transjordan are generally in the manufactured form. Of the total Syrian product 85% is exported in its raw form, and the other 15% are worked in Damascus, Aleppo, Homs, and Hama; these being of the inferior quality. So that we shall deal with the subject under two headings: local and foreign.

1. Local Uses: Before the war a great part was used in the country. Damascus, Aleppo, Homs, and Hama had works of different sorts. Kafiès, Mabroum, Kreiche, Chales, and Melaya were manu-

factured in large quantities and their yearly returns were 400,000 francs, 540000 francs, 380000 francs, 50000 francs, and 450,000 francs respectively²⁸. These were used for home consumption, but a great part used to be exported mainly to the neighboring countries like Egypt, Iraq, Turkey, and Palestine²⁹. These are still carried on a small scale to-day: partly in Zouk, in the Lebanon, and partly in Damascus, Aleppo, Homs, and Hama.

Besides these, there has developed after the war many ways for using the local product. Since the Ommayyads, Damascus has been famous for its silk, but after the war Damascene production increased with amazing rapidity. Native silk, as it is called, has for the last few years, ^{been used} by many of the higher classes of the country. With its beautiful designs, durability, and comparatively cheap price, though high quality, the Syrian silk began to compete with the imported silk. Neckties, shirts, both of best quality, are used by the young men of the country. Damascene works consist of "mandil", by which the Syrian ladies cover their hair, "abas", and "mashlah", which are used by the natives, mainly in the interior; being used in place of the overcoat or simply for fancy. Works in "asbièh", a handkerchief for wrapping the head is common. Muslin, striped silk stuff, printed gauze, gold and silver brocades, uniform satin, and damasked linen are all worked in Aleppo. These, being the chief works of Aleppo, constitu-

²⁸Gaston Ducouso, l'Indurtie de Soie en Syrie et au Liban, pp. 209-212

²⁹ibid, p. 209

ting its principal trade, were before the war, the object of an annual trade of about 2000000 francs³⁰.

"Hamidieh", "misrieh", "hendieh", "malaas", are worked in Homas and Hama. All these except "malaas", which is of pure silk, are made of silk and cotton, and their prices vary with the amount of silk they contain. The prewar annual income of these articles being about 8000000 francs³¹.

Curtains, cushions, slippers of noisy colors are worked in Zouk, in the Lebanon, where only five or six families are engaged in the industry. After these have been worked, being inferior goods, a great part of the product is dispatched to America, where more than half of that village's inhabitants have emigrated. The other part is used in Syria for local consumption, being delivered on the market by means of young men engaged in the industry, who carry a case or two of these articles and go from village to village, specially during the summer, selling these mainly to tourists and summer visitors, who come to spend their summer in the Lebanon, and partly to villagers and the higher class of the Syrian population.³²

Indeed the uses of the Syrian silk in the country are becoming numerous as years go by. I remember that three or four

³⁰Gaston Ducousso, l'Industrie de Soie en Syrie et au Liban, p. 208

³¹ibid, p. 208

³²With a conversation with one of these gentlemen, he told me that only six or seven families engage themselves in the industry, and that they are not eager to teach it to any body.

years ago the manufacturers of the Syrian silk in Syria were faced with many difficulties in disposing of their product. People bid a little for it and as a matter of fact people did not want it, preferring the European goods. It might not have been the fault of the consumers only by not wanting to buy the product, but also the fault of the producers, who did not know how to make good silk along European lines, but any way they found great difficulties. Native producers, in order to be able to dispose of their product, lowered the price considerably and at the same time used foreign designs and trade marks, writing on it that it was manufactured in Europe, in order to make a sale. Lately a great change has taken place. The manufacturers learned to work and color silk like the European products, using the same designs and dyeing it in such a way, as to hold color for long time.

Works in "crèp de chine", "crèp maroquin", and "crèp georgette" are worked like those of Europe, and the Syrians began to use them extensively, in preference over the European product. If such progress will continue, the Syrian product will, in most probability, need only a short time to replace the imported product.

From a government report³³ published by the Department of Agriculture in the Haut Commissariat, it has shown that in the last summer and autumn, the silken European goods were not sought for much on the Syrian market, and the imports for that season

³³"Syrian Silk", Lisan el Hal, January 2, 1930, p. 3

were not considerable, in fact very insignificant. The cause for this diminution, the Department of Agriculture states, is mainly due to the fact that the Syrian market is being satisfied by local production. The Syrian native works in silk has competed effectively with the French imported silk in the "crép de chine" and the "black crép" which is worked to be used by the women for face coverings. In fact the last mentioned, namely, the black is no longer imported into the country, but is worked from the Syrian silk in Syrian factories. Thus, merchants in Beirut, who have ordered large quantities of European silk clothes, and have stocked their stores with, are not finding demand for it, and are putting it on the market for very cheap prices.

2. Foreign Consumption: The Syrian silk, aside from the uses that are made of it in Syria, a great part is exported to foreign markets, mainly to France, and partly to Italy and the United States. The French market has for many years depended on the Syrian produce, not because the product is great enough for the market, but because the Syrian silk can be mixed with poorer kinds of silk, and can give good results. As we have said, 85% of the Syrian product is exported in its raw form to foreign markets, the greatest portion being sent to Lyons. In the year 1926 there was exported to Europe and America about 1400 bales of the good quality, and 200 bales of the Arabic silk, being the inferior quality³⁴. Statistics for the year 1929 showed that

³⁴Gedeon, E., Indicateur Libano Syrien, 1928-29, p. 47

the product for that year seems to be successful, increasing in amount over previous years, for the amount of exports for France and the United States during the month of August only was 200 bales.³⁵ Besides the raw silk that is exported, there is also a yearly exports of silk textiles, to which is added raw silk cocoons. These manufactured textiles find their market mainly in the United States, and those that are worked for use by easterners, are exported to Egypt, Palestine, Iraq, Transjordan, and Turkey. The raw silk and the cocoons find their markets mainly in France and Italy. To indicate, the forms of exports for the years 1927, 1928, 1929 are shown by the following table.³⁶

³⁵ "Silk Output", Al Ahrar, August 23, 1929, p. 6

³⁶ The statistics of export for the years 1927 and 1928 are from the Bullitin Economique of the Haut Commissariat for the year 1929, first quarter, pp. 54-55. The exports for 1929 are from the four issues for the same year of the same magazin; but since they are givensin Syrian Piasters, I turned them into Syrian gold piasters the amount, though it has increase much for that year, the amount of returns is shown to be less than that of the previous year. I have put the amounts as they are, making no changes at all.

Statistics for the same years from other sources do not agree with those of the Bullitin Economique, and not to mislead the reader, I give the following statistics: The Statesman Year Book for 1928-29, p. gives these statistics:

Raw silk.....	£S 1500000	£SG 235830
Silk textiles "	1077000	" 172260
Silk cocoons "	591000	182270

The Levant Trade Review for October 1929, p. , issued by the American Chamber of Commerce for the Levant, gives the export for 1927 and 1928 to be the following:

<u>1927</u>			<u>1928</u>		
	tons	yield		tons	yield
Raw silk.....	145	£SG 278250	" Raw silk	185	£SG 355780
Silk textiles	291	" 209920	" Silk text.	535	" 241060
Silk cocoons	190	" 116990	" Silk cocoons	424	" 213710
Totals	626	605160	" Totals	944	810550

TABLE G. SHOWS THE TOTAL EXPORTS OF SILK FOR THE
YEARS 1927, 1928, AND 1929.

	1927		1928		1929	
	kilos	G.P.S.	kilos	G.P.S.	kilos	G.P.S.
Raw silk 145403	27822563		185482	3551162	204108	22240129
Waste " 68921	1710261		126568	3265942	155733	3118994
Twist thrds2680	223232		8516	484925	2518	266357
EUrop. Text7492	1565019		3585	385761	11358	1826682
Mixed text 9459	216275		3854	315772	7321	618905
Arab text. 9084	1317760		8492	1158487	11446	466492
Mix. thrds109110	11664722		93499	7995259	44512	3707178
Cosoons 190309	11699253		423945	21371186	286074	13495808
Silk carpets	.....	.....	.....	.....	588	24087
Broideries	.....	.....	.....	.....	100	3480
Art. Text 2512	252878		1077	101081	.....	.....
Totals	644873	57172563	854818	70649515	723558	45768112

Besides these direct exports, which are a result of the Syrian output, Syria also imports artificial and genuine silk, which she works in the Syrian factories and turns them into different kinds of cloths, composing a little of these exports. The amount of such re-exports for the year 1929 was 19836 kilos, yielding an amount of 7716954 Syrian piasters.³⁷

Of the total exports shown by the above table, 420125 kilos amounting to 227148258 Syrian piasters were sent through Beirut, 58324 kilos amounting to 11155040 P.S. through Tripoli, 113 kilos

³⁷High Commissariat, Bullitin Economique, 1929-30 p. 741, 4th quarter. I have added the amounts of the four quarters from the four issues.

amounting to 19000 P.S. through Latakia, and 217288 kilos amounting to 53072407 P.S. through Alexandretta. Of these, 29450 kilos came from Damascus, amounting to 21385727 P.S. and 25632 kilos amounting to 6655160 P.S. came from Aleppo.³⁸

e. Uses of Syrian Silk in Foreign Countries: The Syrian silk is used in foreign countries, mainly in France and Italy. The usage that is made of the Syrian silk in France is that it is used for purposes of mixing it with other silks so that the latter may give better results in the weaving and the textile industry. Because the thread is elastic and gives good results when dyed, it is used with poor qualities of silk, a mixture of which gives a fairly good quality. The countries that import the cocoons in their raw form, turn these into threads in accordance with their demand for the quality of threads they desire. The waste silk is used to be mixed with other textiles to produce cloth, which is of a more or less poor quality. But unfortunately, the raw silk which is exported from Syria, though it gives good results in dyeing, and is very elastic, is usually, as stated before, badly spun in being uneven and lumpy. Because of these reasons, the countries which import it, do not use it in the very fine industries, and I remember that three or four years ago, silk manufacturers in Lyon threatened that they would not import any more of the Syrian raw silk, if it is to remain in the condition in which it was, so that measures were taken by the government, at that time, to improve the spinning of silk. Syrian silk is not only used threads

³⁸High Commissariat, Bullitin Economique, 1929-30, p. 736-38

and as cocoons to be spun, but some limited quantities are used in other countries as finished products. Instances of this is shown by the exports that are made to Palestine, Egypt, Iraq, and Mesopotamia. These consist chiefly of finished goods ready for use, examples of which are, "kefiès", used by the bedouins and Arabs of the interior to cover their heads, being used in place of the tarboush or the hat. "Asbièeh", a handkerchief for wrapping the head, "melaya" for women, and "abas" used by men in place of the over coat. Waste silk is exported to Egypt, where it is used for making native dress, by mixing it with other threads of cotton. A small amount of Syrian silk is exported to the United States where it is used for the same purposes as those of France and Italy. Here it may be worth while to mention that a comparatively large part of the Syrian silk textiles go to the United States each year by the tourists who come to the country. Tourists like the Syrian textiles and they buy them in large quantities, paying sometimes two or three times as much as they are usually sold for. So that it has become a custom among the dealers to stock their shops when it is the tourists' season, expecting to make much profits. As a matter of fact much profits are made from selling dearly to tourists, who know little about prices in the country.

To summarize this short discussion, I say that the Syrian product, when imported by other countries in its raw form, is mixed with other silk to help the weaving of the cloth, and the waste silk is mixed with other threads than silk, for furnishing

a comparatively low quality of cloth. When imported in the finished form by Middle Eastern countries, Syrian silk is used for wear in the form in which it is imported. Syrian silk in foreign countries, as far as ³ know, is never worked into cloth, without being mixed with other kinds of ~~cloth~~^{threads}, for purposes we have stated above.

Having discussed the consumption of the Syrian silk, we shall discuss, in the next section, the present day tendencies in the silk growing in Syria and Lebanon, the causes that help foreign silk producers to compete with Syrian producers, the present and probable future effect of the development of artificial silk production on silk industries, and the future possibilities of improving the means of production and of increasing the Syrian output.

IV. Present Day Tendencies in Silk Growing
in Syria and the Lebanon

a. Increase or Decrease in Acreage--Causes: The mulberry tree has been grown in Syria for hundreds of years. It grows on the high mountains, the slopes of the mountains, and in the plains, requiring no distinctly favorable climate, and particularly fertile soil. The fact that the terraces in the Lebanon are cut from rock, with a little of soil covering them, where the mulberry tree grows, make the fact clear.

Between 1889-1893 the number of mulberry trees in the Lebanon increased greatly, followed naturally by a proportionate increase in the quantity of cocoons produced. From 1895 till the world war the number of mulberry trees remained the same, and in 1900 the following statistics were given:³⁹

Syria	3395000	trees covering	1760	hectars
Villayet of Beirut	9170000	"	"	4500 "
Lebanon	28000000	"	"	240000 "

During the war many trees were cut for fire because of the shortage of fuel. Also many plantations were neglected completely, or had grains and vegetables raised in them, to the detriment of the trees themselves.⁴⁰

³⁹Michel Tabit, The Silk Industry in Syria, p. 12

⁴⁰Personal experience, helped by the fact we ourselves, and many in our village, did not care for our mulberry plantations, and did not plough them as usual, and had wheat grown in them.

After the war conditions became better and each year about half a million trees were planted. In the year 1925-26 about 90000 trees were planted, and in that year statistics for the Lebanon were as follows:⁴¹

Trees already planted	13058107
Trees newly planted	936931
Trees uprooted	36440

In the year 1926, 600000 trees were planted in the French Mandates, distributed as follows:⁴²

Lebanon	300000 trees
Alouites	100000 "
Alexandretta	200000 "

In the following year 1927, from 600-700 thousand trees were planted in the French Mandates, and at present the area under cultivation, as distributed among the different states is as follows:⁴³

Alouites	4000 hecktars
Syria(Alexandretta)	6000 "
Lebanon	17500 "
Total	<u>27500</u> "

The area in the Lebanon, namely, 17500 hecktars is divided among the different districts as follows:⁴⁴

⁴¹Lebanes Ministry of Agriculture to J. Kanan, (report), June 18, 1929.

⁴²E. Gedeon, Indicateur Libano Syrien, 1928-29, p. 46.

⁴³Mr. Topousian to J. Kanan, (government report), September 15, 1929.

⁴⁴"Saadeh's Report to Silk Conference", Al Ahrar, February 13; 1930, p. 6.

Meten, Chouf, and Kasrouan	12500	hektars
Batroun and Tripoli	3000	"
Saida, Sour, and Marj-Uyun	1500	"
Bekaa'	500	"

making a total of 17500 hektars as compared with 24000 hektars before the war. The product of the mulberry trees for the last six years, in the Lebanon alone, is shown by the following figures⁴⁵

1924	990000	kantals
1925	900000	"
1926	1200000	"
1927	1250000	"
1928	1250000	"
1929	1300000	"

In one of the news papers⁴⁶ statistics for 1929 show that in the Lebanon alone, 3250000 kilos of mulberry leaves were produced for that year. At the average price of 90 Syrian piasters a kilo, the total return was 2925000 Syrian pounds.

Naturally the increase of the numbers of mulberry trees and the increase of the output was a result of the increase of the demand for it because of a greater product raised. As a matter of fact, the number of boxes of grains hatched in the Lebanon alone was for the last ten years as follows⁴⁷

⁴⁵Mr. Khlat with J. Kanan (letter), Dec. 8, 1929

⁴⁶"Mulberry Output", Lisan el Hal, Feb. 13, 1930, p. 1

⁴⁷Lebanese Ministry of Agriculture to J. Kanan, (report), December 15, 1929.

Fig V. Chart showing the increase of yearly yield in production of mulberry leaves in State of Lebanon

for years 1924-29

In hundreds of thousands of Kantals (1 Kantal = 200 Kilos)

Each big square vertically = 100,000 Kantals
 Each four big squares horizontally = 1 year

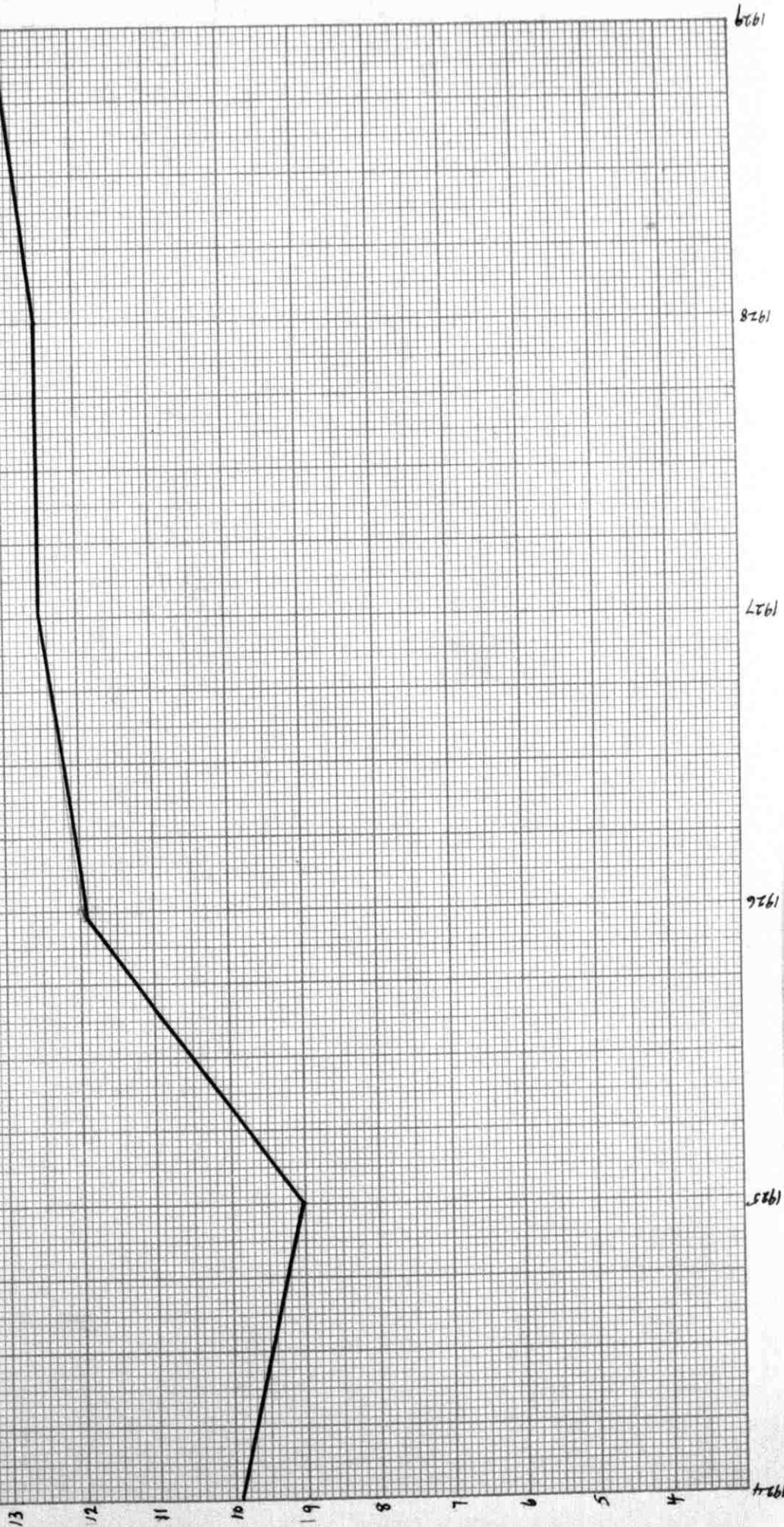


TABLE H. SHOWS THE NUMBER OF BOXES OF GRAINS
HATCHED IN LEBANON FROM 1920-1929

1920	boxes incubated	18300
1921	" "	27000
1922	" "	35000
1923	" "	60000
1924	" "	65000
1925	" "	60000
1926	" "	65000
1927	" "	65000
1928	" "	70000
1929	" "	72000

and that for Syria and the Lebanon combined, for the last four years, is as follows⁴⁸

<u>Year</u>	<u>Boxes of 25 grams</u>
1926	108733
1927	125786
1928	120000
1929	124024

By the above statistics it is shown that a decrease has taken place in the years 1928 and 1929. This decrease was partly due to the amount of grains exported from the country for these two years. This amounted to 14400 and 20294 boxes respectively.⁴⁹

⁴⁸Refer to Table B. p. 6

⁴⁹ibid

The number of boxes of twenty five grams each, which were incubated in the country, have given the following numbers of kilos of cocoons for the same years⁵⁰

TABLE I. SHOWS THE TOTAL OUTPUT OF COCOONS IN SYRIA AND LEBANON FROM 1920-1929

<u>Year</u>	<u>Lebanon</u>	<u>Syria(inc.Lebanon)</u>
1920	550000	800000
1921	800000	1100000
1922	1200000	1900000
1923	1800000	2200000
1924	2000000	2850000
1925	1500000	2981000
1926	1800000	2960000
1927	2000000	3185000
1928	1800000	3390000
1929	2200000	3460000

From the above statistics, regarding the area under cultivation, the yearly output of that area, the numbers of boxes of grains, and the yearly product for the several years, it can be concluded that the acreage is increasing from year to year. As a matter of fact this increase began in 1920, just after the finish of the world war and the establishment of the new govern-

⁵⁰Mr. Topousian to J. Kanan, (government report), September 15, 1929. (for Syria.)
Lebanese Ministry of Agriculture to J. Kanan, (report), September 15, 1929. (for Lebanon.)

ment in the country. This increase may be attributed to many reasons, among which we shall mention the following:

Provisions taken to protect the mulberry trees from being uprooted, was issued in June 25, 1919, preventing the uprooting or cutting of mulberry trees, and the selling of their wood for fuel. It also provided that any body violating this law and cutting the trees, shall subject himself to a severe punishment, by being imprisoned from one month to six months, and shall pay a cash fine amounting from one Syrian pound to fifty Syrian pounds, unless he is allowed to do so by a special permission, given to him by the government, after he had applied for that by a written petition forwarded to the government, explaining the reason why he wants to cut.⁵¹

This severe law had a strong sanction behind it to force it, this bringing forth good results after the end of the war, by preventing the cutting of the mulberry trees. For at that time it was a disease among the natives to cut down the trees and sell them for fuel, and this extensive cutting might have done away with the small remaining portion, had the order not been so opportunely given. This law was the first step that have been taken by the government, with the idea in mind, of creating an intense desire among the inhabitants, to increase the cultivation of mulberry trees which will lead to an increase in output.

⁵¹"Saadeh's Report to Silk Conference", Al Ahrar, Feb. 15, 1930, p. 2

A second reason may be attributed to the effect of the act of May 1920, which attempted to create a desire for planting more trees by distributing trees gratuitously, and by giving prizes in form of compensations for land owners who plant the best field of mulberry trees. The act also exempts payment of the tithes on the lands which have been planted in mulberry trees for five years subsequent to the planting.⁵²

Indeed the two governments are doing much, by way of incentives, to effect progress in the industry. Their method of fulfilling this purpose is by appealing to the motives of the people in the following ways:⁵³

1. The government distributing the plants to the people without any charge.
2. Sending supervisors to villages, just at the time of planting and before the silk season comes, in order to intensify the desire of the people.
3. The giving of educative films on the modern ways of rearing silk worms, and the scientific methods to be followed.

Such provisions and activities, no doubt, have done much in the awakening of the people and in creating a desire among the silk rearers to practice the profession. I think, if such policies are carried extensively, along the lines of bettering the present ways of production, much can be done, in creating a wholesome and systematized silk industry.

⁵²"Saadeh's Report to Silk Conference", Al Ahrar, Feb. 15, 1930, p. 2

⁵³M. Toupousian with J. Kanan, (conversation), September 12, 1929

Fig VI. Chart showing the production of Silk in Syria and Lebanon

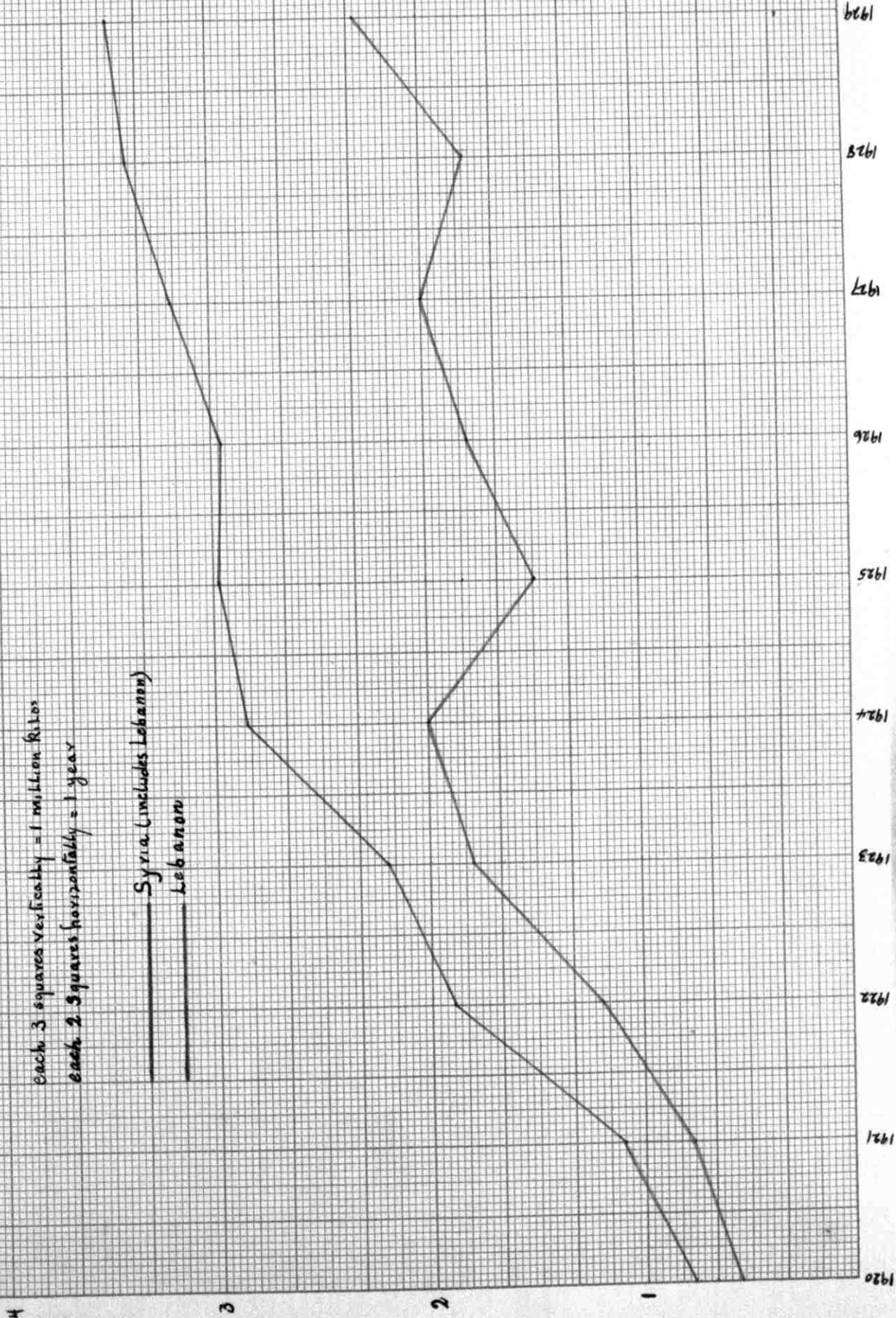
In millions of kilos of Cocoons

each 3 squares vertically = 1 million kilos

each 2 squares horizontally = 1 year

— Syria (includes Lebanon)

— Lebanon



The third reason for the increased acreage of the product is due to the activities that are taken by the present government to stimulate the desire of the people to engage themselves in the industry. Besides the gratuitous distribution of mulberry trees, the giving of compensations for those who get a good crop, the distributing of advisors to silk worm rearers by means of written pamphlets, and the introduction of new machinery, the government held councils charged with the task of bettering the present situation. One of these councils, the most important of all, was held in Beirut from the 11th to the 14th of February 1930, which discussed the following points:⁵⁴

1. Governmental responsibility in aiding the farmers by giving them specific instructions.
2. The rearing of silk worms, particularly, the selection of seeds, the hatching of seeds, improvements in breeding, and purification of the places where the silk worms are kept, by killing all disease which might be found.
3. The improvement of spinning. The betterment of the present machinery used in spinning, and the teaching and training of the workers along modern lines and ways which are used in the leading silk producing countries of the world.
4. Stimulating trade in silk by improving the marketing system and by the creation of greater demand by new uses.
5. Systematization of the present of weaving and the working of the Syrian cloth--an industry, if well developed, will be of great help to the country.

⁵⁴"Silk Congress", Al AHRAR, Feb. 1, 1930, p. 6

To this conference were invited the Chambers of Commerce of Paris, Lyon, Marseilles, and the different political states of Syria. To keep a good memory of the conference and to create a fund for carrying on the improvements suggested, the High Commissioner issued a number of stamps, having on them the picture of a mulberry moth, mulberry leaf, and a cocoons. These were put in the hands of those in charge of fulfilling the plans discussed, and the returns of which are to be spent in any way that is seen fit for the increase of the yearly product. The returns of these stamps are twenty six thousand Syrian pounds; a sum which is hoped to help in the fulfillment of a common desire, that of developing of the Syrian silk industry.⁵⁵

A fourth reason which also led to the final increase in acreage, and in the total output, may be attributed to the increase of the demand for the Syrian manufactured goods. The increase of the Syrian demand for the Syrian manufactured clothes, as has been pointed out in the discussion of the uses of the Syrian silk, has, no doubt, stimulated the manufacturers of such goods to produce on a larger scale than before. Such a production on a larger scale, called for an increase in the demand for raw silk, which, in order to be met, stimulated the silk worm rearers to rear more seeds. The raising of more seeds, in turn, called for a larger amounts of mulberry leaves, which, in order to be furnished, called for an increase in the area of mulberry trees

⁵⁵"Stamps of the Silk Congress", Al Bairak, Feb. 21, 1930, p. 2

cultivation--all leading to the final increase in the mulberry plantations, and a final increase in the Syrian produce of silk.

These, in my opinion, are the most important causes, which have helped greatly, especially in the last few years, the marked increase in the area of cultivation and the amount of produce, which, though not equal to the prewar area and amount of produce, is a marked step to the retaining of the prewar position; both in the area under cultivation and the total produce. The thing to be done is to follow up these measures and not let them die away like a bubble. If these are not followed up, the old conditions will continue, namely, a gradual destruction of the mulberry plantations.

- b. Causes that help foreign producers to compete with Syrian producers even in Syria: At first sight one thinks that all producers of a commodity produce it with the same efficiency and hence are put on equal basis in the manufacturing and desposing of such a commodity. The situation, however, in regard to Syrian silk producers, is not so sound, for the fact that Syria, not only fails to compete with other producing countries in foreign markets, but as a matter of fact, foreign producers are competing with Syrian producers even in Syria. This fact is evidenced by the fact that large quantities of foreign silk are entering the country each year, to the detriment of the silk industries. The causes for such a keen competition are numerous, and are attributed mainly to the carelessness of the natives in producing the product.

Other producing countries do not have an absolute advantage over Syria, in regard to natural factor and good weather favoring the growth of mulberry trees, as some might suppose, for Syria has proved for many years that the land favors the mulberry trees. There are many fertile plains and slopes of mountains in Syria, which, if are cared for and planted in mulberry trees, can hold millions of productive trees. In my opinion the following reasons are the primary and most important in helping the foreign silk producers to compete with Syrian producers, not only in foreign markets, but also in Syria:

1. The first of these causes may be attributed to the fact that the seeds used for the Syrian produce are not all of good quality. The seeds used for the Syrian produce, as we have shown in previous discussion, are either imported, this being the greatest part, or originate in the country. The quality that is imported from different countries is not naturally of one kind. These various kinds differ, not only in source, but also in the quality of seeds. Some of these being of good quality, bearing the government seal of the countries of which they are imported, and some are supplied from countries, bearing no seal, and thus are not of good quality, giving a poor quality of silk. These are not brought forth according to scientific ways, usually infected with diseases from the time they are still seeds, and when they are brought to the country and used for the produce by the natives, do not give a good crop, for after consuming the mulberry leaves, they die, giving no crop to compensate the breeder, or

those that pupate give a poor quality of silk, putting the Syrian producer at a disadvantage, in not being^{able} to compete with foreign producers, who furnish a good quality of silk.

In regard to the seeds that are supplied by the country, the same situation exists. The centers of raising these national seeds are the districts in the southern part of Kasrouan, in the Lebanon, and some parts in the state of Alouites. The total number of these seeds suppliers is twenty.⁵⁶ These are separate from the factory owners, and buy cocoons from silk rearers and breed them in their homes, thus furnishing the Syrian seeds. They, above the fact that they are not fit for this occupation, and have no modern means and instruments that help them in practicing their profession, need capital--the vital thing in many industries, which will help them in enlarging their industry. So as a result of inadequate capital, we find that they are restricted in the amount of grains they can put out on the market each year. The greatest output of any one of these producers is 2500 boxes of twenty five grams each, while the produce of some of them does not go beyond 500 boxes of the same weight.⁵⁷ The total output from the Lebanon is from fifteen thousand to eighteen thousand boxes a year, only one fourth of which is consumed outside the boundaries of Lebanon proper (Akkar and the Alouites).⁵⁸

⁵⁶"Saadeh's Report to Silk Conference", Al Ahrar, Feb. 23, 1930,

p. 6
⁵⁷ibid, p. 6

⁵⁸ibid, p. 6

The equipment of these seeds suppliers consists of a microscope and a little of personal experience which is not scientific at all. The cause for such ignorance is the fact that there are no good advisors to advise them and teach them the art and mystery of the occupation. Above that is the fact that they themselves do not accept such scientific training. Thus they put on the market a poor quality of seeds, giving poor quality of silk. Above that, there is no inspection of seeds before being used for the product, again to the loss of the silk producers, and to being put at a disadvantage.

2. The second cause is the fact that the raising of the silk worms is carried on in a more or less primitive way, not aiding the silk worm in furnishing a good quality of silk. In previous discussion it was shown how the silk worms are reared and we have proved that the methods used are not scientific at all. The houses where the silk worms are reared are not specialized for that purpose. They are used as a dwelling for the members of the family, and when the silk season comes the worms are put in them without being cleansed or sterilized. The man who hatches the seeds does not know much about it, and he practices his profession according to the ways used hundreds of years ago. The persons who rear the silk worms do it in the same way. The houses where the silk worms are kept may contain different kinds of diseases, all to the detriment of the silk worms. The way in which the worms are fed is not scientific and heating and ventilation are not usually adequate. The silk breeder kills his silk worms

because of his carelessness and the quality that is produced by the surviving ones is poor because of the fact that the silk worm were not fed enough, or ventilation was not proper. Thus the silk worm is hindered from producing a good quality of silk, and a poor quality of cocoons is supplied, unfit to be worked into European silk. For this reason they are worked into Arabic silk which is not sought in foreign markets, but is used for local purposes. All these reasons have a marked effect on the final silk exporter, curtailing the possibilities of being put on an equal basis with foreign producers.

3. The third cause is the fact that the spinning of the Syrian silk is not carried on by efficient spinners, but by some apprentices, who have learned the art of spinning from their mothers--an unsound method manifesting itself in the kind of produce. A young girl with a bit of knowledge is entrusted with the art, and she spins according to what she knows, causing a great damage to the product. The woman spins but the threads she produces are not the kind that is sought for best. The thread she spins is uneven and lumpy and has many breaks in it, losing its fineness, and hindering it from being used in the fine arts of industry. The fact that the cocoons are not properly separated, the good from the bad, gives a mixture of a good and a bad quality of silk, being of medium quality. There is also the reason that the spinning is not done for producing fine threads of a considerable degree of thinness, but the threads are thick, which makes them unfit for usage in very delicate textiles. The reason

that the silk is also allowed to absorb a great degree of moisture, for which is made an allowance in the European markets,⁵⁹ make the fact clear that the producer himself does not care much for the quality he furnishes. Because of the lack of very well trained spinners and because of the lack of careful supervision, and the lack of schools training skillful spinners, the result is obvious--less demand for the product, and a disadvantage to the exporter, making the product lose the fame which has been credited to it for years.

4. The fourth reason is that in Syria there are no such things as cooperative organizations for producers who will market the product in the best possible way. In other silk producing countries like Japan and Italy, silk producers have realized the importance of trade unions and cooperative marketing so that silk producers in such countries export under one name for one single price. The importance of such trade unions and cooperative organizations can not be denied at all as an important factor in every trade and as being an important factor in helping the foreign silk producers to compete of those of our country. While our silk is exported by single individuals, naturally it is sold under great competition, so that these few producers cut down each other's prices, trying to find markets for their exports only, regardless of the loss accruing to the country as a whole. While the foreign producers have unity, they cut down

⁵⁹His Majesty's Government, Hand Book of Syria, 1920, p. 283 gives the percentage to be 11%.

their expenses to a minimum, aside from the fact that they can adjust their exports, by means of a wholesome method of storage, to the demand of the foreign market, avoiding much exports at one single time, which helps them to keep a constant and sure demand for their product, and at the same time keeping one price on the market. As a matter of fact, however, such cooperative associations help the foreign producers in minimizing their expenses so that they can under sell our producers, securing the market for their product only. These unions help to minimize the waste in the product, and to work the silk into separate classes so that they supply a standard product, known on the markets with a standard quality and a standard price.

5. The fifth reason may be attributed to the lack of capital and skilled workmanship. The people engaged in the production of silk and its exportation in the country, are usually of the middle and poor classes whose lack of funds prevent them from bettering their machinery and hence producing a good quality of silk. Silk exporters usually export the product just at the time it is turned into raw silk, usually exported in small quantities, because they are eager for getting ready cash to be able to carry on their work for the season. The fact that the credit system is not well developed in the country and there are no agricultural and commercial banks granting credit for these producers, makes clear the difficulties with which the producers are confronted. They have to depend on their own funds, which are usually inadequate, and hence they are eager to dispose of their pro-

duct as soon as possible for any price which will cover their expenses. This excess supply brings about a glutted market and a decreased price, all of which reflects to the detriment of the producer and exporter.

To summarize, I say that the causes are found in the whole process from the time of the supplying of the seeds, until the product is distributed in the foreign markets. Some of these defects are the result of the carelessness of the people and their unwillingness to follow scientific rules and methods, and some others are the result of the carelessness of the government in aiding the producers financially, as well as in training them along the lines of producing a quality looked upon by other foreign markets with a great esteem. The product is not so poor, as one might imagine, for the Syrian silk is famous for its elasticity and the good results that it gives in dyeing--qualities, which perhaps, are the reasons why foreigners will continue to need our product. Unless improvements are to be made in manufacturing an even thread, and unless more efficient systems are to be devised, other countries will probably, in the near future, substitute for our product the product from elsewhere. So it follows that the government should not let things remain as they are, but should take some constructive measures to the betterment of the present situation, in order to help the continuous existence of the Syrian silk industry. Some of the best of these constructive methods that can be followed for fulfilling the aim, will be recommended in the discussion to follow in the topic after next.

c. Present and probable future effects of artificial silk on silk industries: Economic laws tell us that where ever two commodities compete for their usage, with the increase of the usage of the one, the usage of the other will be greatly affected. This, being true in many cases, does not work well in relation to the effects of artificial silk on the real silk industries. It should be understood, however, that in this discussion, we are not trying to prove that the artificial silk has not had a little of effect on the real silk industries, but we are trying to show that no matter how much the increase in the usage of the artificial silk will be, it will never have a marked effect on the real silk, causing its output to decrease.

With the mystery of artificial silk, people thought that with it has come the fate of the real silk industries, thinking that the cheap price of the artificial silk will help much in excelling real silk, but giving no account for the fact that the silk worked in the laboratory, though cheaper than the genuine silk, can not excell it in quality and the designs that can be worked from it.

To make ourselves clear let us look back to the history of artificial silk and what effects it had on the real silk industries to be able to have a fair guess of what might happen in future. In the year 1896 when the total amount of the world's product of artificial silk and real silk was 15,000,000 kilos of silk, the ratio between real and artificial silk was fourteen to one, making 14,000,000 kilos for real silk and 1,000,000 kilos for artificial silk.

The chemists, unsatisfied with this result, concentrated their attention to beat the producers of real silk. Silk producers became terrified by this fact and nations looked forward to that as a realizable fact. Years went by and the rivalry became more acute. Reaching the year 1913, the artificial silk producers thought that they were leading for that year, for their product had been twelve times more than what it was in 1896, namely, 12,000,000 kilos. But to their horror, the demand and production of the real silk for that year did not decrease, but a marked increase had taken place, the product rising from 14,000,000 kilos in 1896 to 28,000,000 kilos for that year, doubling the amount of the output. This in fact was a very successful attempt on the part of artificial silk producers for they had got the ratio down to two to one, where formerly it was fourteen to one. The following year the world's war started, giving an opportunity to the artificial silk to increase its amount. Works along this line increased immensely, and the public attention was directed to the fact that silk industries were in danger of being handicapped by the artificial ones, at the same time decreasing the demand and the output, causing the countries engaged in it to curtail their output to bring it into harmony with the demand, for importations to Europe had decreased because of the war. Such were the expectations of the nations, following economic laws and principles, forgetting that no matter how many will begin to consume artificial silk, there will remain some, who are not few, who will still consume the real silk and will always substitute it for artificial silk.

The expectations, however, were not realized, and the real silk strengthened its position with the lapse of these years. The fact that in the year 1922, the output of the artificial silk had risen to 15000000 kilos only, 3000000 kilos more than it was in 1913, the output of real silk had risen from 28000000 kilos in 1913, to 50000000 kilos in 1922, making an increase of 22000000 kilos, makes this clear. The ratio of increase being twenty two to three. The following table summarizes previous discussion.⁶⁰

TABLE J. SHOWS PRODUCTION OF REAL AND ARTIFICIAL SILK AND AMOUNT OF INCREASE. (IN KILOS)

<u>Year</u>	<u>Artificial silk</u>	<u>Real Silk</u>	<u>ExcessReal</u>
1896	1000000	14000000	13000000
1913	12000000	28000000	16000000
1922	15000000	50000000	35000000

From the above statistics and the brief survey, I think that a safe guess can be made regarding the future effects. During the period under discussion the use of real silk increased more rapidly than artificial silk. How much more rapidly real silk would have increased without artificial silk we do not know, but at least one thing is certain. Artificial silk did not prevent a tremendous absolute increase in the real silk. With this continuous increase of real silk over artificial, there is no rea-

⁶⁰"Saadeh's Report to Silk Conference", Al Ahrar, February 13, 1930, p. 6. These are given in the form of separate statistics but I arranged them in form of a table.

son why the artificial silk should have a serious effect on real silk so as to decrease its output and importance. It is true that the artificial silk had had a little of effect, but this is negligible to the total consumption of silk, giving us no ground to believe that its effects will be serious in the future.

The fact that the real silk will continue to be superior to artificial silk can be shown by the esteem in which it has been held for at least three or four thousand years. Because of its fineness, strength and lustre, as well as for its affinity for rich and delicate dyes, it has enabled the weaver and the embroiderer to produce, by the intersections of its threads in various directions, the most beautiful and elaborate ornamental designs, and to color them with the tints of the rainbow. And because of this reason, results which can not be gotten from artificial silk, I think that real silk will continue to be produced, with a marked yearly increase, and no matter how hard artificial silk producers try, their output will, in no case, have a marked effect on the real silk produced from the mulberry moth of China.

Looking back to the history of silk, one finds the most singular feature in this connection is the persistent efforts which have been made by monarchs and other potentates to stimulate sericulture within their dominions, efforts which continue to-day in British colonies, India, America, and other countries. These are hoped to be continued in future, evidencing the importance of the mystery of the real silk, a most priced product, which

have been looked at as a valueless one and have been highly priced in practically all civilized countries,

d. Future possibilities of improving the methods of production and of increasing the output: The first question that might arise in connection with this subject is if the means of production are improved, is there any possibility that the output will increase? To this question, I give answer, based on my own judgement and on the opinion of others, that the output can be increased immensely, if only specific improvements are made. One of the things leading me to this conclusion, is the fact that I can see no reason why improvement should not be, since the present ^{output} is only slightly over one half of what it was before the war. This proves that the country is capable of producing more, if only certain things can be followed. The fertility of the soil is still as it was when the product was nearly twice as much as it is now and the people are still of the same origin, but certain changes occurred, which raised the standard of living and conditions during the war did much to the destruction of the faith and fame with which the people had looked at the product for many centuries. If only the people can be taught again that the silk industry is not as bad as they imagined, and that the government shall do much to help them, I think that the continuous increase which has begun since 1930, after it had been wrecked by the world war, will still continue, and to increase at a greater rate, if only the government will look upon the following suggestions as a means for fulfilling its aims and if it puts them into practice--appealing

to the prospective aid of the population. By these means it is believed that the Syrian silk industry can be raised to a level of efficiency which will enable local silk to compete effectively with foreign silk, both in the local market and abroad.

My first suggestion is that the government should teach the people to use the right kinds of seeds for the produce, and must teach them to import the good kinds only and to take better care in furnishing the native seeds. The seeds to be used should have no diseases; should be physically strong and to be able to produce a good quality of cocoons, contain a large and fine quality of silk. To do this, I believe, that low qualities of imported ~~of imported~~ seeds should be forbidden to be raised in the country, and in regard to the native seeds, the following provisions will help greatly in bettering them: The government should not allow every one to furnish the seeds unless he passes certain requirements. It should set examinations to those who like to practice the profession, after training them for one season along the new methods of breeding, and teaching them the law of heredity, which helps them in furnishing strong seeds which give a good product. After they have been taught for one season, they will be given an examination which eliminates the unfit to be breeders, and whose work, if practiced, will be a danger for the industry. Those who prove to be fit will be allowed to continue their training and can practice the profession for a temporary time. After the lapse of two years' training, these candidates will be given a final examination along the lines studied, and those who pass

satisfactory, will be given a form of certificate or licence, allowing them to continue in their profession as seeds furnishers. By doing that the government would have eliminated those whose work would have been a calamity and will be sure of having seeds suppliers who are of equal training and knowledge as the other suppliers of the world. This in turn will have its final result, and will manifest itself in a better crop, giving better quality of silk. This recommendation is given because of the fact that the present suppliers, as we have shown, do not have much scientific knowledge, neither modern machinery for their work, and are furnishing poor qualities which are used, but die before giving their cocoons and hence give a small total output.

When this recommendation is fulfilled, then I think that the importation of seeds will in a short time cease, and the people will find that they can supply enough, not only to Syrian producers, but will also be able to export to neighboring countries. Above the training that the government can give, it should supply these seeds furnishers with a little of capital or modern machinery, for which these in return will pay, after selling their crop, but would have helped in furnishing large quantities, making Syria a seeds exporting country. As a matter of fact Syria now exports a part of the seeds that it imports for native consumption, as we have shown in table A on page 6. But if the previous recommendation is to be followed, the exports will increase immensely, all reflecting on the inhabitants of the country, in yielding them more revenue--a policy of all civilized nations.

My second recommendation is that the government should require all primary schools to provide means where the small children will be trained along the lines of mulberry trees growing, and the scientific training of the silk worm. Each school should contain a small field of mulberry trees where the children are taught how to plant them according to the best possible ways. By this they will have a chance to do the work themselves so that the spirit of liking the mulberry trees will be cultivated, so that when they grow up, they will do such things according to scientific methods. They should be trained how to trim the trees by the ~~means~~^{means} of good instruments--sharp scythes and scissors, and how to nourish the trees by means of chemicals. The schools should also have special places for training the children how to raise the silk worms according to hygienic ways, such as the space to be kept between each story of the scaffolding and the other, and the degree of crowdedness of the worms; keeping good ventilation, feeding the worms properly, and keeping a good temperature of the room where the silk worms are kept. The children will be taught the usage of thermometers and will use many charts so that they will be taught while young, the modern means, which can not be taught to the grown up people, who have been in the industry for many years, and who think that their ways are the best. These children, when they go out from school, will have a great effect on their parents, and will try to show them the modern methods. In this way the government would have hit two birds with one stone--training the young and influencing the old.

My third recommendation is that the government should not be satisfied only with the distributing of mulberry trees gratuitously to those who like to plant or sell them at a cheaper price, but it must see to it that every body must plant a certain number of mulberry trees yearly, depending on the acreage and quality of his land. There are thousands of acres of land, both in the plains and in the mountains, which are uncared for and are left bare. If the government requires every owner of such land to make use of it by giving him mulberry trees and requiring him to plant a certain number in it, not many years will pass before the acreage of the mulberry trees increases, calling for an increase of the seeds to be hatched for produce, these making much cocoons, and the product increases immensely.

Such a policy, may at first sight, seem rather impracticable, but it is not so hard to follow. It has been followed in many civilized countries, and as a matter of fact has been introduced to the pines forests, requiring any body who cuts a tree to plant two instead, and there is no reason why it should not be followed in ~~the~~ intensifying the desire for planting more mulberry trees. The increase of such an agricultural industry will give much returns to the pockets of the people.

I

If this policy is carried on under large scale methods, the benefits of large scale production may be had, to the benefit of the Syrian silk producers and exporters in competition with foreign production.

My fourth recommendation is that the government should supervise the present ways of production and try to make as many improvements, by way of introducing new machinery, and should require all spinners to spin their silk in fine sizes, depending on the demand. This process, if followed, will change the impression that other nations have of our silk, and hence will lead to a final increase in the demand for it, causing a corresponding increase in the output. In reality our means of production, both as to the ways of raising the silk worms, and to the machinery used for spinning it, are still carried on in a rather primitive way. With exception to three or four spinning factories, there has been carried on no modern improvements, by way of drying the cocoons and for conditioning and scouring, and even, not much attention has been given, specially after the war, to the thinness and evenness of the threads.

When such things are carried on by the government, no doubt our product is going to improve in quality, and improving in quality will create more demand for it. The increase of such a demand will have a favorable effect on the price, in making it go up; this will, in turn, make the industry more profitable, so that it will attract more people to it. This increase in the number of people will increase the degree of the work, having a final increase of the yearly output. This problem of improving the methods of production and supervising the spinning of the silk is an important one, for a great degree of carelessness has taken place after the war, so that the foreign markets did not

want our product, and if they wanted it, they paid little for it. So it should be the policy of the government to supervise such works, to help the industry from being replaced by other silk suppliers from other countries.

Another recommendation, being the fifth one, which follows from the previous suggestion, is that the government, having stimulated the desire for the carrying on of the industry and a marked increase has taken place, it should try to develop the marketing systems, introducing the cooperative methods, which give Syrian exporters a more strategic position in foreign markets. We have shown that our product is sold under competitive situation, not only competition from other foreign producers, but that competition exists between Syrian exporters themselves. If any increase is to result, then competition is to become keener among the Syrian exporters, causing a less demand for the Syrian product. If these trade unions are to be developed, and cooperative marketing ^{is} to be practiced, as has been done in other silk producing countries, then these will give better results in disposing of the product, controlling the supply in accordance with the demand, and keeping an equilibrium between them. Aside from this, expenses will also be curtailed, and the Syrian producers and exporters will be put in a better position to compete with other silk suppliers, stimulating the demand and increasing the Syrian annual output. No body, I think, will deny the fact that cooperative marketing is important in every trade, especially when such industry is carried on under competitive conditions.

The fact that this procedure is important and very effective, is made clear by the fact that millions and millions of money worth in goods are exported each year from the United States under cooperative marketing, and that cooperative marketing exists in majority of the industries.⁶¹ The silk suppliers of other leading countries have adopted this policy long ago, this being a cause why they can compete profitably. The trade unions have also been developed in Italy and Japan, where more capital can be secured, and in case of losses, they are shared by these many exporters and producers, a very small portion being the share of on single exporter, thus not affecting him so as to discourage him from practicing this profession, as is the case in our country. Above all much of working capital can be secured, under such a practice and the industry will, in most probability, expand.

This practice has been followed by one single woman and her sons, in Syria, where they own the factory for spinning, have exporting agency, and have their own source of funds in Lyon.⁶² This seems very profitable and should be encouraged immensely.

⁶¹Mears and Tobriner, Principles and Practices of Cooperative Marketing, p. 1, gives the following: Grains sold under cooperative marketing 600000000 dollars; dairy products 40000000 dollars; Live stock 250000000 dollars. Ten thousand associations doing business to amount of 2000000000 dollars.

⁶²"Saadeh's Report to Silk Conference", Al Ahrar, Feb. 18, 1930. p.2

My sixth recommendation, which I think, if followed by the government will have a final increase on the yearly output, is that the government should exempt from taxation all silk spinning factories for amounts paid on buildings, and to put no custom duties on all lubricants that are used in such factories, such as oil, benzine, coal, and petroleum. Such exemption from taxation and custom duties, I think will encourage the people to occupy themselves in the industry, for such deductions will have a favorable effect in lowering the cost of production, and this will yield more returns to the producer, thus inducing him to carry on his work extensively, which calls for an increase in the amount to be raised for that year. In reducing a little of the costs of such a producer, he in turn can afford to pay a little more to the furnishers of cocoons, thus inducing them to produce more, for what thing does a worker want more than enough earning, to help him maintain himself and his family by way of food and clothing. I think that such appeals should be the main policy of the government in fulfilling its aim. Such inducements may consist of personal gifts and prizes for those who turn from their factories a fine quality of silk of a certain standard. Such inducements, if carried on, will have, in most probability, good results, in that a good product will be furnished at a reasonably good price. The principle that an enterpriser, to be able to compete in business, must either furnish an equally good product for a less price than that which is asked by other suppliers or put on the market a better product than that which already

exists, for the same price, should not be overlooked, and it should be the aim of every silk producer.

Another thing which, I think, should not be forgotten, is the fact that every industry needs specific sums of money, which are essential to the development of industry, if it is worth while developing. This important fact has been realized in many countries, and is coming to be realized in Syria, that banks and credit institutions have developed, whose main purpose is to furnish the industry with enough money, either in money or credit, to help those who need it not to stop their work and curtail the industry. There have developed the agricultural banks, whose function is to forward money to farmers in times of need, which they pay after they sell their crops. There have developed also the commercial banks, who do the same thing to business men. Such institutions, because of their necessity, have developed immensely, because they are especially important and beneficial for carrying on industries which have been handicapped greatly by the world war, and in a country whose economic condition is not sound enough to induce capitalists to aid, by way of investing, those who need funds to be able to carry on their business on a large scale enough to make it profitable. I think that this situation is typical of Syria. As an effect of the world war, capital became scarce, and those who had enough of it thought much before they were eager to lend it, or else if they wanted to lend it, they demanded very high interest for it⁶³

⁶³Interest rates went up after the war to 18% and 20%, but a little after they came down to about 12%.

So that industries are carried on a comparatively small scale, especially if we consider the silk industry of the country. Many of the spinning factories closed during the war, and to run them at full capacity again, requires much of capital. So if one visits a spinning factory, he finds, in most cases, that only a quarter of half of the basins are used, the others being unused, because--this being in the majority of cases, of the lack of capital. Not only is this shown in the case of the factory, but also in the way the exports and sales of the product are made; these being affected immediately after a small amount is worked, to be able to get ready cash to pay current expenses. Very much I think, has to be done along this line. This may either be done directly by the government--extending enough amounts to those who need it at a low rate of interest and permitting to pay back in installments, so that when he sells his crop, he will be in a position to be able to pay back, but at the same ^{time}, the government would have financed him and helped him in making specific improvements in his machinery, leading to a better product, or have helped him to work on a larger scale.

Capital may also be supplied by means of agricultural banks and commercial banks which can be established for the benefit of the community. Such measures should be carried ^{on} and encouraged by the government. The purpose of these agricultural and commercial banks would be to extend credit to the silk seeds furnishers, to the silk worm rearers, and to the silk spinners and exporters, and to supply them with enough funds for carrying on

their business. Such an increase in funds will help large scale production and improvements of the industry. Think what changes will take place, if enough funds can be obtained. The evolution will begin with the seeds furnishers and ends with the betterment of methods of exportation and marketing. Seed furnishers will supply themselves with modern machineries and hence will have better kinds of seeds, giving better kinds of silk, silk worm rearers will introduce some new changes in the methods of raising the product, giving more help to the silk worms for giving a better product, the silk spinners will also introduce some new machinery to their factories, and will add to the betterment of the threads, better methods of marketing will be employed and the supply of the product will be controlled--all leading to a great degree of perfection for the product, thus helping to find a better market for it, which will help to increase the yearly output, increasing the yearly inflow of money to the pockets of those who are engaged in the industry.

A way which I think can help the government in training the inhabitants along the lines of getting better product is the presentation of educational films, showing the modern means of production and spinning. These films, if showed in public from time to time, without any charge, people who are engaged in the industry will be trained and will have a better knowledge of their profession. In addition to cinemas, public lectures and conferences will help greatly in keeping the silk producers informed of every improvement that has been made for improvement of the

product and in keeping them up to date in regard to their knowledge of the ways and mystery of silk production. These, of course, should be employed as a means to the common end and not an end in themselves--the common end being the final success of the silk industry.

Another effective method would be for the government to furnish the peasants ^{with} ~~of~~ pieces of the uncared-for lands and with mulberry trees which might be planted on those plots. After the peasants had cared for these lands for a certain number of years, a part or the whole of the land which they had cultivated will be their own, or will pass to their heirs after they die. This method has proved to be successful and, according to my knowledge, it has been in use in some countries. This method will increase the acreage of the mulberry trees, thereby, causing an increase in the output of mulberry leaves, which in turn will call for an increase in the grains to be hatched, leading to the final increase of the output.

I think also that the government might train the present silk worm rearers by way of written advices and circulars which can be distributed to the people. Such circulars should describe method of cleaning the houses before putting the silk worms in them, the kinds of seeds to buy and how to take care of them during winter, how to run the hatching houses, how to feed the silk worms and the degree of crowdedness, how to put leaves for the worms to make cocoons, the equipment needed, the diseases

that the silk worms are susceptible to, and how to take care of such diseases. In this regard, I give the following instructions to each of the subjects mentioned above, along which the government should give the advice.⁶⁴

1. The types of houses to be used: Not all houses should be used for that purpose, without being cleansed and sterilized, in order to kill any diseases that might have remained from the year before. To do such a thing scientifically, they should go at it in this way: They should get an oke of burning lime and put it in two okes of water. After the lime melts, which gives a semifluid whitish substance, it should be put in ~~ten~~ okes of water and mixed well, after which it can be used for cleaning the houses. The amount of lime to be used depends upon the area of the room, which is to be used for the purpose. But as a rule each room of hundred square meters needs forty litters, or thirty two okes of lime. After the house have been cleansed, it should remain for a period unused, during which the houses dry, and not put the silk worms in it while it is still wet.

2. How to buy the seeds: These silk raisers should be warned that not all seeds that are furnished are of good quality, and that they should not buy from every person selling them. They should buy those that bear the governments' seal, which designates that they are healthy seeds, and can give a good quality of

⁶⁴For any detailed explanation, refer to Quelques Recommandations Aux Sericiculteurs by the Haut Commissariat, 1928.

silk. They should not buy the seeds a long time before the season comes because if they buy it, they will not be able to take care of the seeds. If they buy the seeds, however, they should not put them in thick bags, as is usually the custom, but should put them in places where there is a free ventilation of air. The seeds should never be put in dwelling rooms, for there they can not keep constant temperature, and often times air does not circulate in them, opposite to what the young seeds need. The seeds should not be bought from those who carry the boxes of grains in bags on their backs, and go from place to place selling them. These are not usually raised according to scientific methods, and are infected with diseases, the origin of which is usually unknown. Another point which they should take into consideration, specially who raise the silk in the plains, that the seeds should be kept during winter in the mountains, and should not be kept in the plains. Such a provision, I think, should be given full consideration, specially under the present conditions. Constant and cold temperature is needed for the seeds during winter, and such a thing can not be found except in special places provided for that purpose, where the seeds should be kept. Compliance with this provision can give better results than those given nowadays.

3. Hatching houses: As to the hatching houses which are to be used, the following provisions should be complied with, which means a total reformation of the present hatching houses: First, Light in such rooms must be sufficient, and not as the present

hatchers think. There should be places for the air to circulate in the hatching room, which circulates in large quantities. These should also be sterilized and cleansed, as stated above. Second, the room must have a thermometer and a psychrometer, which indicate the humidity and temperature of the room. Such things should always be constant. Third, when the seeds are bought to be hatched, they should be put in the hatching room for several days without fire to be kept there. This keeps uniformity in temperature. Fourth, after the elapse of these days, then fire should be kept. This should be applied gradually, increasing each successive day a degree or two per day. This increase of heat should be continuous, until the temperature in the room becomes from twenty four to twenty five degrees centigrade. Fifth, during all the period required for hatching the seeds, a vessel containing water should always be kept on the stove, maintaining a constant humidity necessary for successful hatching. Such a humidity should always be from 75 to 80 per cent. Sixth, close attention should be given to refreshing the air of the room in a continuous way, without permitting strong currents which do not favor the baby worms. Such changing of the air carries away the carbon dioxide ejected by the worms.

4. Silk worm rearing: The silk worms, after being hatched, should not be kept for a long period, of a day or two, without being fed. Such scarcity of food hinders the growth and does not help the production of a good quality of silk. To feed them, clean mulberry leaves from wild mulberry trees should be used.

These should be soft and should be easily digestible. To help the tiny silk worms, the leaves, should be cut into small pieces, each having the breadth of three centimeters. As to the frequency of feeding, this depends upon the degree of the temperature of the room in which the worms are put. After the worms have pupated for the first time, the frequency of feeding should be from five to six times per day. During the second and third stages, they should be fed from four to five times per day, but the quantity of the food should have increased immensely. After the fourth pupate, the frequency should be four times per day, but with a considerable increase in the amount that is given as food.

The leaves to be served to the worms should be clean enough to assume that no diseases exist. To attain this, big pieces of very thin cloth should be used by the rearers when they are cutting the leaves. These should be put on the ground to prevent the leaves from falling onto the ground and catching dust from the soil. Mulberry leaves near the roads or dwelling houses should not be served, unless they are cleansed by the rain and sun light. Damp leaves should not be served unless when they are dried by the sun, sweat from mens' hands and faces should not be allowed to fall on the leaves, for such things hurt the worms, and in many cases, is the cause for their premature death. Men, when cutting the leaves should also remember that the smoke of their cigarettes injures the tiny worms and should never smoke while in the mulberry field cutting the leaves. A thing which also must be remembered is that while carrying the leaves home,

they should not be put into bags or big bundles and wrapped with ropes. Such procedure makes the leaves become dry and hot, both being unfavorable to the worms

As to the degree of crowdedness of the worms, much space should be provided, specially when the worms are still young, to help them move freely. The contents of a box of grains containing twenty five grams, when they have reached the fourth stage, should be provided with tables having an area of about fifty square meters, minimum. An abundance of room is very essential because the worms will have enough space to grow and move freely and has two fold advantage to the raiser: first, this ^{helps} ~~helps~~ him to be in a better position to be able to see the sick worms which roam among the healthy ones, so that he will separate them and throw them away. A second reason, which is related closely to the first one, is that when there is enough space to move freely, the healthy worms will not need to cross over the sick ones, in case there are any, and will not catch the diseases quickly. In short, such uncrowdedness is necessary as adequate living is necessary to the human beings--where they live in slums and crowded places, many diseases and deaths will occur, and the majority will be physically weak, and in those good houses and adequate means of living, opposite results are shown.

As to the ventilation in such places, it should be followed according to the suggestions made in regard to the hatching houses and even to a greater extent. Air should always be given

the opportunity to circulate freely. In opening the windows to help ventilation, due care should be taken that the rays of the sun do not come on the worms because this hurts them. To prevent such happening, thin pieces of cloth should be put on the windows which will prevent the sun; and during the fourth pupate, care should also be taken to provide free circulation of air, even during the night. In regard to the branches that are put to help the worms make their cocoons, care should be taken that these should not be prickly. They should be dry, and when put on the tables where the worms are, they should be put carefully, in order not to kill the worms. To prevent such happening, the food should be placed in the middle, between the branches, where the worms crowd to feed. Then the branches can be put in an arranged form, and should stand vertically with the surface of the table, and not horizontally, as is the practice in the country.

The scaffoldings where the worms are to be put should be of the table forms, but having the surface made of iron strings worked like nets. These, in most cases, do not help the disease to live in them and can always be kept with ventilation going on--opposite to the present methods used. Tables whose surface is made out of wood are not good at all for the purpose, and should never be used, though they are cheap, while the suggested method is more expensive. These string surfaces will last longer than the wooden ones, and will serve the purpose better, and in the long run, the cost to the raiser will be equal to that which is paid to the wooden ones. (for sample look next page)

Below is given a sample of the of the scientific tables on which the silk worms shoul be kept, in order to keep adequate ventilation and dry atmosphere. The space between each compartment and the other should be 60 cm., the width of the tables should be from 80 cm. to one meter, and the lenght should be ~~one~~ ^{two} meters.

This sample is taken from "Quelques Recommandatons Aux Sericiculteurs" issued by the Haut Commissariat, year 1928, page 30.

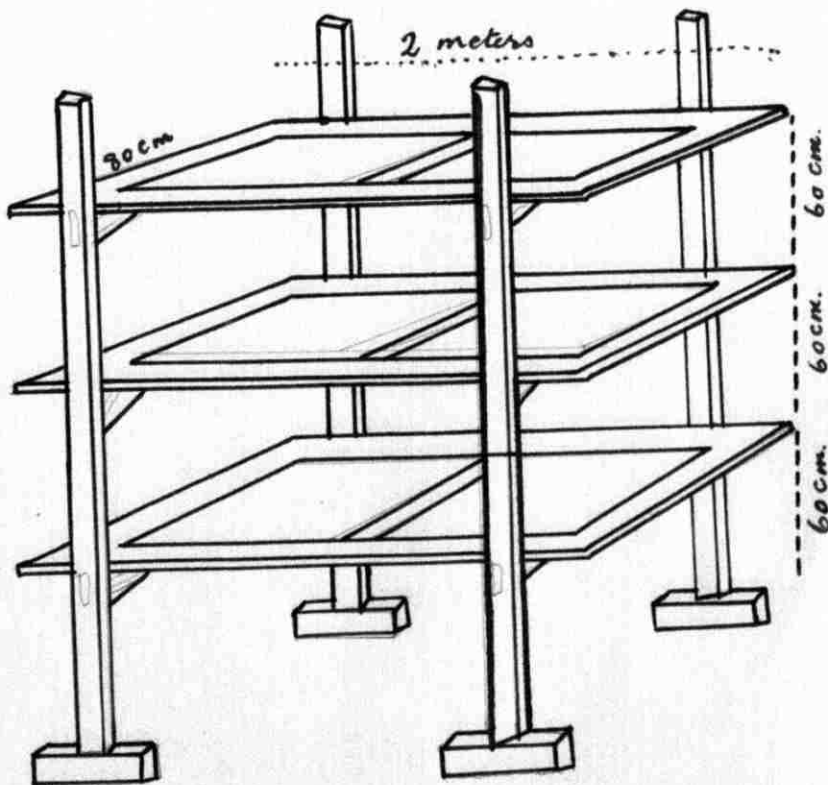


Fig. VII

5. Silk worm diseases: The four chief diseases are, Burnt "fulfili", Flacherie, "Dablan", Masquerdine, "Karnoub", and the Yellow disease, "Kayyah". The signs of the Burnt are, unequal sizes of the worms which are of the same age, brown spots on the body and the legs of the worms. To take measures to save the remaining healthy from Burnt ones, the following should be made:

i. Remove the waste leaves that are not eaten by the worms from over the tables, and the waste of the silk worms, as many times as possible during their life time.

ii. Keep the degree of crowdedness very low--leave adequate space for the worms.

iii. Look over the worms and collect all the infected ones, directed by the above mentioned signs, and throw them away, to prevent those from infecting the healthy ones.

iv. The temperature of the room, in such cases, should be raised to a higher degree than under normal conditions, and the food should increase, both, in quantity of food and frequency of times.

The signs of the Flacherie are that the infected worms will become lazy. It leaves the mulberry leaves and drags itself to the edges of the trays or tables, where it dies. And if it were making the cocoon, it stops and will not be able to hold itself on the branches, where it dies. Provisions should consist of:

i. Take off the waste, as in the previous case, and move the worms to a clean place.

ii. Open all doors, to help more circulation of clean air.

iii. Raise the degree of heat to 27 or 30 degrees Centigrade, and stop feeding the worms for twenty four hours. This is to help the worms digest the food they have eaten.

iv. After twenty four hours have passed, lower the degree of heat to 24 or 23 Centigrade, and begin feeding them again, little by little, by thin leaves from wild mulberry trees.

The signs of Masquerdin are that the worms infected will stop eating and become slow in movement. Its color changes and it dies, its body becoming hard and brown in color. The measures to be taken are:

i. Move the uninfected ones from where they are to other places. ii. Take of the waste of the worms, "djizzie", taking care not to let much of the dust fill the air, and burn it. Do not burry it in the soil.

iii. Provide means for more circulation of air and dry the humidity of the room, by putting a quantity of burning lime in baskets, which should be hung from the ceiling of the room.

iv. Undried woods of mulberry trees for the purpose of having much smoke in the room, should be burnt.

v. The worms should be fed at more frequent intervals to help them finish their cocoons in a short time, and make their cocoons before becoming helpless in movement.

The signs of the Yellow disease, are that the color of the worm becomes very yellow and the body becomes very weakened. The provission to be taken is to prevent unusual and sudden change

in atmosphere of the room in which they are kept, and not to have strong air currents in that place. These diseases can be carried from place to place by the rearers, and so it is wise for these not to make visits to each other during the season.

These are some of the most important instructions which the government can give, and if followed, will lead to a very profitable silk crop to the rearers.

V. Conclusion

Throughout the whole of this thesis, we attempted to show the importance of the Syrian silk, to disclose the present situation in its production and method of consumption, to show the tendencies in silk growing, and to give some recommendations as to the possibility of improving the methods of production and increasing the output.

We have shown that importance of the Syrian silk lies in the fact that it can be mixed with other silks to give good results, because of its elasticity and the good results it gives in dyeing. The present means of production have been shown to be rather unscientific, both in the way of furnishing the seeds, the method of rearing the silk worms, and in the process of spinning. The Syrian silk was shown to be consumed, both, in Syria and foreign markets, but that the process of marketing was inefficient, being carried on under competitive conditions. The unefficiency of the silk worm rearers, the unsystematized marketing process, and the lack of sufficient capital have been shown to be the most important factors that help the foreign silk producers to compete with Syrian producers even in Syria.

In regard to the tendencies in silk growing in Syria, it has been shown that the increase began in 1920, and has been going on since that time. The reasons contributing to this conti-

nuous increase, were given to be: 1. Provisions by the government to punish any body who cuts down the mulberry trees, by imprisonment and cash fine. 2. The gratuitous distribution of mulberry trees by the government, and the incentives that have been given by way of prizes and printed instructions along the modern methods of silk production. 3. The conferences that have been held by the government, whose purpose is ~~the~~ providing means for improving the industry. 4. The growing demand for Syrian manufactured goods.

The final heading was the possibilities of improving the methods of production and of increasing the output. Under this heading we arrived at the conclusion that the product will increase immensely, if the following recommendations be complied with: 1. The government should teach seeds furnishers how to produce a good quality of seeds, by training them and requiring them to pass examinations, and to restrict the furnishers to those who have government licenses. 2. To educate the silk worm rearers along modern lines. These should be the proper types of houses to be used for the purpose, the kinds of seeds to be hatched, the proper keeping of hatching houses, the proper feeding and the proper instruments to be used, the diseases to which the worms are susceptible, and the proper means to prevent such diseases. 3. To require all primary schools to include in their curriculum, studies for children on how to plant mulberry trees, how to rear silk worms, and how to furnish a good quality of seeds. Such studies should be confined to schools in localities where the

silk is raised. 4. Should not only ^{be} satisfied with distributing trees to those who desire to plant, but to compel all those who have barren lands, to plant them in mulberry trees. 5. The government should improve spinning apparatus, and should introduce new machinery, at the same time, requiring spinners to spin a standard and fine quality of silk. 6. Marketing systems should be developed, introducing the cooperative methods, which give Syrian exporters a more strategic position in foreign markets. 7. There should be exemption from taxation all silk spinning factories, and to put no custom duties on all lubricants used by such factories. 8. The government should provide necessary funds to help the producers and should try to establish agricultural and commercial banks. 9. Sericulture could be stimulated by means of public lectures, educative films, prizes, and written instruction distributed gratuitously.

Such recommendations are thought to be of primary importance for the government to follow, if its purpose is to improve the present day methods of production and the increase ^{of} the Syrian produce of silk beyond any figure it has yet reached.

The End

APPENDIXLIST OF THE SILK FACTORIES IN THE LEBANON AND THE ALAOUITESYEAR 1927⁶⁵

<u>Locality</u>	<u>Proprietor</u>	<u>No. of Basins</u>	<u>Rows</u>	<u>Remarks</u>
District of Beirut				
Hadeth	Boustani	44	2	Not working
Sibney	Asad Khalil	40	2	Working
Borj Brajne	Yusuf Beydun	44	2	Working
Kfarchima	Michel klargi	62	2	Not working
Chiyah	Fares Ghosn	10	2	Working
Haret Hreik	Nasri Dakkache	44	2	Working
Asfurieh	abdul kader Ghandour	55	4	Working
Hazmieh	Sadek Sadek	54	4	Working
Wadi Chahrour	Faris Badran	12	2	Working
Nahr el Mout	G. Tabet & Bros	120	2	Works 3 months
Beirut	Habib Doumani	104	2	Working
Nahr el Mout	Emile Tabit	220	2	

District of Tripoli

Koubayate	Dr. Cassini	55	2	Working
"	"	35	2	"
"	Y. Moussa	35	2	"
Arde	Daoud Ghaleb	40	2	"
Zharta	akle Marbes	120	2	"
Rochein	Issa el Daher	40	2	"

⁶⁵ Government Report given by Mr. Bériel, President of the Chamber of Agriculture in the HIGH COMMISSARIAT

<u>Locality</u>	<u>Proprietor</u>	<u>Basins</u>	<u>Revs</u>	<u>Remarks</u>
District de Zahleh				
Mreijate	Mohammed Masoud	12	2	Working
Maallacat	Yusif Charbel	40	2	Not Working

District of Deir-el-Kamar				
Maaser & Beit Eddin	Saleh Nehmi	(50	6	Working
Beinouati	Suleiman Khattar	20	2	"
		40	6	"

District of Saida				
Saida	Debani	44	2	Not working

District of Chouf				
Bteter	Portalis	210	2	Not working since War
Bhamdoun	Khalil Tabit	106	2	Works 2 months
Kfair Amai	Salim Akkawi	170	2	Not working
Jesser-el-Kadi	Daou'	30	2	Working
Bhamdoun	Abdel Nour	40	6	"
Rounala	Boutros Yazbek	20	2	"
Tazany	Dr. Kassar Khuri	40	2	"
Houmel	Nejib Fayyad	48	2	"
Damour	P. & J. Haikal	104	2	"
"	Elias Sabbagh	70	2	"
"	Assad Toubis	100	2	"
" "	Merhej Letaif	80	2	"
Baakline	Kassim Ibrahim	4	2	"
Rechmaya	Cheik el Khuri	60	2	"
"	Elias Mejahese	32	4	"
"	George Kehk	15	4	?

Rechmaya	Chekri Khattar	17	2	?
"	Boutros Fayyad	7	2	?
Megwaya	Saleh Nehmeh	77	6	Working
Ain Traz	Family al-Assad	60	4	"
Near Bhamdoun	Fouad Zalzal	40	2	"
Douar el Remman	Ibrahim Rabbat	44	2	"
Chartoun	Faris Daniel	7	2	"
"	G. Abi Nader	50	2	"
Kfer Amai	Amin Assaf	60	2	"
Ain Zhalta	Taufik Daher	10	2	"
EL Faoura	Rizkhala Faris	20	4	"

District of Maten				
Bikfayya	Chekri Zaizal	40	2	"
Bsousse	Fayyad	50	6	"
Chouit	"	60	2	Stopped 1923
Chbenyeh	Bou Haidar	10	6	Working
Mtein	Assad Barakat	60	2	Stopped 1935
Bhanes	Sakim Rachid	12	2	Working
Baabdat	Elias Lahoud	100	2	Stopped 1914
"	"	80	2	" 1917
"	Michel el Haik	10	2	Working
Zalka	Wadi Ibrahim	25	2	"
Beit Merry	Albert Nakkache	40	8	"
"	"	50	2	Stopped 1914
Broummana	Khalil Rizk	60	2	Working
"	Beit el Akl	60	2	"
Jourit el Ballout	Abdou Maroun	60	2	Basins used 30
"	Youssef Njeim	30	2	Working

Maska	Youssif Ghosn	44	2	Working
Roumieh	Nejm Kanan	50	2	Not working
"	Said Salameh	20	2	Working
"	Skandar Hobeika	20	2	Working
"	Jahjah Mansour	13	2	"
"	Assad Toubiah	80	2	Not working
Beit Chebab			2	"
"	Majid el akl	36	2	"
"	?	35	2	"
"		52	4	"
Jal el Dib	Zaizal	40		
Beit el Kukko	Khalil Faris	50	2	Stopped 1914
Ain el Allak	Iskander el Haik	40	2	Working
"	Yousif Halim	30	2	"
Baskinta	BEEKA	42	2	Stopped 1914
"	Yazbek Daoud	30	2	"
"	Alexander Hraoui	40	2	"
"	Noujaym Bros	40	2	"
"	Khattar			
Antelias	Thoms	100	2	Working
Zabbougha Akl	Akle	50	2	"
Ain el Kabou	Akle Trad	50	2	Not Working
Chouir	Saba el Halabi	50	2	Stopped 1914
Mtein	Salim Shadid	50	2	Working
"	Shahin younane	36	2	"
"	Sons of Nujaym	30	2	"
"	Akl & Sons	100	2	"
Btegrine	Amin Saliba	36	2	"
Khouchara	Hanna Riachi	26	4	"
"	Samaha	40	2	Not working

District of Meten(cont.)

El-Kaakour	Kassem Shabin	50	2	Working
Mtein	Melhem Saad	16	2	"
Hammana	Abdallah Shedid	40	2	"
"	Habib Shedid	25	4	"
"	Daoud Beshir	25	2	"
"	Habib Issa	60	2	"
"	Faris Nasser	40	2	"
Bhela	Nasri Lahoud	50	2	"
Kneisse	Salim Khuri	60	2	"
Arsoun Dalily	Faraj el Khuri	60	2	"
Ain Himadi	Mourgues d'Alges	172	2	Not Working
Chebenieh	Ilyas Rachid	26	4	Working
Bzekine	Naim Baaklini	40	2	"
"	Ali Bou Ali	58	2	"
"	Gabriel Jaramani	40	2	"
"	Hatem Boutros	40	2	Not working
Basbaya	Rustum Nasser	14	2	Working
"	Tanious Ayyoub	11	2	"
"	Saloum Michael	14	5	"
Deir el Harf	Naoum Bou Jowdi	45	2	Not working
Arbanyeh	Louis Acoun	10	2	"
Falougha	Ahmed Masri	25	2	Working
Karnayel	Husein Sabra	60	2	"
Abadieh	Dahir Najm	40	2	"
Ras el Metn	Habib Khuri	28	4	"
"	Farid Hatem	10	2	"

Meten Erhanieh	Abou Khattar	20	2	Working
Ras el Harf	Raohid Shahin	20	4	"
"	Karam Suleiman	19	2	"
"	Shakir Nimr	20	2	"
Salima	Zaglol Masri	20	2	"
"	Abdallah Husein	20	2	"
"	Asmar Masri	20	2	"
"	Mahmoud Masri	20	2	"
"	Najib Suleiman	20	2	"
"	Tanious Bashour	50	2	Not working
"	Boutros Asali	50	2	"
Baalomai	Yousif Gebraiel	5	2	Working
El Kraye	Vve Guerin	75	6	"
"	" "	82	6	"

 District de Batroun

Chikka	Curé Mokhanes	40	2	"
Kartaba	Boutros Khuri	60	2	"
Bteram	Ibrahim Sakr	40	2	"
Kfar Hazir	Habib Mouallem	40	2	"
Bechmazzine	Abdel Kader Zouk	80	2	"
"	Alex Haik	40	2	"
"	Khalil el Milki	60	2	"
"	?	140	2	Not working
"	?	60	2	"
"	?	100	2	"

Alaouties

Kafroun	Rizk Bros	40	2	Working
Mechta	Vve Curin & Bros	80	4	"

Damascus

Zebdabi	? ?	25	4	"
Homs	Annaam Sélim	40	4	"

Bibliography

Al Ahrar, issues of August 25, 1929; October 1, 1929; February 1, 1930; February 15, 1930; February 15, 1930; February 18, 1930; and February 23, 1930.

Al Bairak, February 21, 1930.

American Chamber of Commerce, Levant Trade Review, October 1929.

Commissariat, Haut, Bullitin Economique, 1929-1930. and Rapport Sur la Situation de la Syrie et Liban, 1926

Ducousso, Gaston, l'Industrie de la Soie en Syrie et au Liban, pub. Librairie Maritime et Colonial, Paris, 1913

Duran, Leo, Raw Silk, Silk Publishing Company, New York, 1931.

Epstein, M., Statesman's Year Book, Macmillan and Company, 1927; 1928, 1929.

Gedeon, E., l'Indicateur Libano Syrien, 1926 and 1928-29.

His Majesty's Government, Handbook of Syria, His Majesty's Stationery Library, 1920.

Hooper, Luther, Silk--Its Problem and Manufacture, Sir Isaac Pitman, (Date ?)

Lisan el Hal, January 2, 1930, and February 13, 1930.

Mears and Trobner, Principles and Practices of Cooperative Marketing, Ginn and Company, 1926

Shadid, Faris, La Soie au Liban, (term paper), 1928.

Satow, H.E., Report on Trade, Industry and Finance of Syria,
His Majesty's Government, 1925.

Tabit, Michel, The Silk Industry in Syria, (term paper), 1929.

Commissariat, Haut, Quelques Recommendations Aux Sericiculteurs,
1928.

SARROUF

~~Zeiden~~ G., Al Muktataf, Vols. 27 (1902), and 63 (1925)

.....

Mr. Beriel to J. Kanan, (government report), Dec. 10, 1928.

Mr. Khlat to J. Kanan, (letter), December 8, 1929; and Government
Report, December 11, 1929.

Lebanese Department of Agriculture to J. Kanan, (report), June
18, 1929, and September 15, 1929.

Mr. Topousian with J. Kanan, (conversation), September 12, 1929;
and (government report), September 15, 1929.

N.B. In some parts of this thesis, personal experience was put
for foot notes. These foot notes are reliable be-
cause the writer has had many dealings in the raising
of silk, in having helped raising it himself.