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COLLEGE FILES
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Nanking
Academic
College of Agriculture + Forestry
Sericulture program
1918-1921, n.d.

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ANNOUNCEMENT OF SHORT COURSE IN SERICULTURE

MAY 10 - JUNE 20, 1918

南京金陵大學校養蠶速成科

絲爲衣料之大宗欲絲業之進步必先養蠶之改良茲有美國著名昆虫大博士吳偉夫先生來華先生對於蠶絲一門尤擅專精本校用特組織養蠶速成科使國人得知最新養蠶之科學吳博士以普及中國科學養蠶之新知起見不惜犧牲一切遠涉重洋前來教授本校爲謀中國絲業改良之公益起見盡純粹義務組織是科俾益羣衆願國人幸勿交臂失之也簡章如后

一宗旨 普授養蠶最新之科學界謀絲業之改良

一學期 民國七年陽歷四月十日起至六月二十日止

一辦法 不論程度不限年齡不納學費凡來就學者均可教授

一課程 教授(實習之方法)(辨蠶之善惡)(辨絲之優劣)(科學養蠶取絲之新術)

等課

一試驗 各生到校必須攜帶各本處最好之蠶子若干先本其固有之方法養其帶來

之蠶種其有不良之處由吳博士隨時教正其最良者逐一詳細記載以供羣衆仿效總使各生到校咸得最良之經驗最新之科學

一考試 使本校原有之學生與校外新來之學生互相比賽技藝之軒輊成績之優劣

一獎勵 擇其技藝最高成績最優者由上海絲業公所獎給最華彩之旗幟一面持回原籍既可引啓國人注意羣起效其技藝購其種子又可促進本鄉之人奮發精神力圖進步

一額數 不限人數之多寡凡中國素行養蠶取絲之各省各縣各鄉各實業學校均可派人到校學習但川資及膳宿費等須各生自備

一傳授 其技藝最高成績最優而得獎者必須將技藝詳細傳授將種子廉價出售與國人庶收舉國改良之效

一附則 本簡章未經盡載者請函詢南京金陵大學校

一地址 南京金陵大學校

UNIVERSITY OF NANKING
COLLEGE OF AGRICULTURE AND FORESTRY
NANKING, CHINA

1919



December 3, 1919.

Mr. A. Jost, Hon. Secretary and Treasurer,
International Committee
For the Improvement of Sericulture in China,
Shanghai.

TRANSFER

Dear Sir:

I take pleasure in presenting herewith the report of our mulberry and sericultural work for the year ending September 1, 1919. I regret very much the lateness in getting the report to your Committee, which, as I have already explained to you, is due to my long absence from the University in connection with our cotton work, and the assistance provided to the United States Department of Agriculture.

Inasmuch as a number of your Committee have been following the work here at the University rather closely, I think the report calls for no particular comments on our part.

In addition to requesting favorable action on our financial statements, page 10, including approval of next year's budget, we would request that the arrangements for egg production as per your letter of February 17, accepted as per our letter of March 3, be continued for 1920. We regret exceedingly the misfortune that befell us last year, but feel sure that we can carry this work out successfully and to your entire satisfaction and approval.

We would recommend further collection of mulberry varieties this coming spring, continued in Hupeh, Kiangsi and Anhwei, and Kiangsu, the expense for which, in addition to maintenance of present collection, have been provided for in the 1920 budget.

We have taken the liberty to append to our financial statement, a statement showing the University's investments in the sericultural and mulberry work. I am sure these several items will meet with your committee's approval and should they feel so disposed, we would be glad to have them take over the financing of either one or both.

Very sincerely yours,

Dean,
College of Agriculture and Forestry.

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REPORT ON MULBERRY AND SERICULTURAL WORK.

To September 1, 1919.

Commercial Production of Mulberry

In fulfillment of your Committee's action contained in their letter of February 17, 1919, approving estimates and plans for quantity production of mulberry as per my letter of January 16, I desire to say that this work is progressing most satisfactorily. In April we transplanted about 120,000 seedlings, resulting in an almost perfect stand. These have made a good growth and are ready for grafting in the early spring of 1920 and will be ready to market in the spring of 1921. In June we planted mulberry seed, and from it have more than enough seedlings for the 150,000 to be transplanted in April, 1920, for grafting in 1921, and for sale in 1922. The photograph shown herewith was taken in the seedling nursery on the first of November.



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the largest mulberry nur-
ask is ahead of us in the
the short season available.
for this work, as well as hav-
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roduction through to marketing
ll have had two years' expe-
rience in transplanting and grafting, and one year in marketing.

Mulberry Collection

The following photograph will give you an idea of the general condition of the mulberry collections made in 1918 and 1919. About twenty new lots, from different sources, were added to the collection of ninety-three lots from the season of 1919. These twenty came from Anhwei, Kiangsi and Hupeh. Because of the unsettled conditions at the time of collection, no attempt was made to get very far into the country at any place. Further collection should be made in the provinces named above.

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This without doubt is one of the largest mulberry nurseries in China. Our most difficult task is ahead of us in the matter of grafting so large a number in the short season available. We are, however, already training men for this work, as well as having engaged expert "grafters" to assist us during the rush in the spring, so that we feel sure of success, so far as personal factors are concerned.

One thousand two hundred dollars have already been paid by your Committee as capital on the first year's production. From our experience this year, it would appear that our estimates were not far wrong, but it will be impossible to verify them until the spring of 1921, until we have carried production through to marketing the grafted stock. At that time we will have had two years' experience in transplanting and grafting, and one year in marketing.

Mulberry Collection

The following photograph will give you an idea of the general condition of the mulberry collections made in 1918 and 1919. About twenty new lots, from different sources, were added to the collection of ninety-three lots from the season of 1919. These twenty came from Anhwei, Kiangsi and Hupeh. Because of the unsettled conditions at the time of collection, no attempt was made to get very far into the country at any place. Further collection should be made in the provinces named above.

In the spring each tree was heavily fertilized with vegetable cake fertilizer, a crop of green peas was turned under as green manure, a light crop of soy beans was grown on the land during the summer, and the land ploughed up and sown with peas this fall, to be ploughed under as green manure in the spring. The trees were cultivated several times during the growing season. The soil is in considerably better condition than when we took over the land in the spring of 1918, and the trees are making a satisfactory growth. Lack of uniformity as to size and branching is necessarily due to the fact that they represent so many different lots which varied greatly to begin with. With proper pruning and a few years more growth, the lack of uniformity will largely disappear, and a fair comparison of their leaf production secured.

Mulberry Production by Cuttings

Although the results of our experiment this year were better than the year before, it was not a success from a commercial or quantity production standpoint. The trees that came through are all strong, hardy, good-sized trees, and are very desirable. The early season prospects were most encouraging as will be remembered by Messrs. Jost and Ting who saw them. Unfavourable weather, hot, dry and very windy, was undoubtedly a strong factor in their later decline. The greatest contributing factor, however, was without doubt, insufficient callousing. We shall make our cuttings in December, this year, thus allowing at least three months for callousing, instead of the six weeks allowed last year, which amount of time gave almost 100% success with a species of poplar which is always propagated by the "cuttings" method.

The saving, of one and a half years in time, a great deal in cost and labour, which will be realized when we find the proper combination of factors to make this method of propagation successful, is well worth further time and experiment.

Mulberry Plantation

Although we are receiving no financial assistance from your Committee in the development of our mulberry plantation, because of its relation to our other sericultural work, it will be well to include a report on same herein. This plantation consists of 6,000 "hu tsan" and 500 "ho tsan" trees, two of the recognized best varieties of mulberry planted out last spring, April, 1919, and occupying about thirty-one mou of land. The photograph attached gives an idea of part of the plantation. We hope to be able to use a part of the 1921 crop of leaves, and the full crop of leaves by 1922. This, in addition to the leaves that will be available from our mulberry collection of eleven mou, should by 1922 furnish leaves sufficient for the rearing



of about fifty piculs of cocoon, and by 1924 of about sixty-five piculs of cocoons. In the meantime we hope to make ourselves ready for the utilization of the entire crop for ϕ egg production.

This will make us entirely independent of market supply and market prices of leaves, will place the management of the trees in our own hands, where they can be properly cared for, fertilized and sprayed as necessary, for highest production. The plantation has added advantage of being isolated from any other mulberry trees, and near to the site already determined upon for our permanent sericultural building.

Egg Production

Following out the conditions for commercial egg production outlined in your letter of February 17, we proceeded immediately with the overhauling of two adjoining Chinese houses owned by the University. Photograph of the north house, and the scheme used for rearing are shown below.

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This photograph shows one of the two reconstructed Chinese houses for use in rearing silkworms and egg production, with provision for light and ventilation. A second building (the one that was burned and has been reconstructed) is in the immediate background.

imate background.

This photograph shows the interior arrangement of the rearing rooms. The frames are made wholly of bamboo, which can be easily put up or taken down.

The bamboo provides good, sanitary, durable and cheap construction. The picture was taken in the rearing room used by the short course students.

All arrangements for labor, leaves, etc., had been made, and matters were proceeding well with the rearing of the young worms from the eggs presented by your Committee, when the south building containing the worms was suddenly destroyed by fire. Nothing whatever was saved. The north building was untouched, due to a favourable wind, and the burned building has in the meantime been rebuilt. We regret this mishap exceedingly and can assure you that our disappointment has been very great as well as having involved us in considerable financial loss.

We reared the few small worms, variety "Tsu Nan," which Mr. Viell sent to us after the fire, and secured from them about seventy-three cattles of cocoons, which after selection were used for egg production. In another part of the report, pages 8 and 9, it will be seen that this variety gave the largest silk production, and showed seventy-four per cent disease. After careful selection, distribution of a small quantity of eggs to the short course students, and loss due to disease, we will probably have about five ounces of good seed left.

Plans for a permanent sericultural building, 129' X 43', two and one-half stories high, the top story to be used for housing our short course students and the lower floors for rearing silkworms and producing and testing eggs, costing about \$18,000, equipped, have already been drawn up and approved by the University authorities, and through interested friends, it is hoped to have the money in hand for construction before long. The building will be located on our new agricultural and forestry land, conveniently situated with reference to our mulberry orchard and other department-s of the University.

Short Course in Sericulture

The short course in sericulture lasted from April 10 to July 10, three months, two weeks longer than the course given last year, in order to give the students more practical work in testing eggs and in studying the summer crop. When notices were sent out regarding the short course, certain stipulations were made as to previous school training, and practical work in sericulture, and that the size of the class would be kept down to thirty. These suggestions for improving the quality of our short course grew out of our experience last year, with a large class of various degrees of schooling and experience. Out of over forty applications, twenty-six were accepted. That we were justified in making such rulings is shown by the fact that the students were all of a much higher order - both as to scholarship and actual sericultural experience, that the whole twenty-six remained throughout the course, in spite of the student strike, and that twenty-four out of twenty-six were granted certificates.

The work of the short course followed in general that of the previous year, except that there was more, and more carefully supervised practical work which included rearing cocoons, keeping of careful records, study of disease, selection of cocoon for breeding, production of eggs and examination for pebrine.

Some statistics concerning the students may be of interest. The youngest student was sixteen years old, the oldest students, forty-six, and the average age twenty-four years. Eight of the eighteen provinces were represented: Shantung with eight students, Kiangsi with five, Anhwei and Shansi with three each, Hunan and Kiangsu with two each, and Hupeh and Chekiang with one each. About seventy per cent of the students were sent by agricultural associations, about twenty per cent by officials, and the rest were private students. Three excellent students were sent by the progressive Governor, Yen Shi-shan, of Shansi

That total expenses to each student for the three months were \$19.00 Mexican, including board, room, light, laboratory fees, and incidentals.

Inquiries for next year's course are already being received.

Studies in Prevalence of Pebrine

Mr. Ts'ien utilized the opportunity afforded by the short course, to which students had brought eggs for their rearing work from various sources and different parts of the country, to make a study of the prevalence of pebrine. The results of this investigation are embodied in Table 1 on the following page. It should be borne in mind that the silkworm eggs brought by the students are the best that they could secure in their districts. In some cases only a very few moths were available, and there is the possibility that a larger number may have shown somewhat different percentages of diseased and healthy moths. However, the average are probably not far wrong, and indicate not only the side-spread prevalence but the high incidence of disease. This is further valuable quantitative evidence of the general disease situation and of the problem of eradicating disease, or rather of this one disease only, pebrine, and producing certified eggs for use in producing China's immense silk crop.

Yield of silk from Twenty-eight Varieties of Silkworms

The table on page 9 shows the relative yield of silk from twenty-eight varieties of silkworms, an opportunity for the tabulation of which was given Mr. Ts'ien by the short course. It should be pointed out that the Tsü Nan variety, sent by the International Committee for the Improvement of Sericulture was the best of all, being approached only by one other variety. This table is valuable as showing the relative yield of the different varieties, and the excellence of the Tsü Nan variety sent by your Committee as compared with them.

TABLE SHOWING PERCENTAGE OF DISEASED AND HEALTHY MOTHS
FROM TWENTY-SEVEN VARIETIES OF SILKWORMS.
WHITE COCOONS.

Variety Name	Source	Total	Number Tested		Percentage	
			Diseased	Healthy	Diseased	Healthy
1. Summer	Nanking	115	2	113	1.74	98.26
2. Tsü Kuei	Nanking Univ.	18	6	12	33.33	66.67
3. New Round	Shantung	106	47	62	44.34	55.66
4. Four Molting		82	37	45	45.12	54.88
5. Nanking Three Molting	Nanking local	441	217	228	48.30	51.70
6. New Long	Shantung	77	39	38	50.65	49.35
7. Lien Siang		37	21	16	57.00	43.00
8. Three Molting	Chekiang	230	135	95	59.00	41.00
9. Four Molting Spotted	Chekiang	65	40	25	61.54	38.46
10. New Round	Nanking	181	116	65	64.00	36.00
11. Yühang Spotted	Soochow	11	7	4	64.00	36.00
12. Pearl River	Nanking Univ.	49	35	14	71.43	28.57
13. Tsü Kuei	Shansi	73	53	19	73.62	26.38
14. Tsü Nan	Int. Com. F.I.S.C.	1390	1030	360	73.67	26.33
15. Taihu Special		27	20	7	74.00	26.00
16. Bronze Bird	Kiangsu	24	21	3	87.50	12.50
17. Camel	Kiangsu	11	10	1	90.90	9.10
18. Big Round	Chekiang	20	20	0	100.00	
Totals for White Cocoons		2959	1852	1107	62.60	37.40
COLORED COCOONS						
19. Wien Yang Round	Soochow	5	5	0	100.00	
20. Wien Yang Oblong	Soochow	5	5	0	100.00	
21. Pink Pointed	Shansi	52	16	36	30.77	69.23
22. Duck Egg	Soochow	13	5	8	38.46	61.54
23. French Yellow	Int. Com. F.I.S.C.	5	3	2	60.00	40.00
24. Three Molting Pink	Shansi	9	2	7	77.77	22.23
25. Three Molting Yellow Pointed	Shantung	57	32	25	56.00	44.00
26. Han Yellow	Soochow	32	23	9	72.00	28.00
27. Fish Lien	Nusih	60	31	29	52.00	48.00
Totals for Colored Cocoons		238	122	116	51.26	48.74
Grand Totals		3197	1974	1223	61.75	48.25

AMOUNT OF SILK REELED FROM TWO HUNDRED COCOONS OF
DIFFERENT VARIETIES

Name of Variety	No. Cocoons	Wt. 200		Amount of		Remarks
		Cocoons	with floss of silk	Amount of silk reeled	silk reeled from one catty cocoons	
			Chi.oz.	Chi.oz.	Chi. Oz.	
1. Four Molting	200		5.8	0.4	1.1	
2. Four Molting	200		7.5	0.64	1.36	
3. Nanking Three Molting	200		5.9	0.53	1.43	
4. Lien Siang	200		7.5	0.63	1.34	
5. Three Molting	200		6.0	0.55	1.46	
6. Four Molting Spotted	200		8.8	0.83	1.50	
7. New & Round 新元	200		7.2	0.87	1.93	
8. Yühang Spotted	200		6.0	0.68	1.81	
9. Pearl River	200		8.0	0.63	1.26	
10. Tsü Kuei	200		8.0	0.63	1.43	
11. China Tsü Nan	200		8.5	1.05	2.99	The best of all
12. Special Taihu	200		8.0	0.50	1.00	
13. Camel	200		5.3	0.42	1.26	
14. Big & Round	200		8.8	0.62	1.13	
15. Pink Pointed	200		8.8	0.96	1.74	
16. Yellow Three Molting	200		8.0	0.70	1.40	
17. Han Yellow (Soochow)	83		3.6	0.28	1.24	
18. Han Yellow	200		5.0	0.54	1.73	
19. Pih Lien	200		4.0	0.33	1.32	
20. New "Hwa"	200		7.3	0.78	1.70	
21. Tsing Hsih	200		7.7	0.53	1.10	
22. Lime	200		5.0	0.45	1.44	
23. "Oak Leaf Feeding" Worm (only when very young)	200		10.3	0.60	.93	Too many double cocoons. The worst of all.
24. 四化性	161		5.0	0.48	1.53	
25. Tsü Kuei X Dan Shia	200		5.8	0.50	1.38	
26. Yellow Back Mixed (Yellow cocoons)	200		7.2	0.69	1.46	
27. Yellow Black Mixed (White cocoons)	200		5.9	0.42	1.14	
28. Tsing Kuei X New "Hwa"	200		7.2	0.81	1.80	
Average	194		6.82	0.61	1.47	

FINANCIAL STATEMENT TO SEPTEMBER 1919

Receipts

Budget approved and paid by International Committee for the Improvement of Sericulture in China	\$2,683.00	
Student fees; sale of silk	<u>506.00</u>	\$3,189.00

Expenditures

Mulberry Collection	\$ 120.45	
Short Course	460.18	
Administration	1,933.00	
General Expenses including liabilities in connection with Egg Production	628.97	\$3,142.60
Unexpended Balance		\$46.40

Budget for 1920

Administration (salary for Mr. Ts'ien and assistant)	\$2,220.00	
Mulberry Collection	400.00	
General Expenses, Short Course, etc.	200.00	\$2,820.00

University Investment for Year Ending September 1, 1920

Building for Quantity Egg Production (includ- ing rebuilding of burned portion)	\$934.42	
Permanent Equipment	262.87	
Mulberry Orchard of 31 mou, including trees labor, etc.	<u>480.55</u>	\$1,677.84

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CHINA UNION UNIVERSITY
CENTRAL OFFICE
180 FIFTH AVENUE
NEW YORK, N. Y.

only copy
UNIVERSITY OF NANKING BULLETIN

Admission to the Colleges
Special Course in Sericulture
The Summer Schools

1921

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VOLUME FIVE, NUMBER SIX

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**REQUIREMENTS FOR ADMISSION
TO THE COLLEGES.**

On July first the University of Nanking will conduct entrance examinations for admission to the Colleges in Nanking, Kiukiang, Hankow, Changsha, Taiyuenfu, Tientsin, Shanghai, Amoy, Canton and in other cities where a sufficient number of candidates apply. Each candidate must register in each center before the date of examination.

Every candidate for examination in the various centers is required:

1. To be a middle school graduate.
2. To present his photograph with personal signature in the presence of the examiner.
3. To pay a matriculation fee of \$5.00 before taking the examination. (no refund).

The subjects for examination in the Colleges are as follows:

Chinese, composition and history;
English, grammar and composition, written and oral;
Mathematics, algebra through quadratics, and plane geometry.

Every applicant who successfully passes the entrance examinations is required to have in the Registrar's office not later than August thirty-first the following blanks completely and properly filled out and signed:—

1. An application for entrance on one of the blank forms supplied by the University.
2. A guarantee signed and sealed by a reliable guarantor, on a blank form supplied by the University.
3. A diploma or certificate that he is a graduate of a middle school.

4. A matriculation fee of five dollars if he has not taken his examination in the centers and wishes to take the examinations in Nanking on September sixth.

The above requirements apply to all candidates whether taking these entrance examinations in July or again in Nanking on September sixth. New students will not be permitted to take entrance examinations at any other time. No one who is not a middle school graduate will be taken into the University, even if he does pass the examinations.

For further information address the Admissions Committee, the University of Nanking, Nanking.

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SPECIAL COURSE IN SERICULTURE

In view of the pressing need for highly trained men to undertake the great task of developing the Chinese silk industry, a Special Course in Sericulture of one year's duration will be given at the University of Nanking beginning with September 1921. This will take the place of the former short courses, which used to be held in the spring, as it was found that a thorough training could not be given in such a short time.

Aim of the Course--The aim of this course is to give the students an intensive training in every phase of sericultural work, both theoretical and practical, in order that they may be well equipped and prepared for any undertaking necessary in the promotion and development of the Chinese silk industry.

Time—The course will begin 8 September 1921 and end 21 August 1922, and will be divided into four terms as follows, with no vacation during the summer :—

First term: 8 September 1921---2 December 1921.

Second term: 10 December 1921---10 March 1922.

Third term: 22 March 1922---19 June 1922.

Fourth term: 21 June 1922---21 August 1922.

Course of Study—The course is composed of class work, field practice, and laboratory exercises, which are distributed as follows:—

First Term

COURSE	HOURS
Methods of Silkworm Rearing	5
Principles of Mulberry Growing	5
Anatomy of Silkworm	3
Principles of Heredity	4
Micrology	3

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Second Term

COURSE	HOURS
Breeding of Silkworm	4
Physiology of Silkworm	3
Anatomy of Silkworm	3
Methods of Egg Production	2
Micrology	3
Economics of Sericulture	3
Practice in Pruning Mulberry Trees	
Practical Study of Grafting Mulberries	

Third Term

COURSE	HOURS
Insect Pests and Diseases of Mulberry	4
Pathology of Silkworm	4
Soils	3
Practice in Grafting Mulberries	
Practice in Rearing Silkworms	
Practice in Egg Production	
Practice in Cultivating Mulberries	
Practice in Pruning Mulberries	

Fourth Term

Practice in Rearing Silkworms	
Practice in Examining Moths for Pebrine	
Graduation Thesis	

DESCRIPTION OF COURSES

141. *Methods of Silkworm Rearing*—This course includes a comparative study of the old and new methods of rearing silkworms that have been widely used in this country, special emphasis being laid upon showing the students the defects of the old and the difficulties of the new. This is a prerequisite course to the actual rearing of worms in the spring.

First term, 5 hours. No laboratory fee.

142. *Methods of Egg Production*—This course is intended to make a comparative study of the Pasteur method and the Nanking University method, which is a modified form of the Pasteur. It is a prerequisite to the practical work of raising silkworm eggs. Lectures and recitations.

Second term, 2 hours a week. No laboratory fee.

141 A, 142 A. *Anatomy of Silkworm*—This is an elementary course in the study of silkworm structure. The work is composed of one hour lecture and four hours laboratory exercise a week, running for two terms.

First and second terms. Laboratory fee, three dollars per term.

142 B. *Physiology of Silkworm*—This is a supplementary course to the one in silkworm anatomy, including a study of the functions of different organs of the silkworm. Lectures, recitations, and laboratory exercises by appointment.

Second term, three hours weekly. No laboratory fee.

143. *Pathology of Silkworm*—This course treats of the nature, causes, and methods of control of the diseases affecting silkworms, such as Pebrine, Muscadine, Flacherie and Grasserie. Lectures, readings, recitations and laboratory work.

Lectures two hours and laboratory exercises four hours a week. Laboratory fee, one dollar.

141 B. *Principles of Heredity*—This is a prerequisite course to the one in silkworm breeding. It is composed of studies of the laws of variation and heredity, of the theory of mutation, and of Mendel's Law. Reference assignments, lectures, and recitations.

First term, four hours weekly. No laboratory fee.

142 C. *Breeding of Silkworm*—This course deals with the application of the principles of heredity to silkworm improvements and the methods by which to attain this aim. Lectures, recitations, and laboratory exercises.

Second term, four hours weekly. Laboratory fee, one dollar.

141 C. *Principles of Mulberry Growing*—This is a general course dealing with the principles of mulberry growing, including soils, sites, cuttings, layerings, buddings, grafting, pruning, fertilizers, insects, and diseases. Lectures, recitations, and field work by special appointment.

First term, five hours weekly. No laboratory fee.

143 A. *Insects and Diseases of Mulberry Tree*—This is a supplementary course to Principles of Mulberry Growing, dealing with studies of the life history and methods of control of insects and the nature, causes, and methods of control of diseases affecting mulberry trees. Lectures, recitations, and laboratory practice.

Third term, lecture two hours and laboratory four hours a week. Laboratory fee, one dollar.

141 D, 142 D. *Micrology*—This is an elementary course in studies of the principles and structure of both simple and compound microscopes, their uses, and methods of preparing and staining slides. Lectures and laboratory practice.

First and second terms, lecture one hour and laboratory exercise four hours a week. Laboratory fee, two dollars.

143 B. *Soils*—This course deals with the origin, formation, classification, composition, and properties of soil

with special reference to its relations to mulberry culture. Lectures, readings, and recitations.

Third term, three hours a week.

142 E. *Economics of Sericulture*—This is a study of the economic development of Chinese sericulture and the problems that face the silkgrowers to-day. Lectures and discussions.

Second term, three hours a week. No laboratory fee.

144 *Graduation Thesis*—This is intended to teach the students how to conduct experiments in an elementary way, how to find references and how to write up a thesis in good and concise form. This work results in writing a thesis on some specified subject of at least 5,000 characters. No student is allowed to graduate without submitting to the faculty a thesis which is acceptable to the latter.

Fourth term.

Various Kinds of Practical Work—Each student is requested to raise a definite quantity of silkworms under the guidance of the instructors in charge, in addition to practice in fumigating implements, and in cocoonery, egg production, and various phases of mulberry growing.

REQUIREMENTS FOR ADMISSION

Candidates for Admission to the course are Required:—

1. The applicants should be at least middle school graduates and able to present middle school diplomas at the time of entrance examination.

2. He should file with the registrar (a) an application for entrance completely filled out on blank forms supplied by the University and including a photograph of himself and a signed recommendation from the Principal of the Middle School from which he has graduated; (b) a guarantee signed by a reliable guarantor, on a blank form supplied by the University.

These completed blanks must be in the Registrar's office not later than August 31 on the year the applicant desires to enter. No applicant is permitted to take the examinations until his application has been approved by the University.

3. He must take and successfully pass the entrance examinations on the day appointed. This entrance examination will be held at the University on September 6 but plans are being formed to hold entrance examinations at Shanghai, Tientsin, Canton, Hankow and some other important cities of China on July 1, in addition to the one held in Nanking.

The subject in which candidates are examined are as follows: (a) Chinese composition; (b) Chinese history; (c) Elementary Physics; and (d) Elementary Chemistry.

Candidates are also requested to pass an oral examination in addition to the written examination.

Fees and Expenses—Board will amount to \$55 for the year; tuition, \$15; and room, and incidentals, \$25; (Laboratory fees included) making a total of \$95 for the whole course, the students, of course, providing their own travel and other expenses.

Payments may be made in four installments before the opening of each term as follows:—

First term: Twenty-five dollars

Second term: Twenty-five dollars

Third term: Twenty-five dollars

Fourth term: Twenty dollars

Graduation—Students who possess a good moral character and have completed all the prescribed courses of study are allowed to graduate upon presentation of a satisfactory thesis the subject of which is chosen by the students and approved by the faculty, and will be given a certificate.

University Rules and Regulations—All the rules and regulations of the University other than stated here but in line with ones described above are also applicable to the students in this course.

THE SUMMER SCHOOLS

FOREWORD BY PRESIDENT BOWEN

Dear Friends:

The chief aims of the University of Nanking Summer School are to help extend educational advantages to those who are unable to attend regular academic sessions, and to make available to teachers, mission workers, agriculturists, silk and cotton growers, and any others interested, the benefits to be derived from the trained staff and equipment of the University. The pages which follow will make clear what the University is able to offer this summer—the first, it is hoped, of a progressive series of Summer Schools—and will state the necessary expenses. The expenses are figured on a cost basis. But as it is possible that many of those who would be most benefitted by attendance at this Summer School will find it difficult to provide these expenses, it is suggested that various societies and organizations and churches endeavor to send picked men and women and to provide such financial aid as may be needed. For workers who have spent years in faithful service the University Summer Schools should afford an invigorating and profitable vacation; and such an investment ought to bring immediate returns in new ideas, renewed enthusiasm, and useful knowledge.

Cordially yours,

A. J. BOWEN.

FACULTY

Bowen, A. J., B. A., LL. D., President.
Williams, J. E., B. A., D. D., Vice-President.
Sie, K. S., M. S. A., Director.
Sarvis, G. W., M. A., Dean of the University Summer School; Sociology, Economics.
Hu, I. T., M. A., Dean of the Extension Summer School.
Buck, J. L., B. S., Agriculture.
Chang, L. C., B. A., Registrar.
Cheo, M. I., B. S., Proctor at Kuleo.
Cheo, P. (Teachers' College,) Phonetics.
Chien, C. L., M. S. A., Sericulture.
Clemons, H., M. A., Librarian.
Griffing, J. B., B. S., M. A., Cotton.
Hwa, B. H., B. S., Agriculture.
Mrs. Liu, C. C., Prctor at Kan Ho Yen.
Liu, K. C., Assistant Librarian.
Marx, E., B. A., B. D., English.
Rowe, H. F., D. D., Religion.
Shao, T. H., B. S., Cotton.
Shen, J. W., B. D., S. T. M., Religion.
Ting, T. C., B. A., Physics.
Thomson, J. C., M. S., B. D., M. A., Chemistry.
Wang, K. T., B. S., Sericulture.
Wang, C. P., Ph. D., Education.

CALENDAR

Registration	June 30, Thursday, 5th moon, 25th day
Classes begin	July 4, Monday, 5th moon, 29th day
Examinations	August 12, Friday, 7th moon, 9th day
Summer term closes	August 12, Friday, 7th moon, 9th day

GENERAL INFORMATION.

QUALIFICATION OF APPLICANTS.

(a) Only men will be admitted to the University Summer School courses, and applicants must be middle school graduates and able to use English well, as all instruction will be given in English.

(b) Men and women will be admitted to the Extension Summer School courses if they have a good knowledge of Chinese. All the courses will be given in Chinese.

REGULATIONS REGARDING CHOICE OF COURSES.

(a) Those who are admitted to the University Summer School will be allowed to take any courses in the Extension Summer School.

(b) Those taking the Extension Summer School work will not be allowed to take any courses in the University Summer School. In the Extension Summer School no course will be given unless there are at least ten students desiring to take the course.

REGISTRATION.

Registration will close June 30. Kindly return to the Registrar's Office, University of Nanking, Drum Tower, Nanking, the application blank to be found on the last page of this bulletin, stating the courses you desire to take, and enclosing the three-dollar matriculation fee—before June 30. This matriculation fee will not be refunded, in case the applicant should not be able to attend the summer school.

BOARD AND ROOM.

For both the University Summer School and the Extension Summer School the board will be six dollars, and the room rent, two dollars. No money will be refunded to students who leave before the close of the term. Women students will be provided with board and dormitory accommodation at Kan Ho Yen, and the men will be provided for at the Drum Tower.

TUITION.

(a) The tuition fee for the University Summer School will be ten dollars for three courses. For each additional course three dollars will be charged. A student will not be permitted to take more than four courses. It is advisable that those desiring to take the courses in science take two courses only.

(b) The tuition fee for the Extension Summer School will be six dollars for three courses. For each additional course two dollars will be charged. No student will be permitted to take more than four courses.

SPECIAL LECTURES.

In addition to the class work in the morning, there will be special lectures by experts on such topics as hygiene, education, Religion, civics, Chinese literature, Chinese agriculture, Chinese philosophy, Chinese social conditions and problems, and other important subjects. These lectures are designed to give students practical knowledge and concrete suggestions relative to social service.

USE OF THE LIBRARY.

The privileges of using the University Library will be granted to Summer School students under the regulations. The main library is located in Severance Hall at Kulou and there is a branch in Cooper Hall at Kan Ho Yen. The University Library contains (March first, 1921) 8,974 Chinese books, 8,141 foreign books, and 13,022 pamphlets. During the time of the Summer School the main library will open daily, except Sundays, from eight to twelve and from two to six. On Saturday afternoons the hours will be two to four. The branch library at Kan Ho Yen will be open every week day morning from eight until twelve.

SCHEDULE OF COURSES UNIVERSITY SUMMER SCHOOL

	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.
Industrial Psychology	7.00	7.00	7.00	7.00	7.00	
College Entrance English	8.00	8.00	8.00	8.00	8.00	
Educational Psychology	8.00	8.00	8.00	8.00	8.00	
Sociology	9.00	9.00	9.00	9.00	9.00	
Religious Psychology	10.00	10.00	10.00	10.00	10.00	
Advanced English	10.00	10.00	10.00	10.00	10.00	
Economics	11.00	11.00	11.00	11.00	10.00	
Organic Chemistry	7.00 Lec.		7.00 Lec.		7.00 Lec.	
	8-11 Lab.		8-11 Lab.		8-11 Lab.	
Agricultural Chemistry		7.00 Lec.		7.00 Lec.		7.00 Lec.
		8-11 Lab.		8-11 Lab.		8-11 Lab.
Elementary Physics	9.00 Lec.		9.00 Lec.		9.00 Lec.	
	10-12 Lab.		10-12 Lab.		10-12 Lab.	

SCHEDULE OF COURSES
EXTENSION SUMMER SCHOOL

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Phonetics	7.00	7.00	7.00	7.00	7.00	
Teaching of Primary School Subjects	8.00	8.00	8.00	8.00	8.00	8.00
Child Psychology	9.00	9.00	9.00	9.00	9.00	
Phonetics	10.00	10.00	10.00	10.00	10.00	
Pastoral Theology	11.00	11.00	11.00	11.00	11.00	
General Agriculture	7.00	7.00	7.00	7.00	7.00	
Soils	7.00		7.00		7.00	
Agricultural Education	8.00	8.00	8.00	8.00	8.00	
History of Sericulture						8.00
Cotton Culture	9.00	9.00	9.00	9.00	9.00	
Sericultural Problems		10.00		10.00		

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UNIVERSITY SUMMER SCHOOL COURSES

CHEMISTRY

Elementary Organic Chemistry.—This course consists of a brief survey of the more important classes of organic compounds in the aliphatic series of hydrocarbons. Its purpose is to give the student a clear idea of the principles of organic chemistry and its relations to general chemistry. The laboratory work consists of a study of some of the important syntheses and the reactions of the different classes of compounds discussed in the classroom. The text-books are J. T. Stoddard's "Introduction to Organic Chemistry" and Fisher's "Laboratory Manual of Organic Chemistry."

General Agricultural Chemistry.—This course is a survey of the application of the principles of chemistry to agriculture. It includes a study of the chemical composition and properties of soils, fertilizers, plants and crops, and animal food and nutrition. The work of the classroom is supplemented by analyses of typical agricultural products in the laboratory.

EDUCATION.

Religious Psychology.—The aim of this course is to make clear the basis for religious feelings and to point out ways in which such feelings can be properly aroused in youths and in adults.

Industrial Psychology.—The aim of this course is twofold: (1) to help those who have not found their life work to select a profession, and (2) to help adults to see the required elements that are in different professions, so that they may be in a better position to guide young people in leading useful lives.

Educational Psychology.—This course consists of a series of lectures on the equipment of the mental life of children and their connection with methods of teaching, discipline, hygiene, and school management.

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ENGLISH.

College Entrance English—The aim of this course is to help students deficient in English to prepare for entrance to the Junior College. Attention is given to pronunciation, conversation, reading, grammar, oral and written composition, with emphasis on these elements varied according to the needs of the class. As much attention as possible is given to the individual student and his particular difficulties. The course is to Junior College students who are weak in English. Four years of middle school English or the equivalent are prerequisite for this course.

Senior College English—The aim of this course is to furnish opportunity for further study of regular senior college grade for those who are prepared for it. It is primarily for former college students who are now engaged in occupations and wish to refresh or advance their knowledge of English; and for regular students pursuing work toward graduation. It is a course in the reading, interpretation and appreciation of literature, with incidental attention to written composition and oral speech. Graduation from Junior College or the equivalent is prerequisite.

Practical English—The aim of this course is to give the student as fully and clearly as possible a knowledge of the life and customs of English-speaking countries, particularly the United States of America, and to increase his vocabulary of colloquial idioms. The actual speech, life, and customs of the Western countries, and their differences from Chinese life, are presented and explained, by means of reading, lectures, conversation, pictures, visits foreign homes in Nanking, etc. To students who should never go abroad, it should give a better understanding and appreciation of Western life. Those who go abroad should be helped very materially in travelling and in becoming adjusted to the new country. Completion in at least one year of senior college English or the equivalent is prerequisite.

PHYSICS

This is a combined laboratory and recitation course, the laboratory "how" preceding the text-book "why." The texts used are Millikan and Gale's "Physics" and Millikan, Gale, and Bishop's "Laboratory Physics."

SOCIAL SCIENCES

Elements of Economics.—This course is planned to cover the fundamental economic concepts and laws by means of lectures and illustrative material. Readings and papers are required of the students in addition. Course is suitable for students who have had a middle school course in the subject and who desire to understand or teach it more thoroughly. Particular attention is paid to current economic problems in China and to problems arising out of the Great War.

Current Social Problems.—The aim is to discuss in relation to each other the more important social problems of the day. Especial emphasis is placed on various plans and methods of social reform. Socialism and kindred movements analyzed and appraised. The meaning and significance of liberty, democracy, and progress are considered. The causes and remedies of war are discussed. Students are required to read widely and prepare reports.

EXTENSION SUMMER SCHOOL COURSES.

AGRICULTURE.

The first two courses in Agriculture are designed primarily for teachers in mission schools and for evangelists and pastors. The courses are given with the idea of making it possible, for those who wish, to make their work count more in the everyday life of the people, and especially to make the teaching and preaching more effective. The

course are also equally valuable to any others interested in the improvement of agriculture. Students who take the course cannot, in any way, during the six weeks, become agricultural experts. In such a short time about all the student can be expected to grasp is the fundamental principles underlying an improved agriculture. Such students should go away strong advocates of a better agriculture, which means better farmers on the land. Both courses are given in Chinese.

Agricultural Education.—The success of workers along agricultural lines depends not only upon a knowledge of the subject matter but upon the use of concrete methods and materials for its presentation. To this end a course is given in which the following subjects are taken up; class room methods of demonstrating agriculture; the creation of demonstration apparatus out of available materials, such as insects, tree leaves, weeds; exhibits; extension work; home project work; chart making; field work by students; seed and plant selection; correlation of agriculture to other subjects in the curriculum and the relating of school agriculture to self-help. This course is presented by the use of such concrete materials and methods as are suggested and by field work.

General Agriculture.—This course deals with the principles of scientific agriculture and with the fundamental agricultural problems in China. All who wish to take the course should have at least a higher primary education, and should also, if possible, take the course on Agricultural Education. Some of the subjects to be dealt with are soils, farm crops, seed selection and principles of plant breeding, farm animals, farm implements, farm management and rural economics. Special attention is given to the agricultural problems in China and possible solutions.

COTTON CULTURE.

This course takes up the culture and improvement of cotton from two standpoints, that of acclimatizing American

cotton and of improving Chinese cotton. An excellent opportunity is given for field practice not only by the fact that the University farm cotton fields and experiments are available but also because most of the essential operations in cotton culture and improvement occur during the period of the summer school. Students are given actual practice in cotton culture, including thinning and various methods of machine cultivation, and in roguing, plant selection, self-pollination of blossoms, and other features of pure seed production. Operations which are not in season at this time, such as planting and ginning, are also demonstrated and practised. Lectures are given but emphasis is placed on learning by doing.

EDUCATION.

Child Psychology.—The course is based on the discussion of the subject matter in a book entitled "Child Psychology," published by the Chung Hwa Book Company, Shanghai.

Teaching of Primary School Subjects.—The work of this course is offered in a series of lectures on the teaching of arithmetic, science, language, history, etc. Class instruction is supplemented by discussion, reference reading, reading of monthly papers, etc. No text is provided for this class.

PHONETICS.

The aim of this course is to give teachers and preachers a knowledge of the new phonetic system of reading and writing Chinese. Since the government schools are teaching this, mission workers will no doubt find this course very helpful.

RELIGION.

Pastoral Theology.—This course is intended to provide the student with the means of thoroughly preparing for the effective discharge of duties and responsibilities connected with the Christian pulpit and pastorate. Gladen's "The Christian Pastor" is the text-book used.

SERICULTURE.

Problems of Sericulture.—This course is intended to familiarize students with various phases of the silk industry and its problems and proposed solutions.

History of Sericulture.—This course deals principally with the origin of silk growing, spread of sericulture over the world, development of the silk industry in both native and foreign countries, and history of the world silk market.

SOILS.

This is a course dealing with studies of classification, composition, and properties of the soil and its relations to crop culture.

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UNIVERSITY OF NANKING

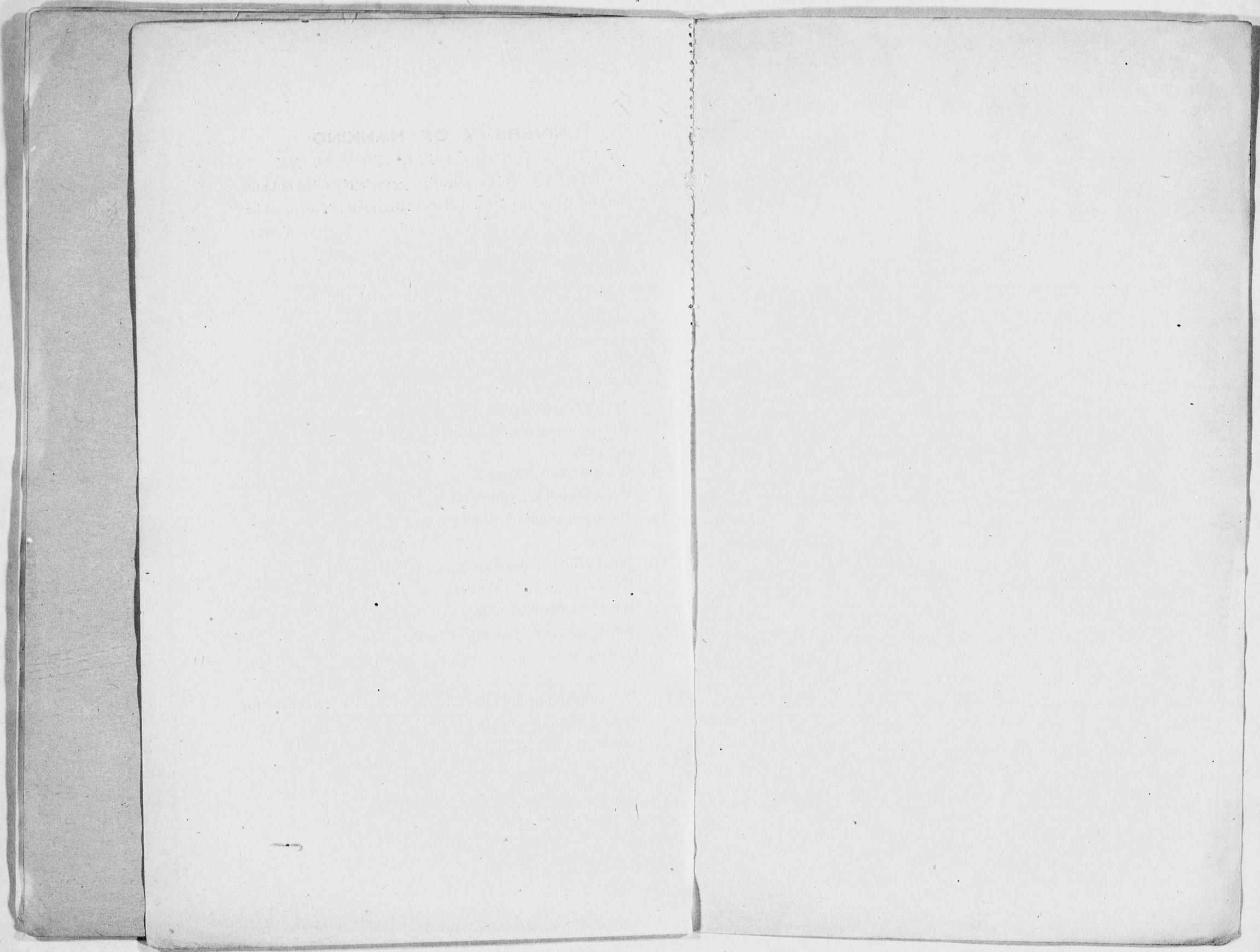
SUMMER SCHOOL APPLICATION BLANK

IMPORTANT; This application, completely filled out and accompanied by the three dollars matriculation fee, must be in the Registrar's office on or before June 25th, Drum Tower, The University of Nanking, Nanking.

1. Name (English) _____ (Chinese) _____
2. Year of birth _____ 3. Ancestral Home _____
4. Man or woman _____
5. Permanent address _____
6. Name of Parent or Guardian _____
Occupation _____ Address _____
7. Are you married? _____
8. Who is financially responsible for you? _____
Address _____
9. What is your religion? _____
What church are you a member of? _____
10. Have you attended Middle School? _____
Where? _____ When? _____
11. What Middle School are you a graduate of? _____
Where? _____ When? _____ How long? _____
12. Have you attended college? _____ How long? _____
13. What courses do you wish to study in the Summer School Curriculum _____

14. Do you plan to continue to study in the Summer School for progressive courses in the future? _____
15. What position are you holding now? _____
Where? _____ How long? _____
16. Have you had any experience in social service? _____
If so, what was it? _____

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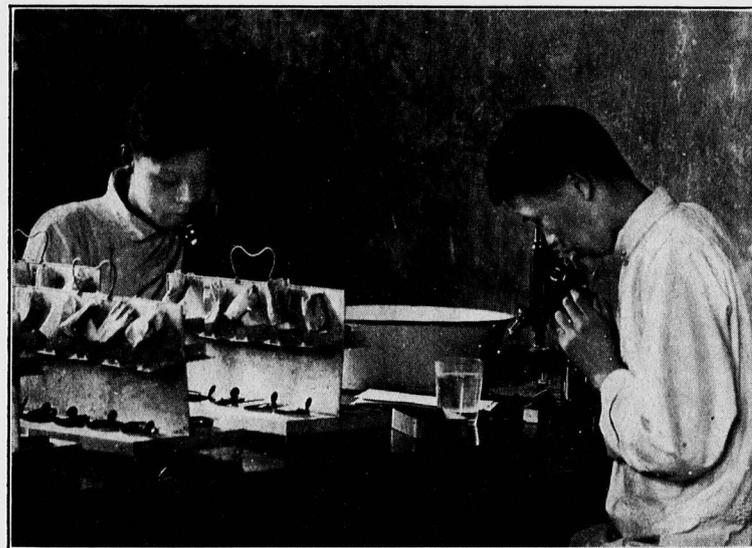
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ACKNOWLEDGMENT

The University of Nanking acknowledges its appreciation and indebtedness to the China Silk Mission for caring for its exhibit at the International Silk Exposition.

Sericultural Exhibit of The University of Nanking

COLLEGE OF AGRICULTURE AND FORESTRY
NANKING, CHINA



University of Nanking students making microscopic examinations for pebrine, the elimination of which disease is the outstanding problem in China in the improvement of the production of raw silk

THE UNIVERSITY OF NANKING

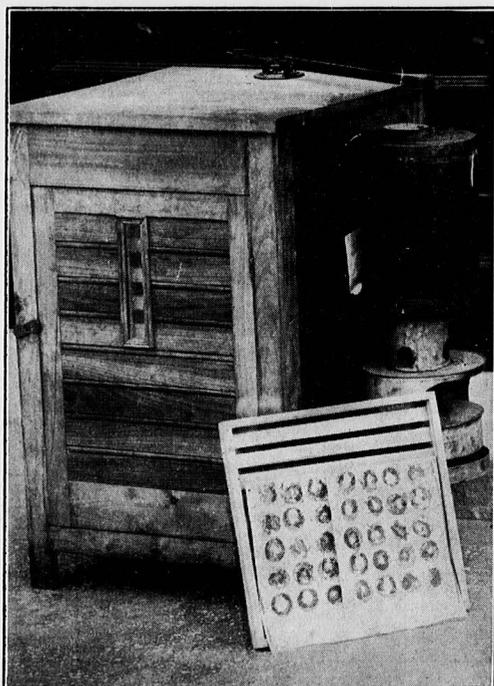
The University of Nanking is an American Union Christian educational institution of six leading denominations in the United States doing mission work in China. Through its College of Agriculture and Forestry it is trying to help solve some of China's more outstanding economic and social problems. The work of the Department of Sericulture in part outlined above, is in charge of Mr. Chien Tien-ho, a graduate of the New York State College of Agriculture at Cornell University.

SILKWORM INCUBATOR

An American egg incubator has been adapted to the hatching of silkworm eggs. There is a big need for such a machine, and active steps will be taken to make it a commercial success, adapted both to the needs of schools and farmers. The present commonly used method of hatching out the silkworms by wearing the egg card next to the body is undesirable because of the irregularity of temperature and poor ventilation.

SHORT COURSES IN SERICULTURE

Forty-two students from seven provinces were enrolled in the 1920 three-months short course in sericulture. Thirteen students were sent by



The silkworm incubator designed by Mr. Chien

District Magistrates, thirteen came of their own will, eight were sent by agricultural schools, five by agricultural societies, and three by experiment stations, thus showing the important sources from which these students are gathered, and the opportunity for influence that the short course enjoys. Out of thirty-seven replies received from our eighty Short Course graduates twenty-four were teaching sericulture.

MULBERRY PRODUCTION

During the spring of 1920, 76,000 mulberry seedlings were grafted with improved stock and 250,000 seedlings were transplanted for grafting in the spring of 1921. The pur-

pose of our mulberry production is to produce good trees and distribute them at cost price, thus stimulating the planting of more mulberry trees.

EXPERIMENTS IN MULBERRY CUTTINGS

The 1920 experiment in producing mulberry trees from cuttings has been a success and we are hoping to commercialize this form of production which will mean a saving in time of a year and a half and of the labor of transplanting and grafting. In the silk regions of the Yangtze valley this practice of growing mulberry trees by cuttings is not used.

MULBERRY COLLECTION

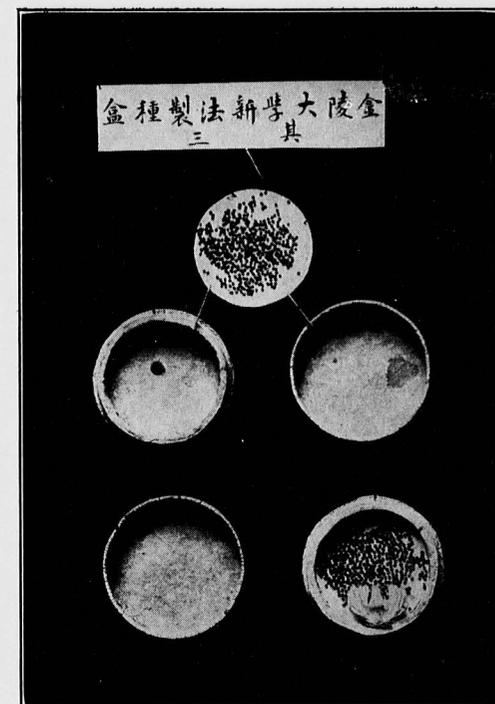
The University has the finest collection of mulberries to be found in China. The collection now represents the work of three years, comprising over two hundred different lots of mulberries collected from five provinces and contains about 1,200 trees, covering fifteen mow of land.

RAISING SILKWORMS FROM COLD-STORAGE EGGS

Through the utilization of cold-storage facilities silkworm seed was kept until the middle of May, when it was incubated. Young worms were hatched after one week and developed a fine crop. The cocoons produced were just as hard but slightly smaller than the spring crop, and the result was decidedly better than the summer and fall crops. This method for delaying the hatching of the silkworms is not used at all in China and has great possibilities of development.

PURIFYING THE SILKWORM VARIETIES

Before any valuable experimental or hybridization work with the various varieties of silkworms can be undertaken, the purification of the varieties is an essential step. By another season the University will have a large number of pure varieties with which to carry on extensive experiments with pure lines of silkworms.



The new individual laying box

A NEW METHOD OF SILKWORM EGG PRODUCTION

Neither the Japanese method of individual egg production nor the Continental method are wholly adapted to conditions in China, because of the very high incidence of disease and the egg card method used by the Chinese. The University has worked out an individual laying box as shown in the cut, which conserves the card feature of the Japanese and the individual feature of the Continental method. This new method of egg production will mean much in the elimination of pebrine from Chinese silkworms.

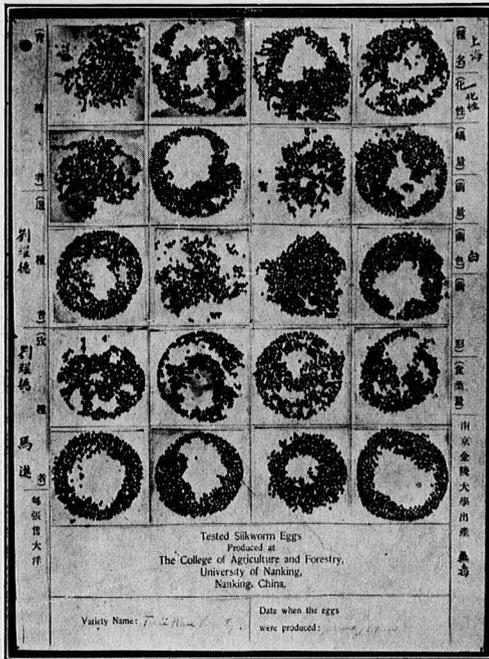
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STUDIES IN PEBRINE

Investigation of pebrine, which does so much damage every year to the silk industry, shows an incidence of 79% diseased or slightly diseased out of fifteen varieties under investigation. The elimination of pebrine is one of the most important needs in the improvement of China's silk industry. The University is now producing silkworm eggs that are disease free, for distribution to the farmers.

THE UNIVERSITY MULBERRY ORCHARD

The University now has about sixty mow (ten English acres) in mulberries, the leaves of which will be used in feeding the silk worms for their experimental work and in producing large quantities of certified silkworm eggs.



A card of certified silkworm eggs produced by the University of Nanking

Experiments carried on with twenty-nine varieties of silkworms showed that the amount of silk reeled from different varieties of cocoons varied from 16.66 grams to 28.74 grams, which indicates the possibilities for selection for high yields of silk.

BUDGET

Our last year's budget for the Department of Sericulture of \$4,300 was provided by the International Committee for the Improvement of Sericulture in China.

SILK PRODUCED PER UNIT OF FOOD CONSUMED

An interesting experiment carried on by the University in 1920 to determine the relative efficiency with which different varieties of silkworms utilized their food in the production of raw silk, showed a variation of 42 grams to 135 grams of silk per kilogram of leaves used. This indicates a wide field for investigation and the determination of those varieties that produced the most silk for the amount of food that they consumed.

SILK YIELDS OF DIFFERENT VARIETIES OF SILKWORMS

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