



Thomas Wardle

KASHMIR: ITS NEW SILK INDUSTRY,

WITH SOME ACCOUNT OF ITS
NATURAL HISTORY, GEOLOGY, SPORT, ETC.,

AND WITH
FORTY-FIVE FULL-PLATE ILLUSTRATIONS OF KASHMIR
SCENERY, AND OF SPORT, INDUSTRY, FOSSILS,
ETC., ALSO
NOTES OF A VISIT TO THE SILK-PRODUCING
DISTRICTS OF BENGAL IN 1885-6,

BY

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ERRATA.

Page 56, line 11 for "Srinagar" read "Jammu."
Plate 46; see page 295.

P.S.—I have been officially informed that the Sericultural Balance-sheet for the year ending April, 1904, is equally satisfactory with those of the previous three years.

PUBLICATIONS BY THE AUTHOR.

GEOLOGY OF LEEK AND OF CROMER.
ON CARBONIFEROUS LIMESTONE AND ITS MICROSCOPIC
CRYSTALS OF SILICA.
THE WILD SILKS OF INDIA.
RESEARCHES ON SILK FIBRE.
ROYAL COMMISSION REPORT ON THE ENGLISH SILK
INDUSTRY, 1885.
DESCRIPTIVE SILK CATALOGUE; COLONIAL AND INDIAN
EXHIBITION, 1886.
ON SILK. MANCHESTER JUBILEE EXHIBITION, 1887.
ECONOMIC UTILIZATIONS OF THE WILD SILKS OF
INDIA.
EARLY COPTIC TIMES; CHURCHES, FABRICS AND DYES.
SILK; ITS ENTOMOLOGY, HISTORY AND MANUFACTURE.
ON 630 SPECIES OF SILK-PRODUCING LEPIDOPTERA.
NEW FACTS IN THE STAFFORDSHIRE YOREDALE
MEASURES.
ON SEWAGE TREATMENT AND DISPOSAL.
ON SILK POWER-LOOM WEAVING IN LYONS.
ON CYPRUS SILKS AND TANS.
THE "BREAKING" OF COPMERE.
TEXTILE PRINTING AS AN ART.
ON CONTINENTAL ADULTERATION OF SILK BY CHEMICAL
WEIGHTING.
ETC., ETC.

DEDICATED
BY GRACIOUS PERMISSION
TO
HER ROYAL HIGHNESS THE PRINCESS
OF WALES,
PRESIDENT OF THE LADIES' NATIONAL
SILK ASSOCIATION,
WITH PROFOUND RESPECT.

PREFACE.

IN order to make this book of greater practical value I have inserted my various Reports just as they were written and sent to the Government of India and to the State of Kashmir. They give an accurate account of the Sericultural operations in Kashmir, and contain a large amount of technical and practical information which cannot fail to be of service to those in other parts of India and the Colonies desiring to establish and conduct Sericultural operations successfully.

These Reports are also a record of my work in and for Kashmir during the last seven years, and which has fortunately proved both successful and encouraging in the establishment of a new Kashmir industry.

My object in reprinting the Report of the Conference held at Calcutta in 1886, under the Chairmanship of Sir Edward C. Buck, then Secretary of Revenue and Agriculture, is to re-urge consideration of the suggestions I then made, and to draw attention to the information contained in that Report, both with regard to Bengal Sericulture, and to the more energetic production

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Also to my niece, Miss Elinor Wardle, for her interesting drawings of the fossils in plate 41.

I wish to acknowledge my indebtedness to Miss K. Lowe for her valuable assistance in helping me to revise and correct proofs.

LEEK, AUGUST, 1904.

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CHAPTER I.

INTRODUCTORY, BEING MOTIVES FOR SERICICULTURAL ENQUIRY IN INDIA. EFFORTS TO UTILISE TUSSUR SILK. BLEACHING AND DYEING DISCOVERIES. TUSSUR SILK STATISTICS AND LARGELY INCREASING CONSUMPTION. KASHMIR SILK, ITS POTENTIALITIES.

I NOW beg to submit my Reports to the Government of India on my efforts during the last few years to promote Sericulture in Kashmir.

Before doing so it may be desirable that I should describe the earlier history of the movement as far as I am concerned, and what led to my taking an interest in it.

I was first led into research connected with the industrial development of India by my efforts to utilize the wild Tussur silk* of that Country. I was fortunate in being the first to succeed in dyeing this silk properly.

The results of these efforts were, at the request of the then Prince of Wales (His present Majesty

* Also written Tasar, Tussah, Tusser, Tussur, and Tussore, the Indian word being *tasar*, probably derived from the Sanskrit *tasara*, "a shuttle," to which the cocoon has a resemblance. It is the most important species of the family Saturnidæ, *Antheræa Mylitta*.

the King-Emperor), communicated to me by Sir Phillip Cunliffe-Owen, placed in the Indian Section of the Paris Exhibition of 1878, and were afterwards removed to the South Kensington Museum. They consisted of hanks of bleached and dyed Tussur silk yarns, and of woven and printed specimens, including the first piece of plush made from Tussur silk, which suggested the later large Yorkshire Industry of "seal cloth," an imitation of sealskin, chiefly made from the waste of Tussur silk; the first to exploit it being Messrs. Field & Bottrill of Skelmanthorpe, near Huddersfield, after having seen the Tussur silk exhibit in the South Kensington Museum.

For this Exhibit a Gold Medal was awarded at Paris to the Secretary of State for India. It was first awarded to me, but the Exhibit being entirely of Indian Tussur Silk, I decided that it ought to go to the Secretary of State for India.

Shortly after the Paris Exhibition of 1878, I was requested by the Lyons Chamber of Commerce to exhibit in Lyons on their behalf the results of my researches in the bleaching, dyeing, and utilization of this silk; and I arranged a representative collection of the material, raw, dyed, and manufactured, which was supplied and presented by the Government of India, clearly showing the improvements in the bleaching and dyeing processes, as well as indicating its commercial possibilities of textile utilization. The collection was exhibited in the Musée de la Bourse at Lyons, and named the

“Wardle Collection,” and it remained on exhibition there for several years.*

In a comprehensive survey of the sericulture and native Indian manufacture of Tussur silk, entitled “The Indian Silkworm” by Sir George (then Dr.) Birdwood, made in his Annual Report on the Government Central Museum, Bombay, for the year 1859-60, will be found many interesting particulars on this subject.

This Report is reprinted at length in my Handbook of the Collection illustrative of the Wild Silks of India in the Indian Section of the South Kensington Museum, published by the Science and Art Department of the Committee of Council on Education, South Kensington, 1881.

Sir George, who afterwards from 1871 to 1899, became Special Assistant in the Revenue and Statistics Department of the India Office, in this Report reviews the whole literature, historical and natural-historical of Tussur silk up to that early period of its publication.

The Silk Jury of the Paris Exhibition of 1878 were not slow to see the importance of the improvements made in the bleaching and dyeing of this silk. The President of the Jury told me that it was destined to have a gradual and important

* The natural colour of the Tussur cocoon and of its reeled silk thread is of a dark fawn hue which had hitherto prevented the dyer from obtaining rich colours upon it, as well also that the fibre is physically more intractable to tinctorial treatment than that of the *Bombyx Mori*, the larvæ of which produce the silk of Commerce.

development in Lyons. In time a large demand arose which the natives of India were too apathetic to supply; and it seems very unfortunate that India should have allowed China to have taken the lead, and chiefly to furnish the ever increasing main export supply of Tussur silk. Considering that only in one week last year 142 bales of Chinese Tussur silk were conditioned in Lyons alone, it is now probably too late for India to attempt to monopolise this market; but she should take up this subject in earnest, and endeavour to supply a part, if not the whole of this expanding trade.

It was undoubtedly Sir George Birdwood who was the first to call attention to this silk, which he, at that early date, thought might be fitted for more refined manufacturing treatment than it had received in India and elsewhere.

Previously to 1878 no Tussur silk was successfully used in Europe, although it had been often tried.

The difficulties of dyeing and bleaching this wild silk having however been successfully overcome, it gradually from that time began to be used, and increasing quantities were passed regularly through the Lyons Conditioning House each week, and on the 30th November, 1899, no less a quantity than 433 bales or 60,620 lbs. were conditioned that week,—a record week, and in one week in June of the present year 238 bales were conditioned there.

In 1902, 4,795 bales, weighing 703,942 lbs., passed through the Lyons Conditioning House, and in 1903, 5,141 bales, or 792,926 lbs.

In addition to this, from June, 1902, to May, 1903, 142 bales or 18,744 lbs. of Tussur Silk were exported from Shanghai to London, and 2,467 bales or 325,644 lbs. to America; while from June, 1903, to November, 1903, 5 bales (660 lbs.) were exported to London, and 1,220 bales (161,040 lbs.) to America. For the week ending February 13th 142 bales were, as above stated, conditioned at Lyons.

My work in connection with Indian Tussur silk is recorded in my Monograph of the Wild Silk Industry of India, added as an appendix (26 pages) with micrometer measurements of silk fibres, to Sir George Birdwood's Handbook of the British-India Section of the Paris Universal Exhibition, 1878; also in my contribution of 38 pages in French to Monsieur Rondot's Work, "L'art de la Soie;" and in my Paper on Tussur silk, read at a meeting of the Society of Arts, held on the 14th May, 1891, presided over by the late Lady Egerton of Tatton; and also in my "Handbook on the Wild Silks of India" above mentioned.

In 1885 I was sent to India by the Government of India and the Royal Commission of the Colonial Exhibition with a two-fold object, one to report on sericulture in Bengal, and the other, to collect typical silks from various parts of India for exhibition at the forthcoming Colonial and Indian Exhibition of 1886.

For this latter purpose I was requested to go by his present Majesty (then Prince of Wales) who was the President of the British Section of that Exhibition.

After visiting the Bengal silk-producing districts of Surdah and Berhampur, I was requested to give an account of my visit by Mr. (now Sir E. C.) Buck, then Secretary to the Government of India in their Revenue and Agricultural Department.

I did so at a public meeting held in Calcutta for the purpose on the 8th January, 1886, and my Reprt was published as a Blue-book at Calcutta, and duly forwarded to the India Office. See Chapter 18.

I was afterwards sent by Mr. Buck into Manbhum, and in Govindpur I spent a week amongst the Santals and Khols examining the possibilities of obtaining supplies of Tussur raw-silk and in inducing the natives to cultivate its production. I was the guest of the Rev. Mr. Campbell, a Scotch Missionary amongst these tribal and aboriginal people.

I afterwards went to Patna, Futwa, and Gya, and saw considerable quantities of Tussur cocoons being reeled by the natives, and collected examples of both cocoons and specimens of their reeling.

I took great interest in this sericultural work. It caused me to consider whether there were no climates in India suitable for the cultivation of the European univoltine silkworm, the *Bombyx mori*, which is the worm from which is chiefly obtained the silk of commerce both in Europe, China and Japan; the silk of Bengal being the product of two or more species of multivoltine silkworms, *Bombyx fortunatus*, and *Bombyx cræsi*, species belonging to the more sub-tropical regions of India.

I was led to consider the suitability of Kashmir, where the climate in summer much resembles that of Italy, and therefore suitable for the cultivation of the mulberry and of the univoltine silkworm of commerce, the *Bombyx mori*, and it was accordingly to that important State that I turned my attention, with the results I am about to describe.

CHAPTER II.

HISTORY OF KASHMIR SERICULTURE. CORRESPONDENCE. FIRST PURCHASE OF SILKWORM EGGS. FURTHER INCREASED PURCHASES. SUCCESSFUL BREEDING. STAFFORD HOUSE SILK EXHIBITION, 1894. NECESSITY FOR EDUCATIONAL TRAINING IN SERICULTURE.

IT is a great pleasure for me to put on record the names of those with whom I have had correspondence and who have assisted in helping forward the phenomenal development of this now important and useful Industry.

I will do so in order of chronological priority.

In June 1889, I received a letter from my friend Mr. John Lockwood Kipling, then Director of the Art School at Lahore, whose guest I was in 1886, and who wrote to me that year about Kashmir Silk when he was visiting Colonel Parry Nisbet, C.I.E., the British Resident at Srinagar.

This prompted me to write to Colonel Nisbet, whom I had met in Peshawar, when he was Commissioner there, but who had since been transferred to Kashmir.

This was some time before I had any official correspondence on Kashmir Sericulture with the

Government of India in India, or with the India Office in London.

I at once entered into correspondence with Colonel Nisbet, who corroborated Mr. Kipling's information, and looked favourably on my idea of the possibility of developing a useful industry in the production of raw-silk.

The following letters will be sufficient to show the initial stage of thought and action at that time. I cannot find Colonel Nisbet's letters to me; they were probably destroyed with my office letters, as is my custom every seven years. I have written to Colonel Nisbet to ask him if he retained copies of them, but he informs me he did not.

[COPY.]

Leek, 6th January, 1890.

Dear Colonel Nisbet,

Some time ago I received a very interesting letter from my friend Mr. Kipling, who wrote to me when your guest, from the Kashmir Residency.

He draws a very delightful picture of the capabilities of Kashmir for vegetable products, and especially mentions silk.

I am very glad indeed to hear it. It was one of my regrets on leaving India that I had not time to go to Kashmir, for I was extremely anxious to have acquainted myself with its capabilities as a silk-producing State, because I had heard a good deal of it in times past, and of several unsuccessful sericultural efforts.

The result of my Report on sericulture in Bengal to the Government of India caused a demand for Bengal silk, which in Leek soon quadrupled after I was there. The price has risen considerably, and much more than is grown could easily be sold, and I bring this before your notice in order to point out what a splendid opportunity there is in Kashmir, now there is a probability, under your influence and good management of its becoming in time a great silk-producing State.

I remember when I visited Peshawar in 1886, I found a good deal of Bokhara silk in the bazaars, and I wondered that Indian silk was not used.

I think it would be of great importance to have some examination made as to the silk-producing capabilities of Kashmir, and to establish there such a Sericultural Institution as that at Padua, and the one at Montpellier, both Government Institutions, which are doing immense good to sericulture in Italy and France.

It always seems a great pity to me that Europe, and especially England, does not get more Silk from our own dependencies. We have to go further afield, chiefly to China and Japan, for the bulk of what is needed.

I thought I would venture to trouble you with these observations in the interests of such a beautiful industry as silk, and which would benefit both England and Kashmir.

I feel convinced that a very large silk-growing

industry for export as well as for native use, could be established in Kashmir.

In 1891 we shall have an Exhibition of Silk in London, as you will see by the enclosed paper, and as President of the Silk Association of Great Britain and Ireland, I should be very happy to see Kashmir well represented as a silk-producing country.

I shall be very glad at any time to be of service to you in matters relating to Kashmir Silk.

Believe me,

Yours very truly,

(Signed) THOMAS WARDLE.

[COPY.]

Leek, June 24th, 1890.

Dear Colonel Nisbet,

Yesterday morning my wife handed me a letter dated the 16th November of last year, which I had not sooner seen, for during my absence from home letters were placed on my dressing-room drawers to wait my return, and this one was found on cleaning them at the back on the floor.

I am very sorry indeed it has escaped notice so long. Probably my not replying to this may have been the reason I have not received any reply to my letter of the 8th January.

It is quite correct as you state that the London Silk Exhibition of this year was to be only for British and Irish Silks. The object was to show ladies that Silks are and can be made in Great Britain,

equal to their requirements, and it was only a tentative Exhibition to that end ; but it is intended in 1892 to have a large Exhibition at the Imperial Institute, or elsewhere, in which India is to be fully represented. Then will be the time for you to show us what Kashmir can do.

Our Exhibition, the one held at the town house of Lady Egerton of Tatton, and opened by the Duchess of Teck, passed off very successfully indeed. A National Silk Association of Ladies has been formed, of which I send you a circular. I hope Mrs. Nisbet will sign it, and get other ladies to do so, and send it back to Lady Egerton of Tatton, the Hon. Secretary.

Already we are making Spitalfields busy.

I send you an account of the Exhibition which appeared in most of the papers.

I am deeply interested in the Silk future of Kashmir. I feel quite sure from its physical geography and beautiful climate that it is destined to be a great silk-producing country. It is almost the only country I know where the *Bombyx mori* is found wild in any numbers, and the wild cocoons collected. I think the climate is suitable for the development of the best races of *Bombyx mori*, such as those of Italy and France, and it ought to have a Government Sericultural Laboratory, not a State one, but an Imperial one, and under Imperial management and control.

If I could do anything to assist the progress of Kashmir sericulture I will very gladly come out

and report on its capabilities etc., if you wish me to do so.

The Silk Association has just published its Report of last year and part of this. I have much pleasure in asking you to accept a copy. You will see in it a copy of my correspondence with Lord Cross.

With kind regards to Mrs. Nisbet,

Believe me,

Yours very truly,

(Signed) THOMAS WARDLE.

[COPY.]

Leek, October 27th, 1890.

Dear Colonel Nisbet,

I have just received the samples of Kashmir raw-silk with which I am delighted. I will have their value thoroughly assessed, and will fully report upon them in the course of a very short time.

Can you inform me whether they are the produce of wild Kashmir Bombyx mori cocoons, or of the cultivated or fed worms?

I am told that there are people in Kashmir who pay the Government an annual sum for the privilege of collecting from the mulberry tree the cocoons of the Bombyx mori.

I fear the prices at which the samples are marked will be prohibitive, being much dearer than Italian raw-silk in London.

Can you send me samples of other qualities of

raw-silk? I can guarantee a considerable consumption of them in Leek from the manufacturers of sewing-silks, if their value could be about 10/- to 12/- per lb.

Yours very truly,

(Signed) THOMAS WARDLE.

[COPY.]

Leek, 5th December, 1890.

Dear Colonel Nisbet,

With further reference to your letter and its accompanying parcel of samples of Kashmir Silk, I have carefully examined them, and have also submitted them to two gentlemen of the greatest experience; one a London silk broker, and the other a silk manufacturer, and I send you their opinions, which I entirely endorse, and they leave me very little to say.

I strongly urge the adoption of an improvement in cocoon-reeling on European lines.

There is not the slightest doubt that it might be the foundation of a large and remunerative industry, and with such a beautiful climate as Kashmir is favoured, it seems to me that it would add to the immense usefulness of India to us and to herself if Kashmir could be made to supply us, and also France, with such beautiful silk.

I am just considering the order for a set of cocoon-reeling machinery consisting of a number of reeling bassines and equipment at the request of the Government of India, from France and Italy,

and have received the estimate. As it may possibly be of interest to you to know the particulars, I have much pleasure in sending them.

Yours very truly,

(Signed) THOMAS WARDLE.

It may be well to mention here some notes with reference to the earlier history of Sericulture in Kashmir.

In Sir Walter (then Mr.) Lawrence's interesting book "The Valley of Kashmir," written by him while Settlement Commissioner in Kashmir, the following information is given:—

"The history of sericulture in Kashmir has been fitful and desultory. The silk industry is of ancient standing, reference being made to it in A. D. 1536, by Mirza Haidar, in his History."

"Before 1869 the industry had existed in the unorganized, crude state in which it had probably existed for centuries, but nothing however is known in Kashmir about the origin of its silk industry, beyond the fact that it is very ancient, and that it is intimately connected with that of Bokhara, with which it has always had interchange of seed and silk."

"In later times the important date is the year 1869, when Maharaja Ranbir Singh, an enthusiast in new industries, revived the silk production on a large scale. The cost of buildings and plant was enormous, and the rearing-houses being scattered in all parts of the valley, could not be

properly supervised. There was no one possessing any technical knowledge to supervise, and though great improvements were made in reeling, there was no man in Kashmir who could avert the calamity which befell the industry in 1878, when nearly the whole of the silkworms were carried off by disease. Every credit is due to Babu Nilamber Mukerji, the Chief Justice of Kashmir, for his efforts and his success in improving the reeling of the silk. The industry lingered on till 1882, and from that time to 1890, the State had left it to the silk rearers; the quantity of seed rapidly diminished, and sericulture was virtually at an end."

Why did these efforts not succeed? That is easy to tell.

Ignorant procedure. Letting silkworm diseases have their own way, because they were not understood. Ignorance of the scientific work of Pasteur, and of the present methods of prevention of disease, which he alone first formulated.

The Lister Dehra Doon Grant failed in the same way, at a loss of £50,000. There need not have been a loss, but a big profit, had all the conditions of the problem been understood. Wherever the mulberry will properly grow, silk can be profitably produced.

When in Bengal in 1886 I found a mortality of 60 per cent. of the silkworms there through quite preventible disease. My recommendation of an Imperial sericultural station passed unheeded, and I doubt whether much material improvement

amongst the native silkworm-rearers has yet been effected.

In 1889 I also communicated with Mr. (now Sir E. C.) Buck, who at once took steps to further the idea of Kashmir Sericulture, by sending over a Mr. R. Mukerji (a younger brother of Babu Nilamber Mukerji, mentioned by Sir Walter Lawrence in his book), to see what could be done. The operations in Kashmir from May, 1889 to 1897, when a new arrangement described below, came into force, were under his charge, in subordination to the Settlement Commissioner, but with very imperfect appliances if measured by modern scientific methods.

The possibility of a successful future for this Industry was first suggested to the Government of India by me on the 14th December, 1891, in a letter I wrote to Mr. (now Sir Arthur) Godley, Under Secretary of State for India.

Having for a number of years had the privilege of knowing Sir George Birdwood of the India Office, I also wrote to him urging the possibilities of Kashmir as a sericultural country.

He at once took the matter up very warmly. I indeed owe much to him for the frank, unreserved confidence he always placed in me and in my opinions, and several times I discussed the matter with him both by letter and orally; and very great credit is due to him for all he did in furthering my ideas, and actions. In short, from the first, and down to the time of his retirement

from the India Office, he has spared no pains in giving me every encouragement in my work.

He directly conducted the whole of the India Office official correspondence with Kashmir from 1891 to 1902, on the subject.

In 1894 a few pounds of Kashmir raw-silk were sent over to England by Mr. Rishibar Mukerji.

In a letter I wrote to Sir George Birdwood on the 21st February, 1894, I said:—

“I propose if this eight pounds of Kashmir raw-silk comes in time, to have some of it manufactured into silk fabrics, and as the first fabrics made out of silk grown in Kashmir. I have a deep conviction that the future of the silk industry in Kashmir will be of great importance, and that if the Maharajah of Kashmir thinks favourably of the idea, Kashmir may soon become one of the greatest centres in the world for sericulture. I ask for your earnest co-operation in this matter.”

This silk was manufactured into brocade by Messrs. Warner & Sons, of Spitalfields and Braintree, and exhibited at the Stafford House Silk Exhibition in 1894. It was shown by me to the late Queen and to the then Prince and Princess of Wales, who evinced much interest in it.

It was described by me in the Catalogue of that Exhibition as follows:—

“R. Mukerji,

Director of Sericulture, Srinagar, Kashmir,
Small experimental Silk cloths, manufactured in
London from the first raw-silk from Kashmir.”

Mr. Mukerji's connection with sericulture terminated at the beginning of 1894, and Mr. W. R. (now Sir Roper) Lawrence was placed in charge.

In July, 1895, some further samples of Kashmir raw-silk were brought over to London, on behalf of the Kashmir Durbar, to Sir George Birdwood, and by him forwarded to me for report as to quality, etc.

My report was sent to the Government of India by Sir George Birdwood, on the 5th December, 1895. In it I advised that the stock of raw-silk retained by the Durbar, pending the examination of the samples sent over, should be shipped direct to London and sold there; and on the 29th November, 1895, Sir George Birdwood was informed that, under the orders of the Durbar, sixteen cases containing sixteen bales of raw-silk had been sent, via Calcutta, addressed to him for sale in London. These cases were received on the 26th January, 1896, and samples were at once forwarded to me for distribution amongst silk manufacturers, merchants, etc. Their various reports on the raw-silk were fairly satisfactory, but recommending considerable improvement.

Here I must not omit to mention the name of my most excellent friend Sir M. M. Bhownaggee who for many years has been watching the industrial interests of India.

I well remember in an excellent speech at the annual dinner of the Silk Association of Great Britain and Ireland, at the Freemason's Tavern, London,

in 1891, he used the following prophetic words:—

“There is in India any amount of raw material, for instance there is in Kashmir abundance of raw-silk, and if efforts like those of Mr. Wardle and this Association could teach her how to make use of it, India can supply not only her own wants, but those of other parts of the world.”

These words sank deeply into my mind, and I think it will not be denied that they have borne good and abundant fruit.

I do not see why, with the climatic potentialities of a great country like India, we should go to the farther East for silk, or any other tropical materials, cotton for example, which with proper knowledge, could no doubt be as well, if not better, grown in India than anywhere else.

In 1896 Sir Adelbert Talbot became Resident in Kashmir, and, as a result of his study of my encouraging Reports on the possibilities of Kashmir silk, he recommended His Highness the Maharajah of Kashmir and Jammu to recommence the Industry which had become extinct, on a commercial scale and in a more scientific and extensive manner.

In Chapter 8 I have referred to the active part taken by Sir Adelbert Talbot, in his correspondence with Sir George Birdwood on the point, and to the lengthy correspondence which ensued between the India Office and myself, recorded in the memorandum of the engagement of a Director of Sericulture, and the purchase of silk machinery, for the Kashmir State, in 1896-7.

The Kashmir State Council accepted Sir Ádelbert Talbot's advice and the Government of India were addressed accordingly.

*Captain J. L. Kaye who had succeeded Mr. Lawrence in 1895, was in 1897 the Settlement Commissioner of Kashmir. He at once took a great interest in sericulture, an interest which has been continued during his stay there down to his retirement in the early part of the present year.

Sir Walter Lawrence in concluding a very interesting account on pages 368 and 369 of his charming book "The Valley of Kashmir," wrote:—

"It is impossible to exaggerate the potentialities of silk in Kashmir," but he suggested it should be left to individual enterprise to develop it and not be a State-guided industry.

With his first sentence I am in thorough agreement, but not in his opinion that the industry should not remain in the hands of the State.

Since he wrote his book the progress made in the industry has verified my view, that it ought to be managed by the State, but things were not so hopeful when Sir Walter wrote in 1895 as time has since proved them to be: in fact everything was purely experimental.

It was through Sir George Birdwood that I received instructions in 1897 from the Secretary of State for India, to go to France and Italy accom-

* Captain (now Major) S. H. Godfrey acted for Captain (now Major) Kaye as Settlement Commissioner of Kashmir for a year in 1898-1899.

panied by Captain Chenevix-Trench, then the Assistant Resident in Kashmir, for the purpose of purchasing silk-worm eggs and cocoon-reeling machinery.

On my return from the continent in June, 1897, I sent in my report of what I had seen and done, of the cocoon-reeling machinery and the silk-worm eggs I had purchased, the latter amounting to over £600 worth. This Report will be found in a following Chapter.

On my return, Sir George Birdwood becoming acquainted with the extent of my purchase of silk-worm eggs, from various silk-worm breeders in Italy and France, said he feared I had purchased more than the Government of India would care to be responsible for. I offered at once to take the responsibility, for I knew from experience, and in the care I had exercised in purchasing eggs free from disease, that the time was ripe for practical work, and that that for experiment had passed.

I was much gratified in due time in learning from Kashmir that the hatching of these eggs and the rearing of the worms had been completely successful and free from disease, and I was requested to purchase £1,500 worth for the ensuing season.

I did so and success fortunately also attended that purchase. The following year (1899) £3,040 worth were ordered.

The actual produce of cocoons from this purchase was 12,000 maunds or 984,000 lbs. and of raw-silk 1,000 maunds, or 82,000 lbs.

One pound of cocoons yields one ounce six drams of raw-silk, which is about the normal production in South Europe.

The success in the rearing of silk-worms from this latter purchase of eggs proved so great that orders arrived in 1900 for the purchase of 25,000 ounces. This quantity cost £4,000, and the outturn from these was 1,053 maunds of raw-silk or 65,346 lbs., but with greater care and experience in rearing of the worms, and good weather, upwards of 25 per cent. greater yield ought to have been realized.

Mr. Walton gave the 25,000 ounces of seed purchased in 1901 to 6,000 householders. They farmed it out, and in fact more than 25,000 people were employed in rearing the crop throughout the valley. Thus the production of the silk is essentially a cottage industry, as far as silk-worm rearing goes; and the reeling of the cocoons is entirely done by Srinagar workmen and boys in the new filatures.

During my stay in Kashmir I advised that the purchase of eggs might safely be increased by 5,000 ounces, and it was at once decided to purchase 31,000 ounces for an increased crop of silk for the present year (1904) and in addition 1,000 ounces of eggs of the value of about £133, from Italy, for trial to obtain good commercial white raw-silk like that of Japan.

I have recommended the Government of India to adhere steadfastly to the purchasing of undiseased

eggs from Europe, notwithstanding advice to the contrary by those who erroneously thought that "eggs of reproduction" in Kashmir would do as well. Such advisers did not seem to think that silk-worm breeding and rearing is in Europe a very scientific industry, and that it is impossible to expect the village Kashmiris to understand the use of the microscope in detecting pebrinised moths and eggs, or in the various minutiae of this branch of the industry, which is so completely understood, and so skilfully practised, in Europe.

But nearly every year since 1897, at my recommendation, such eggs of native reproduction have been tried experimentally in Kashmir on a small scale, and have through want of knowledge, always failed. From a Report of the Proceedings of the fourth Conference on Sericulture, held at the Srinagar Residency, on the 22nd October last year, which I have received from Mr. Colvin, the present Resident, I am informed that it has been decided that the danger of using tainted seed could not be over-estimated, and that the cocoons raised in the Ramban Tahsil in 1903 as a further experiment, had been subjected to microscopic examination, and the seed again found to be tainted with disease and unfit for distribution as industrial seed. Directions had accordingly been given that these cocoons should be used for reeling only, and not for seed.

It will be seen from all this how completely I was justified in making what was thought at the

time my over-adventurous purchases of seed in 1897 and the following years.

I therefore most earnestly recommend a continuation of the system hitherto adopted, and which has proved so wonderfully successful; and that no official nervousness may ever be allowed to mar the results secured by my decisive action in 1897.

I venture to add, see Chapter 7, a copy of the correspondence between the Government of India and myself in 1889; a correspondence initiated by me with a view of securing for India under Imperial control (rather than under Presidential), an educational establishment of sericulture both for India and Kashmir. It is to be regretted that this advice was not accepted, but that instead a laboratory under the direction of a mixed committee in the Bengal Presidency was adopted.

My idea was to see established an Imperial Government Institution with branches such as those that have been in operation for a long time in France and especially in Italy, of which an account will be found in Chapter 17; where every department of scientific sericulture is conducted, and taught by highly qualified technical savants, resulting in annually improved breeds and races of silkworms, improvements in the cultivation of the mulberry, in the physiological study of the origin and prevention of the diseases peculiar to silkworms—pebrine, flacherie, muscardine, grasserie, surcina—as well as of all matters pertaining to scientific and commercial Sericulture, and in the thorough technical training

of young men intending to enter into this important branch of Agricultural Industry.

I have no hesitation in stating that if my suggestion had been acted upon, not only would sericulture in Bengal have been vastly improved, but would have by this time become an important industry in other parts of India, such as Hyderabad, Mysore, etc., where the mulberry can be well cultivated, and where there has always been some silk-production and silk-weaving done.

As it is, however, Kashmir is happily the pioneer, and the marvellous success of the efforts there adds weight to my previous advice, as well as shows that we need not be so dependent on other countries for supply of raw material, whether silk—or other fibres—if we will look scientifically after the resources of our own possessions.

CHAPTER III.

ENGAGEMENT OF A DIRECTOR OF SERICULTURE FOR KASHMIR. BUILDING OF FILATURES. PRO- DUCTION OF RAW SILK, 1898 to 1904.

When the Secretary of State for India sent me to France and Italy in 1897 to make enquiries about sericulture, and to purchase silkworm-eggs and cocoon-reeling machinery for Kashmir, I was also requested to engage the services of either a Frenchman or an Italian, who would occupy the position Mr. Walton has now so worthily filled during the last few years.

I made enquiries, but was not satisfied, and I returned to London to report that I preferred to decline the responsibility of engaging anyone, either French or Italian, because none of them understood either English or Hindustani, and besides I feared such an appointment, if made, might prove unsatisfactory.

Happily I found Mr. C. B. Walton (son of the late Lieut.-General Walton, C.I.E., S.C.) whose acquaintance I made at Surdah during my first visit to India in 1885-6, and who for twenty years occupied important positions at the Surdah filature in Bengal, six years as Assistant, eight years as Manager, and six years as Director of the three

concerns of Surdah, Maldah, and Moorshidabad, and was familiar with the language, was disengaged. I unhesitatingly recommended him for the appointment.

He was at the time open to engagement, having retired from the Directorship of the Bengal Filatures, and was living with his wife and family at Musoorie.

The Under Secretary of State for India requested me to telegraph to him at once to go up to Srinagar to see Sir Adelbert Talbot, the then Resident, on whose advice the Kashmir Durbar gave him the appointment on the 1st May, 1897. He still holds it, and the selection has been a very happy one.

The erection of filatures was at once commenced and was continued from year to year, six having been completed by the close of Sir Adelbert Talbot's tenure of office, towards the end of 1900, and four new ones commenced in 1902 being almost ready for use when I left Srinagar in May, 1903. Each filature is 425 feet long, and contains 212 bassines, or in all 1272. The building of the first six filatures cost £28,000, and in all this work Mr. Walton was warmly supported and directed by Sir Adelbert Talbot, who continued to give personally great attention to this effort.

When Mr. Walton was appointed in 1897, the out-turn of raw-silk was for the year preceding only 10 to 12 maunds (820 lbs. to 984 lbs.)

In 1898 he had the first European seed (purchased

by me in Italy and France in 1897) to work upon, but there was heavy expenditure in this year, and the $1\frac{1}{2}$ maunds of seed (1,968 ounces) which cost £630 did not make a profit, as Mr. Walton kept some 200 maunds of cocoons (16,400 lbs.—a Kashmir maund being 82 lbs.) for trial, on a practical scale, of “reproduction” for the following year.

If he had not done this there would have been no loss.

There was a considerable loss in the exploitation of this seed for “reproduction,” in fact as much as 50 per cent. of the eggs were unproductive, chiefly through the ignorance and inexperience of the natives in sericulture, and partly through climatic conditions being unfavourable.

Another cause has been that the mulberry trees had been allowed to grow without careful cultivation, and had never been pruned. The consequence was that the leaves were not in the best state for feeding the worms.

Unfortunately these cocoons of native reproduction proving, as I fully expected, highly pebrinised, failed to bring forth healthy moths, or productive eggs.

The year 1899 showed a handsome profit on 5 maunds (6,560 ozs.) of silkworm-eggs; in 1900 the profit was more than in 1899, but did not offer a fair comparison with that year, as the market in 1900 was low and the silk sold very badly, in fact only realising from 11s. to 12s. 6d. per lb.

The raw-silk which was sent to England in 1899-1900 was about 150 bales, or 22,500 lbs.,

which fortunately found purchasers up to 16s. 9d. per lb.

The total value of this would be about £18,844, and in addition there was the value of the waste-silk or "déchets" resulting from the reeling of the cocoons, the current price for good waste-silk in 1900 was 3s. per lb. and the proportion of waste being about one-third, made an additional total of about £2,145.

Owing to the more trained manipulative skill on the part of the cocoon-reelers, the raw-silk is beginning to and should soon approximate, if not equal, that of Italy and France, and consequently command a corresponding price. In 1902, Mr. Walton sent over to England 953 maunds (74,186 lbs.) or 522 bales of silk, (a Kashmir bale weighs 145 lbs.), besides sending a 100 maunds (8,200 lbs. or 54 bales) to the local markets for local use. The waste, which as I have already stated is generally one-third of the quantity reeled, is of two qualities, and realised respectively 2s. 8d. and 1s. 7d. per lb. There is also the silk from the inferior and double cocoons, which are sorted out; this amounted in 1901 to 100 maunds (82,000 lbs.) and fetched from 25,000 to 30,000 rupees (£1,666 to £2,000).

This quantity of silk (1,053 maunds, or 86,346 lbs.) is the product of 20 maunds (1,640 lbs.) of eggs. One ounce of silkworm-eggs weighs 30 grammes, and contains from 30,000 to 40,000 eggs, and yields 42 kilos or 92½ lbs. of fresh cocoons. A French ounce is 482·5 grains.

My sole reasons for recommending these extensive purchases of European seed were on account of the difficulty of obviating disease in Kashmir-raised seed, and of the security by purchasing immune eggs, besides the undoubted superiority of eggs bred from the best races of silk-worm moths from European localities where silk-worm breeding is conducted as a science.

The present growth of the black mulberry tree (*Morus niger*) in Kashmir available for silkworm culture is calculated to be sufficient to produce annually 50 lakhs worth (£333,333) of silk. But I have strongly recommended the systematic planting and cultivation annually of the white mulberry (*Morus alba*) such as is grown and preferred in France and Italy, when, if adopted, the area will be extended, the production of raw-silk greatly increased, and a valuable and important industry consolidated in the beautiful climate of Kashmir.

Reckoning the rupee at 1s. 4d. which is the present rate of exchange, and likely to remain so, the amount would, as stated above be £333,333 worth per annum. So it may be safely assumed that the outlook for the production of raw-silk in Kashmir is of a very promising nature.

The following table compiled during my stay in Kashmir, gives the number of Silkworm Rearing employed in the villages of the Valley of Kashmir, and the quantity and value of seed used yearly since 1897, as well as the quantities and values

of the yield of silk per year, and the number of persons employed in rearing, not including the factory or filature cocoon reelers :—

Year.	Quantity of Eggs in Quances Imported.	* Ditto Local.	Value of Eggs and Carriage.	Raw Silk produced.	Waste Silk produced.	Local Silk & Waste Inferior Cocoons.	Total Value of Out-turn.	Number of Rearers who took eggs.	Average Number of Rearers engaged.	Quantity of Fresh or Green Cocoons.
1898	1,920	...	£ 766	lbs. 5,412	lbs. 1,863	lbs. 351	£ 4,858	326	1,304	lbs. 1,07,100
...	...	6,400	...	Nil	Nil	Nil	...	1,106	4,424	Nil
1899	6,400	...	1,632	22,509	7,500	7,239	...	803	3,212	3,26,672
...	...	12,800	...	560	320	500	14,684	2,255	9,020	16,000
1900	19,060	Nil	3,000	44,181	23,063	7,739	27,419	4,290	17,160	8,13,792
1901	25,606	do.	4,333	65,931	32,870	12,346	49,118	5,887	23,548	10,65,204
1902	25,527	do.	4,333	†1,20,750	†54,500	†12,000	†96,666	†8,158	32,632	†18,82,692
1903	25,521	do.	4,333	† ...	† ...	† ...	† ...	11,060	44,245	...
1904	35,500	do.	5,500

* The Eggs were of local reproduction, both moths and worms died of Flacherie and Pebrine.

† The exact figures to be obtained later on.

‡ Not yet realized but anticipated to be very satisfactory.

The eggs in each year were of course purchased the year previous to the production of the raw-silk, so that eggs put down for the present year were really purchased last year, *i.e.* for the silk crop of 1904.

The above mentioned rearers are householders whose families assist in silkworm-rearing. Mr. Walton thinks that the total number of persons, young and old, averages 4 to 5 persons in each household, thus then giving employment to from 50,000 to 60,000 people. One ounce of eggs is given out to each family of 4 or 5 persons, and two ounces to larger families.

The value of the silk, with the waste, is shown above to be from £90,000 to £100,000, a most valuable addition to the revenues of the Kashmir State, and to the material prosperity of the villagers who are liberally paid for silkworm rearing by receiving a very remunerative price for the cocoons they bring in to Srinagar. The eggs are distributed to them gratuitously.

The 20 maunds (30,000 ozs.) of eggs of the value of £4,000 purchased in 1902 were distributed over a larger number of men, most of whom have now gained experience, and, the trees being pruned each year, will yield much better results as regards the quality of the cocoons, as well as the greater out-put of raw-silk.

My correspondence with Mr. Walton has been very voluminous. I have spared neither time, trouble, nor expense in endeavouring to obtain every possible kind of information about European

sericulture, as well as devoting myself to persuade silk manufacturers to forego their prejudices and give Kashmir silk a fair and impartial trial.

In May last I went to see Messrs. Chabrières, Morel et Cie, of Lyons, the largest distributors of Raw-silk on the Continent. They then held 60 bales of Kashmir Silk; they reported of it most favourably, and told me it was fast becoming sought after by some of the principal manufacturers of France, and that they could dispose of any quantity Kashmir could produce for some time to come.

Another silk merchant of the firm of E. Lacharriere & Cie, 4, Rue Desirée, Lyons, came from Lyons to see me last October, earnestly wishing to do business with Kashmir direct, and reported in the same strain as Chabrières, Morel et Cie.

I had to inform him that the Durbar had decided to employ only Messrs. Durant, Bevan and Co., 9, New Broad Street, London, E.C., the well-known and oldest established silk brokers in Europe, to distribute the silk at the reasonable brokerage of 1 per cent., and I referred him to them.

In England also I am receiving very favourable reports, and I feel sure that as soon as the cocoons can be produced and reeled as perfectly as they are in France and Italy, the silk will be of the same high value. Up to the present time it realises prices from 1s. to 2s. per lb. less than the best Italian silks, so far a very satisfactory result, considering the number of persons occupied

in reeling, in 1904 over 5,500, who were comparatively new and inexperienced in the extremely delicate manipulation of cocoon-reeling.

I feel sure that were it not from the innate delicacy of touch and their skilful fingers, these men and boys would not have become so proficient in as many years as it has taken many of them months to learn to reel.

Mr. Walton obtained in 1902 one maund (his cocoon maund is 88 lbs.) of cocoons per ounce of eggs against half maund (44 lbs.) the previous year, and last year he hoped to get 110 to 132 lbs. from an ounce, as the reelers gain more experience.

The last Resident, Mr. Louis W. Dane, and the present Resident Mr. E. G. Colvin, have followed up Sir Adelbert Talbot's successful efforts with great ability and energy, and the outlook now under Mr. Colvin's able guidance is exceedingly encouraging.

I have much pleasure in reporting that the successful development of sericulture in Kashmir in all its technical details and management, is greatly due to Mr. Walton, the Director, for the perseverance, knowledge, and skill with which he has with untiring energy and firmness conducted this industry during the seven years of its existence. I was greatly pleased and satisfied with the efficiency with which the six large filatures at Srinagar were being conducted, and with the enormous number of native people employed in them reeling cocoons. The new Industry has been fortunate in having Mr. Walton for its Director,

This Industry has also the advantage of a Conference Committee, which meets periodically. It consists of General Rajah Sir Amar Singh, K.C.S.I.; the Revenue Member of the State Council; the Governor of Kashmir; the State Medical Officer; the Chief Judge; the State Engineer; the Accountant-General; the Settlement Commissioner; the Director of Sericulture; the Assistant Resident; and the President, Mr. Colvin, Resident.

CHAPTER IV.

SILK SECTION OF THE EARL'S COURT EXHIBITION,
1900. CONSIGNMENT OF SILK, BOMBAY VERSUS
CALCUTTA.

IN 1900. I arranged a second Exhibition of Kashmir raw and woven Silks in the Silk Section of the Woman's Exhibition, at Earl's Court, which was described by me as follows:—

KASHMIR SILK.

Exhibited by His Highness the Maharajah Sahib of Jammu and Kashmir, India.

1. Raw-silk, Organzine, and Tram "in gum" undyed.
2. Figured and plain Brocades, Brocatelles, Damasks, etc., all manufactured from the raw-silk produced in Kashmir, in 1898 and 1899, for Upholstery, Decorative and Dress purposes, in English, Indian, Italian, Venetian and French styles and designs. The Silk dyed with pure unweighted dyes by Messrs. Joshua Wardle and Sons, Silk Dyers, Leek, Staffordshire, and woven by Messrs. Warner and Sons, of Braintree, and Spitalfields. This most interesting Case of Silk of Kashmir

production is illustrative of the successful attempt within the last few years to introduce Sericulture into Kashmir, the climate of which is extremely favourable both for the rearing of the silkworm, and the cultivation of the mulberry leaf, upon which it feeds.

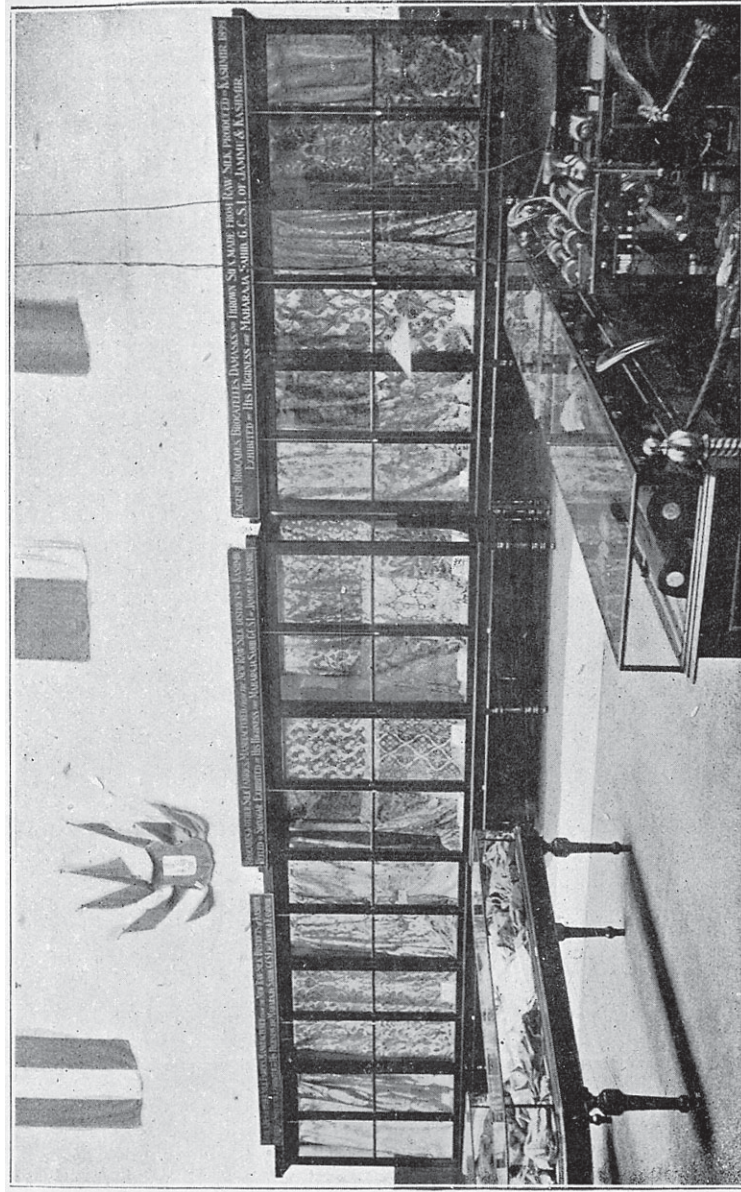
The illustration of the Case of Kashmir Silks exhibited was made for the Earl's Court Catalogue.

When I at first recommended the Government of India to take up sericulture in India, I advised that the raw-silk produced there should be sent direct to London, via Karachi or Bombay in preference to Calcutta. My chief reason for this was that knowing that Bengal silk was not used for the great bulk of European textile necessities, China and Japan silk being chiefly required, I felt convinced that prejudice might probably arise in the minds of European silk manufacturers if any idea of Bengal silk should be entertained.

It was thought, however, that it might be better to consign the silk to London by way of Calcutta, that hitherto having been the usual channel for the silk exports of India.

But here I would like to observe that Bengal silk has very important uses, and I would not like to be understood as in any way disparaging it. It is preferable to that of the silk of other countries for certain purposes, but these are limited in comparison with the uses of the silks of China, Japan, Italy and France.

PLATE I.



Kashmir Silks at the Earl's Court Exhibition of 1900.

The high reputation of Bengal silk filatures is of historic importance, they have long been celebrated, and will doubtless have as at present a continuing and increasing future.

In the Appendix I have given a list of the Bengal Filatures as they existed in 1901.

With the continued and increased application of the aids of modern sericultural science, there is no reason why Bengal silk should not acquire an ever increasing reputation and expansion as well as also in Mysore, Madras, and other parts of India, where the climate is suitable to the cultivation of the mulberry whether grown as a tree or a shrub.

I found the prejudices I had anticipated did arise, and with a view of meeting them I visited at considerable expense, trouble, and anxiety, most of the silk textile users in this Country, as well as several large Continental manufacturers, and succeeded in obtaining for the new silk of Kashmir a more favourable consideration, but even now much prejudice exists.

When samples were first put before them they said, "Oh, we know Indian Silk very well; it will not suit our textiles; we have repeatedly tried it." They had conceived a strong prejudice against it, thinking it must be of the same class and character as that of the multivoltine sub-tropical silk of Bengal. The prejudice aroused nearly spoilt its chances; it certainly delayed them for some time, and even now it is far from being overcome by some manufacturers. This prejudice was not

confined to England; it was shared in on the Continent in the same way, and it cost me much time and money to go over to Germany and France with samples to convince the manufacturers and dealers that it was not Indian silk at all, but that of the very best race of silkworms of France, but grown, so to speak, in Kashmir from eggs imported from the South of France, as well as some from Italy.

In time, however, the silk has been tried on its merits, and is now in demand. It is worth, as I have previously stated, from 1s. to 2s. per lb. less than standard French and Italian raws, but there is no reason why its quality and value should not equal the European silks as soon as cocoon-reeling in Kashmir, and other points suggested in my No. 2 Report, Chapter 15, have become more perfected, and this is rapidly being done.

There were also important reasons, geographical and others, for Kashmir silk being imported direct. This for the last two years has been done with marked beneficial results. It is now consigned direct by the Kashmir State to Messrs. Durant, Bevan & Co., who have taken the greatest interest in distributing it, chiefly in France, and also in England. Mr. Francis Durant, the experienced head of the firm, accompanied me to Srinagar, where he stayed a short time and fully explained what was required in the European silk markets to bring up Kashmir silk to the required standards of quality.

His visit had a very useful effect for no one in Europe better understands raw-silk.

The following Tables were furnished to me in Srinagar :—

	Rs.
Saving in commission and expense in 1901	20,000
Ditto ditto ditto in 1902	15,000
Prospective saving in the rest of the un-reeled crop	25,000
	<hr/>
	Rs. 60,000

Rps. 60,000 are equal to £4,000.

Table, in English money, showing the amount of net profit to the State in consequence of the change and of the advance in the price of silk.

	£
Saving in commission and expenses ...	4,000
Ditto, in increased price of raw-silk of 1901, 65,931 lbs.	7,897
Ditto in 1902 on 56,662 lbs.	8,735
Prospective saving on the unreeled crop of 1902 if the higher prices continue, estimated at... ..	10,000
	<hr/>
	£30,632

CHAPTER V.

INDIA OFFICE CONFERENCE. STATE VERSUS PRIVATE
ENTERPRISE. MY VISIT TO KASHMIR IN 1903.
JAMMU DURBAR. SRINAGAR SILK CONFERENCE.
SUCCESSFUL THREE YEARS' BALANCE SHEET
AND PROFIT.

ON the 26th September, 1901, I was invited by Sir George Birdwood, K.C.I.E., M.D., LL.D., C.S.I., Special Assistant in the Revenue and Statistics Department of the India Office, to an informal Meeting at the India Office, which he had arranged in order to give me, Sir Adelbert Talbot, K.C.I.E., late Resident in Kashmir; Mr. T. W. Holderness, C.S.I., I.C.S., Secretary, Revenue Department of the India Office; Mr. L. W. Dane, C.I.E., the newly appointed Resident for Kashmir; and two other gentlemen of great knowledge and experience in silk and Indian sericulture, the opportunity of expressing our views on the present position of the Kashmir silk industry and on its future, chiefly for the information of Mr. Dane, who was proceeding shortly to India to take up the post of Resident in Kashmir, previously held by Sir Adelbert Talbot, and others.

I was appointed Chairman, and a long discussion ensued as to the best means of further developing

sericulture in Kashmir. A detailed Report of this Conference will be found in Chapter II.

My methods and advice were criticised, and the Government was strongly advised to proceed on the lines of "eggs of reproduction."

I, as strongly, protested, and begged the Government to let the system I had adopted and carried through so successfully for four years, be continued; in fact, as I said, "let well alone, and continue each year to purchase eggs from Europe of the best developed races of silkworms;" and this, chiefly because I had each year a guaranteed undertaking from M. Arbousset, of Alais, a celebrated sericulturalist, and other graineurs in Italy, that the eggs supplied to Kashmir should be carefully selected from moths microscopically examined, and their eggs wholly free from pebrine.

I am happy to say the Government has continued to take my advice, with results the most encouraging, as the foregoing table shows.

There need be nothing strange or abnormal in sending for silkworm-eggs from such a distance when, from a report of Mr. Adams, Secretary to H.M.'s Legation in Japan, even as far back as 1870, it will be seen that Japan exported to Europe no less than 3,776 cases of cards containing silkworm-eggs for France, and 2,583 cases to Italy, or a total of 6,359 cases containing 1,390,500 cards, of a gross weight of 319,829 lbs., or an average number of 220 cards per case. In 1868 the quantity exported amounted to no less than

2,300,000 lbs. This shows that France and Italy replenish their races by regular imports of eggs from the East, and this is without reckoning eggs from China, the quantity of which is generally very considerable.

PRIVATE ENTERPRISE.

At the informal Conference to which I have just referred, we discussed the question of private versus State enterprise. I am and have all along been decidedly adverse to this industry being taken over as a private enterprise, or by any Company promoting schemes.

I am distinctly of the opinion of the present Viceroy, Lord Curzon, emphatically expressed in a Speech by him at Jaipur in April of 1902, in which he said:—

“There is no spectacle which finds less favour in my eyes, or which I have done more to discourage, than that of a cluster of Europeans settling down on a Native State and sucking from it the moisture which ought to give sustenance to its own people.”

From the first, and before this emphatic pronouncement of the Viceroy, my humble efforts for Kashmir have been wholly in this direction, and I have fearlessly opposed schemes projected both in London and in Srinagar, for private enterprise, being fully persuaded that the State of Kashmir, having had the courage, mainly through the wise advice and perseverance of Sir Adelbert Talbot when Resident, to induce the Maharajah to make

a commencement on a practical scale with the eggs I purchased in 1897, and having embarked in the construction of a large filature and out-works, and in building new ones each year at great State cost as the Industry increased, that any profit made should go into the coffers of the State; although I would here like to remark that the question of the employment of thousands of native Kashmiris, greatly needing occupation, and then being on the verge of starvation, had more weight with me than the profit-making. That this has been accomplished is very gratifying, and not only so, but as I have shown, a very large money profit, amounting to upwards of £40,000, has been made during the last three years, which profit has properly gone to the State. See balance-sheet on pages 52 and 53.

In this view I was supported first by Sir Adelbert Talbot, and during the last three years by Mr. Dane and Mr. Colvin. The Maharajah and his brother, General Rajah Sir Amar Singh, both strongly declaimed in the Durbar assembled to meet me at Jammu in the spring of 1903, against the handing over of the industry to private enterprise, when I purposely asked them for their opinion.

Fortunately there were two, if not three, opposing schemes more or less matured for private enterprise; they materially helped to neutralize each other, but the Srinagar attempt very nearly succeeded, because it was thought, and I believe stated, by the Accountant-General in office before Mr. Anderson,

that the industry was a losing concern, and naturally the then Resident said it had better go into private enterprise.

A lease was drawn up and partly signed; it required only the signature of the Viceroy.

On learning this, being totally opposed as I have before stated to private enterprise, or any Company promoters, I at once wrote to the Viceroy, Lord Curzon, through his private Secretary, Mr. (now Sir) W. R. Lawrence, and he laid my letter before Lord Curzon, who refused to sign the lease, and it therefore became firmly rooted as a State Industry.

I hope it may permanently so continue.

Having had correspondence with Sir Adelbert Talbot during his term of Residency, on the Industry and its prospects, I knew from him that up to the time of his leaving Office at the end of 1900 the Industry was profitable. He had informed me that the estimated profit for the year 1899-1900 was £13,333. I was unable to account for the statement made later on that a loss had been actually incurred, and necessarily felt much alarm on the ground of my own moral responsibility in having advised the Government of India to commence this Industry.

My fears were ill-founded, as I shall proceed to show.

I decided to go out to Kashmir at my own expense to see into matters for myself, both on this account and the interests of sericulture

PLATE 2.



Major-General His Highness Sir Pratap Singh, G.C.S.I.,
the Maharaja Sahib of Jammu and Kashmir.

generally, and to strongly advise the desirability of teaching the natives to weave the silk of their own production.

The Government of India approved of my going out, and I was most warmly welcomed on my arrival at Jammu, both by His Highness the Maharajah of Jammu and Kashmir, and his brother General Rajah Sir Amar Singh.

I was instructed by Mr. Colvin, who had lately succeeded Mr. Dane as Resident of Kashmir, and whom I met on my arrival at Sialkot, and had a day's discussion with him, to call first at Jammu before I went up into Kashmir, in order that I might have an interview with the Maharajah, who was then staying at his Palace at Jammu.

A Durbar was held in the Palace at Jammu on the 13th March, 1903, to welcome me, and to hear what I had to say on the various subjects connected with the silk industry in Kashmir, and on the mode of distribution of raw-silk in Europe.

I had a most hearty reception, and there were present, in addition to the Maharajah and his brother, Sir Amar Singh, Khan Bahadur Ghulam Ahmad Khan, Revenue Member of the Jammu and Kashmir State Council; Rai Sahib Bhagat Narain Dass, M.A., Judicial Member of the Jammu and Kashmir State Council; Rai Sahib Dewan Daya Kishan Kaul, B.A., Private Secretary to His Highness the Maharajah of Jammu and Kashmir State.

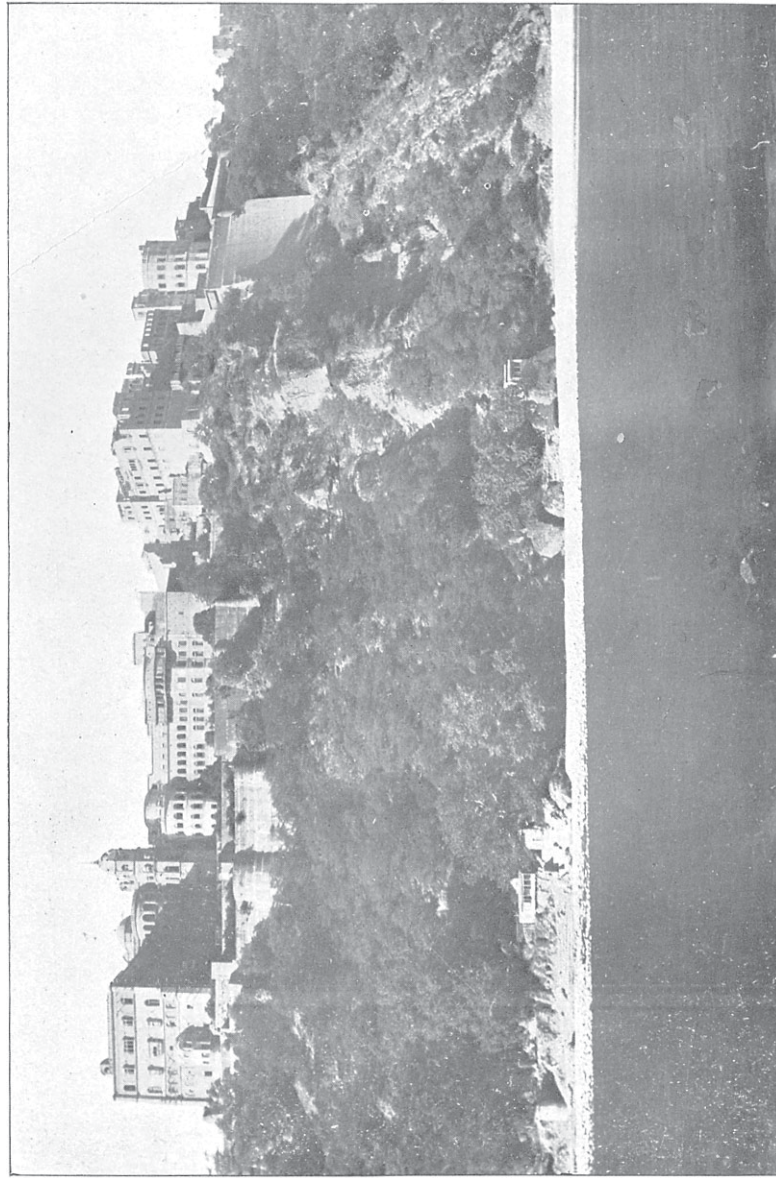
Mr. Colvin, the Resident, having gone on tour in the Himalayas, could not be present, but I met

PLATE 4.



General Raja Sir Amar Singh, K.C.S.I., Brother of the Maharaja of Kashmir.

PLATE 3.



Palace of H.H. the Maharaja of Jammu and Kashmir at Jammu.

him soon after at Srinagar on my arrival there.

The Maharajah commenced the interview by hoping I had had a pleasant journey, and saying he was exceedingly glad I had come all the way from England in the interests of Kashmir, and that he was most grateful to me.

After a little conversation with him I asked him if he would like me to explain the object of my visit. He replied he would be very glad.

After making a few remarks about myself saying that so far as I was concerned my visit was absolutely a disinterested one, and that to me no pecuniary advantage would accrue, I read to him the index of my explanatory notes of my week's stay in the reeling districts of the south of France, written during my voyage to India, reading also portions of the text where it was felt desirable to do so. The meeting lasted nearly two hours, everyone seemed most interested. The particulars will be found in my No. 1 Report (see Chapter 14) which, after having been listened to with much attention and interestingly discussed, the Maharajah said he considered it to be of great importance, and ordered it to be printed at once by the State press at Jammu. This was acted upon, and I corrected proofs within a few days after.

I showed them the French tavelettes, as used in the Cevennes, the raw-silk samples I brought from Lyons of French cocoon reeling, and the magnificent black figured brocades I had had woven

in England by Messrs. Warner & Sons, of Kashmir Silk. The Maharajah with great pleasure accepted my suggestion that he should present a piece to the Queen and another to the Princess of Wales and asked me to be the bearer of them.

The Brocades were forwarded by Mr. Colvin to the India Office in London, and on respective days appointed subsequently by the Queen and the Princess of Wales I had the honour of offering them for acceptance on behalf of the Maharajah.

It was impossible not to be struck with the genuine satisfaction and pleasure evinced both by the Queen and the Princess of Wales on the reception of these beautiful silks.

I introduced the subject of private enterprise to the Maharajah, and asked him whether it was at all his wish that the industry should be given over to private enterprise, or to company promoting, and whether he did not think it was much more desirable that it should remain a State industry.

He rose, and in the most emphatic manner declared that he had no wish whatever that it should go into private enterprise. He was very much opposed to it and said it was intended as far as possible to have it retained and expanded as a State industry.

Sir Amar Singh warmly endorsed this expression, and said there was no intention whatever, nor had there ever been, to hand it over to those who had been trying to lay hold of it as a private enterprise.

I left Jammu on the 15th March, and arrived in Srinagar on the 19th March.

I spent a few days in the filatures there with Mr. Walton, the Director of Sericulture, inspecting all the reeling and other operations, and waited at the Residency for the return of Mr. Colvin, who was then away in camp.

On his arrival I discussed with him the proceedings of the Durbar and my stay in Jammu.

He called a Conference on Sericulture at the Residency on the 1st May, 1903; there were present besides himself:—

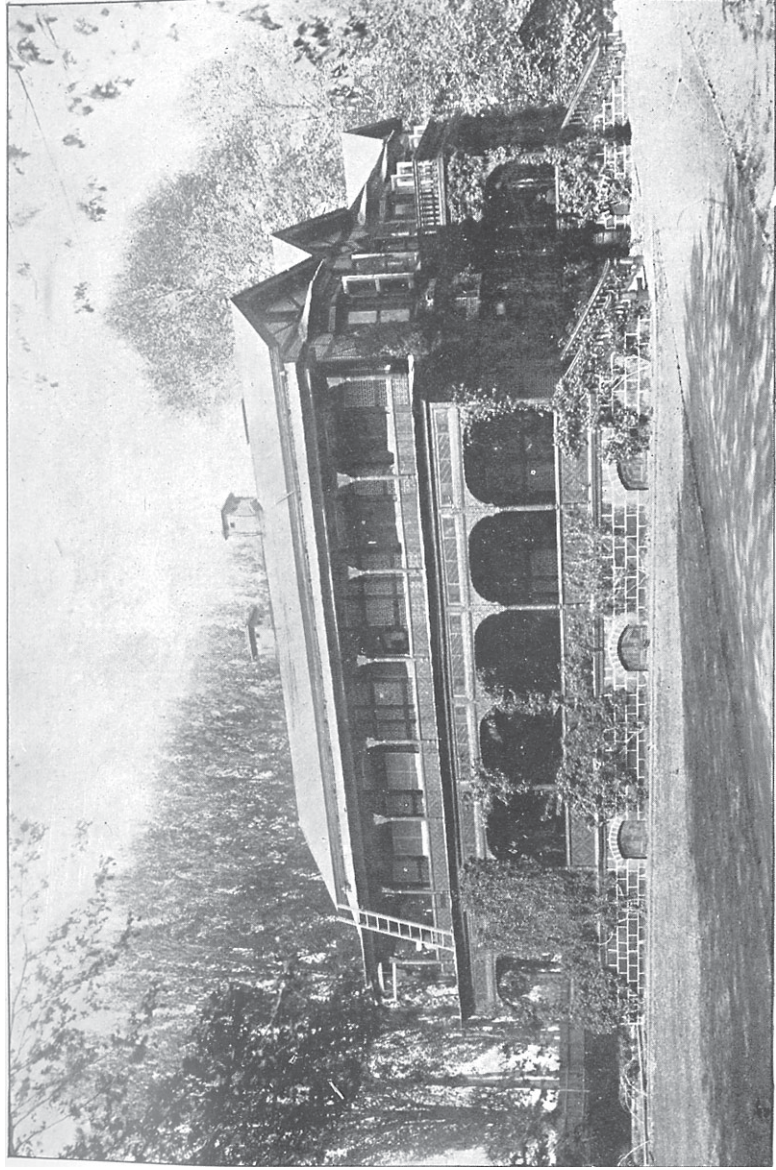
Pundit Man Mohan Nath Kaul Sahib, the Governor of Kashmir; Major J. L. Kaye, Settlement Commissioner; Mr. F. Anderson, Accountant-General; Mr. Walton, Director of Sericulture, and I attended by special invitation.

Particulars of this interesting Conference will be found in Chapter 12, and also a report of a subsequent Conference, Chapter 13, which was held last October.

At this conference I strongly advocated the commencement of silk weaving, and related the discussion that took place at the Durbar at Jammu on the subject, both as to weaving and as to its being a cottage industry and as to the desirability of giving employment to women. I also advised the appointment of a Forest Officer to superintend the cultivation of the mulberry trees which I found in a very badly managed state.

I warmly advocated the desirability of having

PLATE 5.



The Jhelum River-front of the Residency, Srinagar.

a thorough financial investigation of the state of the business up to that time, April, 1903. The Accountant-General, Mr. Anderson, was called into Council, and it was decided that such investigation and a stock-taking should be at once entered into. I should say that no such investigation had taken place for the previous three years.

Mr. Anderson, in the course of the following fortnight, had in a most able manner gone into every minutiae, and produced his balance-sheet, and the result was most satisfactory; the conclusions erroneously arrived at, to which I have referred, were disproved, and a magnificent profit of £40,240 8s. od. for the past three years working was put on record.

This balance-sheet was however a provisional one, because the quantity and value of silk then in the state of cocoons, could not accurately be arrived at, except as cocoons, and a valuation of an *ad interim* nature was taken, giving credit for value of cocoons as cocoons only, notwithstanding I urged that a higher value should be taken for them approximating to their yield as raw-silk. However, Mr. Anderson being anxious to be on the safe side, was very properly inexorable, and the much lower value as cocoons, was taken.

Now when it is considered that the yield of cocoons for 1902 had been so prolific, that only one-third of them could be reeled in the reeling season, before the winter set in, for want of room, and the filatures necessarily became closed,

we may safely assume that the profit has become greatly increased.

The present value (February, 1904) of cocoons being 4s. 6d. per lb., and that of the raw-silks of Italy and France averaging 19s. 6d. per lb., gives a difference of stock value, less the expenses of cocoon-reeling, of a large amount, and we may therefore safely assess the item of profit at vastly more than £40,240 8s. 0d.; and in giving below a copy of Mr. Anderson's provisional balance-sheet for the financial year ending 12th April, 1903, I add a statement from a letter I received from Mr. Colvin, dated the 7th January, 1904, to the effect, that, although the next balance-sheet will not be out until the close of the financial year, April, 1904, it will show an enormously increased profit, although the drop in the silk market severely affects the result.

PRELIMINARY BALANCE-SHEET OF
THE SILK INDUSTRY FROM SAMVAT 1954,
(1898) TO END OF 1959. (12th April, 1903.)

LIABILITIES.

	In Rupees.		In English money.	
	Rps.	A. P.	£	s. d.
A. Capital	5,16,320	9 1	34,421	6 8
B. Working expenses	17,07,895	8 9	113,859	14 8
C. Profit	6,03,308	10 3	40,240	8 0
	Rps. 28,27,524	12 1	£188,521	9 4

ASSETS.

D. Block	4,10,935	12	10	27,395	13	4
E. Cash receipts ...	17,26,261	15	3	115,084	1	4
F. Stock in hand ...	6,90,327	0	0	46,021	16	0

*Rps. 28,27,524 12 1 £188,501 10 8

This provisional profit of £40,240 8s. od. shows the wonderful return after six years of work of 117 per cent. on the capital expenditure of £34,421 6s. 8d., a percentage which will be materially increased when the value of the raw-silk reeled from the stock of last year's unreeled cocoons is realised.

* See also Chapter 12.

CHAPTER VI.

SILK WEAVING. CHINESE AND JAPANESE EXPORTS OF WOVEN SILK. KASHMIR TEXTILE POSSIBILITIES. PURCHASE OF LOOMS AND ENGAGEMENT OF A SILK WEAVER.

I WISH now to report preliminarily upon a suggestion I made to His Highness the Maharajah of Jammu and Kashmir in Durbar at Jammu on my arrival there.

I informed His Highness and the Durbar that I had thought for a considerable time that the cocoon-reeling results had been so satisfactory in producing raw-silk of great fineness and evenness of thread that I did not see why the natives might not now be taught how to weave such fine silks as are so largely imported into Europe and America from China and Japan, and in addition to this there is also the great field of silk-wearing India, an extensive and important market close at hand.

I stated that this idea was one of the most important that had decided me to come out to Kashmir.

I would like to say here, that for good or bad, the idea is entirely my own, and has not been suggested or mentioned to me by anyone. Being therefore solely responsible for it I have given it all the consideration in my power before I ventured

to mention it either to the Government of India or to the State authorities in Kashmir.

I feel sure that I have evolved the idea of a procedure which, if thoroughly carried out, will result in a further development of the Kashmir Silk Industry almost as important as that of Sericulture, more especially as to an excellent employment and vocation for both men, women and elder children.

I approached the Board of Trade, through my friend Sir A. E. Bateman, for information concerning the exports of woven silks from China and Japan. He kindly gave me the following statistics which show in round numbers that China exports one and a half millions sterling worth of these silks, and that Japan exports no less a sum in value than three millions sterling worth.

BOARD OF TRADE STATEMENT SHOWING THE VALUE OF SILK GOODS (DOMESTIC MANUFACTURE) EXPORTED FROM CHINA TO FOREIGN COUNTRIES IN EACH OF THE YEARS 1900, 1901, 1902 :—

Total English Values		
1900.	1901.	1902.
£1,507,358 3 9	£1,613,402 3 4	£1,333,548 14 2

STATEMENT SHOWING VALUE OF SILK GOODS (DOMESTIC MANUFACTURE) EXPORTED FROM JAPAN (EXCLUSIVE OF FORMOSA) TO FOREIGN COUNTRIES IN EACH OF THE YEARS 1900, 1901, 1902 :—

Total English Values		
1900.	1901.	1902.
£2,383,872, 8 4	£3,041,772 4 3	£3,181,667 11 10

Now these silks are imported into Europe and America because neither European nor American weavers can weave them as cheaply as the cottage-loom weavers in China and Japan. In Japan the labour was a short time ago only 3d. per day, but wages have risen there, and at the present time 6d. per day is paid for silk weaving. The maximum wages of the Kashmiris being only 4d. a day gives them an excellent chance of competing.

On my mentioning this in the Srinagar Durbar, the Maharajah rose and said he thought it was an excellent suggestion, and he should be very glad to see weaving introduced. I may mention that no silk weaving yet exists in Kashmir or Jammu. The only weaving I saw was puttoo weaving, a kind of rough woollen tweed, of which the cloaks the natives wear are made; also tweeds for tailoring purposes resembling Scotch tweeds.

I had explained that the reeling of the cocoons had been brought about, under Mr. Walton's able supervision, to such perfection, that I felt sure there was now a possibility of weaving goods quite equal in texture and fineness to those so largely exported from Japan and China, to Europe.

At the conclusion of the Durbar which lasted nearly two hours in discussing various points of the silk industry, the Maharajah again cordially shook hands with me, and thanked me in a very touching manner, and General Rajah Sir Amar Singh asked me to accompany him to his house which

PLATE 6.



Mr. Colvin the Resident, General Raja Sir Amar Singh, and the Author.

adjoins the Palace. He discussed the weaving idea with me, and said he felt very much interested in it, and that if I could succeed in introducing it in Kashmir, it would be nothing short of a real blessing to the people of Srinagar, many of whom were at that time without employment, and in consequence of a material advance in the price of rice, were unable to buy it.

I promised to devote my most careful attention to the subject, and I have, up to the present time, spared no pains in preparing to instal this new industry into Kashmir.

I mentioned the idea to Mr. Colvin when I met him in Srinagar a few days afterwards; he greatly approved of it, and told me to proceed on the lines suggested by Sir Amar Singh, namely, to purchase a couple of looms and engage a competent weaver to come out as soon as proper arrangements in England could be made.

I had the privilege of meeting the Church of England Missionary and Zenana Staff at Srinagar, and had much conversation with them about silk-weaving; it met with their approval. The Rev. C. E. Tyndale-Biscoe and Miss Hull told me that if a cottage-weaving industry could be established, and women could be taught to weave also, a great improvement in their material and moral condition would be effected, especially among the Hindoo widows, many of whom were living in a state of pitiable degradation.

I am not sure whether a system of cotta e-

PLATE 7.



Mrs. Colvin and the Author at the Residency, Jammu, returned from an Elephant Ride to the Fort.

weaving can be successfully instituted, owing to the great difficulties attending European supervision, the economical distribution of warp and weft, and the proper collection of the woven result ; at least not in the present state of native society there. The temptation to dishonesty would be great, and the difficulties of securing an all round straightforward installation would cause much trouble, creating many drawbacks. This is Mr. Colvin's opinion, as well as Mr. Walton's.

Mr. Colvin thinks it would be much preferable to build a factory and establish, as in England, a factory system of weaving, at any rate as a first effort ; and he instructed me to order twelve looms, which are now made, and sent out with all the necessary equipment for working them, namely, winding, beaming, and warping machinery.

I have done this, but in some degree à little regretfully, as I hoped to see the excellent ideas and plans of Miss Hull and the rest of the Missionary Staff have the first place, but upon further consideration I am convinced that Mr. Colvin is right, and I have been for some months engaged for the adventure, at his request and that of Sir Amar Singh.

With the help of my friend, Mr. Kershaw, of Macclesfield, who is acknowledged to be one of the most experienced manufacturers of woven silk in England, and himself one of the largest silk manufacturers, I have got out plans of an initial factory both for one and two hundred

looms, capable of future extension, and showing the most economical distribution of all the necessary machinery for a hand-loom factory, and the subsidiary space for winding, warping, etc.

The consideration of power-looms must be left to the future; I think it may come in time, if found necessary,—if Chinese and Japanese competition should make it necessary.

This new Industry, if successfully installed, will find employment for great numbers of people, and it is in this way chiefly that it will be beneficial to the State. It cannot be expected to bring in the rapid and large profits of sericulture, because of the cheap products of Japanese and Chinese hand-looms. So cheap are they, that, as I have just stated, neither hand nor power-loom work in Europe or America can yet compete with them; but I am hoping before long to evolve a power-loom which will be capable of successfully competing with their hand-loom production.

With regard to the factory versus cottage weaving, I am now all the more disposed to advocate the former, on learning from Mr. Colvin that two out of four of the new filatures for cocoon-reeling, which were almost completed when I left Srinagar in May, 1903, are now filled by women cocoon-reelers, they having been induced by pressure of hard times to leave their purdah and, perhaps for the first time in the history of industry in India, certainly in Kashmir, to come outside their homes and learn how to reel cocoons in the

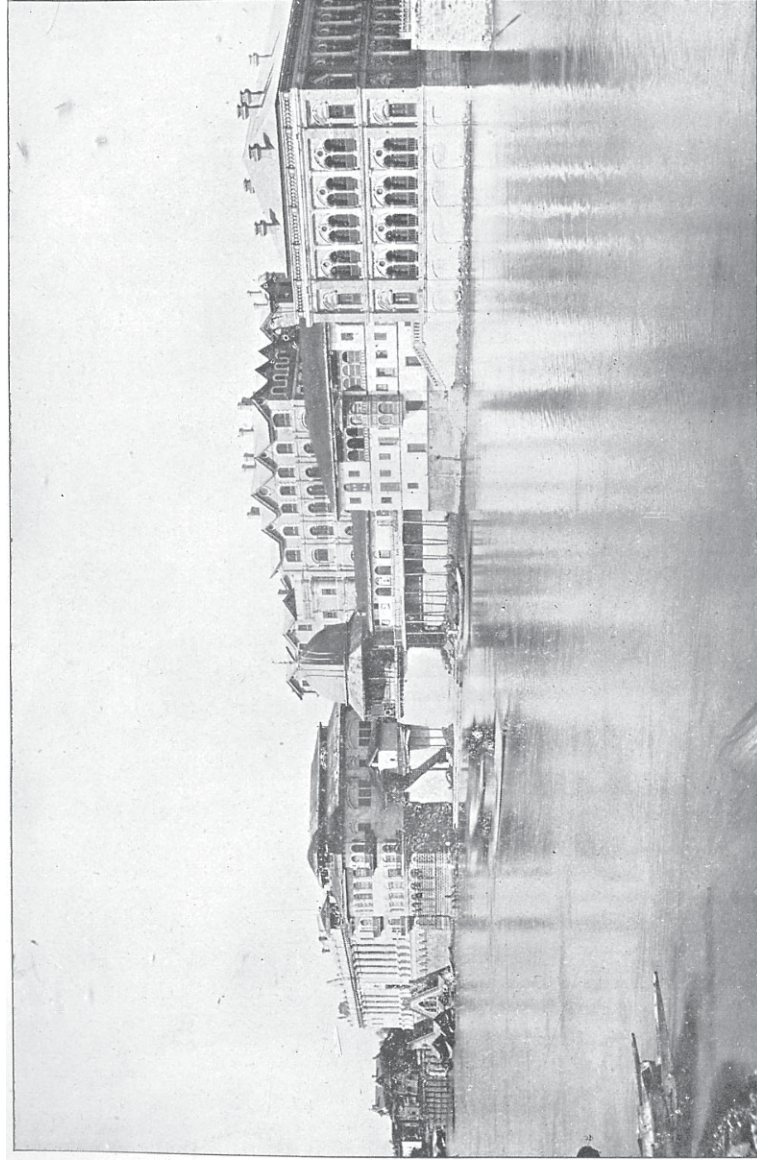
factory. It points to a gradual amelioration in the hard lot of the Kashmir women, who, from what I heard and saw of them, seem to bear the burden of most of the lowest and most laborious of the daily work, whilst the men take only the easiest. In this view I welcome the decision arrived at by Mr. Colvin, who recently informed me that there are now 1350 women employed.

I sent out, in March, a highly skilled weaver with the looms and the necessary apparatus; and up to that time for some months I kept him employed in using and perfecting the looms, and adapting every necessary detail, so that when he arrived in Srinagar there would be no experimental work necessary. I have already sent samples of his very successful weaving of Kashmir Silk to the Maharajah, Sir Amar Singh, and Mr. Colvin, which leave nothing to be desired as to quality. The chief point now to be ascertained is, how cheaply the Kashmiri, when his or her clever fingers be well loom trained, can compete with the Chinese and Japanese. I believe and think of it in a very hopeful way.

The woven stuffs of Japan and China are made with unthrown raw-silk from white cocoons, whilst the cocoons of Kashmir Silk are yellow and present great difficulties in overcoming the yellowness which prevents good white and pale colours from being obtained upon it.

After prolonged research and experimental laboratory work, and with the help of one of my sons,

PLATE 8.



Palace of H.H. the Maharaja of Jammu and Kashmir on the Jhelum at Srinagar.

who is an expert piece-silk dyer and finisher, we have been able so to whiten Kashmir woven Silk that it can scarcely be distinguished from the white Silk of Japan.

This is a discovery of the highest importance, and will make the progress of a weaving industry in Kashmir much less difficult of success and of sale.

CHAPTER VII.

COPIES OF PREVIOUS CORRESPONDENCE WITH GOVERNMENT, SEPTEMBER, 1889.

NO. 91, DATED INDIA OFFICE, 26TH SEPT., 1889.

*To His Excellency The Most Honourable the Governor-
General of India in Council.*

My Lord Marquis;

In continuation of previous correspondence, I forward herewith, for your Excellency's information and for such action as your Government may deem desirable, a copy of a question asked in the House of Commons on the 26th August last, by Sir Roper Lethbridge, on the subject of steps being taken in India for the improvement of Indian Sericulture.

*2. I also forward a copy of further correspondence, as noted below, on the same subject, with Mr. T. Wardle.

3. I take this opportunity of drawing your attention to the fact that the information concerning the establishment of a Silk Committee in Calcutta,

* From Mr. Wardle, dated 12th August, 1889. From Mr. Wardle, dated 24th August, 1889. To Mr. Wardle, dated 24th September, 1889.

which appears to have reached Mr. Wardle, has not been communicated to this Office, my despatches of the 28th March, No. 39, and 4th July, No. 63, remaining unanswered.

4. I shall be glad to hear at an early date what steps have been taken, or are in contemplation, with a view to making use of the information acquired by Mr. N. G. Mukerji, in Europe, and for the establishment of the experimental Silk Laboratory for which the apparatus was sent out in December last.

I have the honour to be,

My Lord Marquis,

Your Lordship's most obedient humble Servant,

(Signed), CROSS.

Letter from Mr. Wardle to the Right Honourable the Under Secretary of State for India, Sir John Gorst.

Leek, 12th August, 1889.

Dear Sir,

When I had the pleasure of seeing you with Mr. Davenport, M.P., some time ago, you kindly suggested that I should write to you asking what had been done with regard to my suggestions to the Secretary of the Revenue and Agricultural Department, Calcutta.

In reference to the rumour of the Imperial Government having handed over the Sericultural Laboratory and staff to the Bengal Government, who had handed it over to a mixed Committee, I

thought, before troubling you, I would wait a little to see whether I should receive any reply from Sir E. C. Buck, the Secretary.

His reply has arrived, and Mr. Davenport will be good enough to hand it to you. It is just as I feared.

I am informed that the whole of this important experiment has already been handed over to three European firms, and it is not in the least likely that there will be any but an abortive result.

I deeply regret that the Government of India should not have seen the immense importance of Sericulture in India, where the Silk Industry would have been consolidated and developed by persistent and long-continued Imperial Government direction, and an "educational" effort to improve the native rearing of silkworms.

If the Governments of France and Italy have for so many years seen the necessity of preserving their respective silk industries by State watchfulness and nurture, I feel certain that they are still more required in India.

The disease which twenty-five years ago devastated the Italian and French silkworm crops, and which has decimated, if not destroyed, the output of Cyprus, as will be seen by an admirable Report from the High Commissioner just issued to Parliament, I repeat that this disease, which twenty-five years ago did so much damage, has been effectually stamped out by the influence and work of the sericultural laboratories, where Monsieur Pasteur's

methods and discoveries are regularly in active operation.

Should these laboratories and precautions cease, pebrine and other diseases would most surely be as rife in a few years in Europe as they are at the present moment in Bengal.

Never at any period in the history of Bengal Silk was it so much in request as now. In Leek I am asked for it every day, and begged to use my best endeavours with the Government of India to do what lies in their power to enable the trade to procure this, and, if there should be the slightest doubt on this point, I would be glad to take any person you would depute to the Manufacturers of this and other English towns to see for himself that the demand for Bengal Silk is as I have represented.

The expense in India of conducting this "education" would be small compared with the annual expense in Italy and France.

The demand for Bengal Silk this year has so far exceeded the supply that Manufacturers will have to wait for the crop of the November "bund" which does not arrive in England until the early part of next year.

I cannot understand why the apparatus for the Laboratory is not required, and the question what is to be done with it completely astonishes me. If it is not the right kind of apparatus, it ought to be replaced by what is the right kind. There is no difficulty: I could easily select all proper

instruments and appliances from either Lyons or by advice of Dr. Quajat at the Government Station at Padua.

I venture to think this is an Industry which the Imperial Government ought to encourage, both with regard to its value to England, and for the employment of the poor people of the silk districts in Bengal, whose loss has been and is enormous through the decay of this Industry.

Mr. Finucane's idea that the Silk experiments should be carried out by the Silk Merchants is totally in opposition to the wiser decision of the French and Italian Governments, who know too well the value and importance of the Silk Industry to their peoples.

Were I a Director of Agriculture in Bengal, I cannot help saying it seems to me, that this is one of the objects which would strongly appeal to me for Government succour and direction.

I am perfectly satisfied that the experiments will not have a lasting benefit in India unless they are placed on a permanent and scientific footing.

I take it after much concern and study of the question, that the poor peasants, who cannot help themselves nor sustain for themselves any organised system, and are mainly interested in these experiments, ought to have the direct help which I so earnestly seek for them, and I have frequently repeated that the question of producing Bengal Silk for native uses is a more important matter than that of its production for export.

Were I in Parliament I would move for a Commission on this subject. I am quite certain it is of sufficient importance for one.

I hope you will consider the deep interest I feel will be my excuse for troubling you at such length.

Yours truly,

(Signed), THOMAS WARDLE.

P.S.—The India Office note on the paragraph about Laboratory apparatus is:—“The apparatus ordered and sent out was what M. Rondot recommended, and is believed to be what (or nearly all that) Mr. Mukerji desired.

No. 3.

Leek, Staffordshire,

24th August, 1889.

Dear Sir John Gorst,

I have your letter of the 31st July before me, and cannot help expressing my deep regret and alarm at the inertness of the Government of India in the matter of the revival of Bengal sericulture, with its possibility of great extension in the Madras Presidency, in Kashmir, and probably other parts of India, and its practical abandonment of the promising and initial steps to carry out a reformation of this Industry.

I now venture to trouble you at a little more length than before; at the same time fearing I am trespassing too much upon your valuable time.

I am quite convinced that this matter is one of such importance as to deserve a Parliamentary Committee and the evidence of experts.

I think I ought to put you in possession of some ideas, which to my mind are overwhelmingly conclusive of the absolute necessity of retaining this sericultural teaching initiative and "education" (to use a French term) under Imperial direction.

It makes a great difference to the character of the experiments whether they are carried on by a Provincial or Imperial Institution, and especially whether they are carried on permanently or temporarily.

A permanent and not a temporary sericultural appointment ought to be insisted upon.

It is very clear to me that the Bengal Government has no intention of carrying on sericultural training permanently.

I may mention, in passing, that one of the most important things to be done is the translation into the Indian vernacular of the important French and Italian treatises on sericulture.

This could only be done by a permanent and Native Official, and it will never be done under the direction of business men, especially by those who are interested in the least important side of the question, namely, in the production of raw-silk for export, neglecting entirely the silk for native uses, of which large quantities are brought from other Countries into India.

It is absolutely essential that continuous ex-

periments be made at the expense of a special fund provided for that purpose.

Besides the benefit to India, the experience gained by such an Institution would greatly benefit our English colonies, where sericulture is commencing.

The Silk Industry of Kashmir has up to the present time entirely collapsed from want of sericultural knowledge, as that of Bengal is now collapsing.

Nor is it only a specific knowledge of how to grapple with the silkworm diseases which is necessary, but a special knowledge regarding the management throughout that has revived the silk Industries of France and Italy so completely.

Before the silkworm diseases appeared in France and Italy the average quantity of cocoons obtained from 1 oz. of eggs was 17 to 20 kilogrammes, but now by the sustained Government action it is over 40 kilogrammes per oz., and increases every year.

The average of 24 sericultural departments in 1887 shows 25.99 kilogrammes from 1 oz. of eggs, and in 1888, 40.99.

I am quoting from the statistics of the "Production de la Soie en France, et à l'Etranger, of the Syndicate de l'Union des Marchands de Soie de Lyon."

I am translating this work in order to show the Government the immense importance the French attach to their silkworm breeding.

The methods that combine to produce this result in Europe at present ought to be applied wherever sericulture exists or may be introduced, because there is little doubt that the rearing of silkworms may be gradually abandoned in Europe; the reason will be the same as the reluctance on the part of English farmers to grow wheat, and it will go back to tropical countries where human wants are few, and where labour must always remain cheap.

From the same source I quote the following remarks on sericulture in Spain, where, from disease and other causes, this Industry has become considerably decreased:—

“M. Le Ministre de l’Agriculture, vivement préoccupé de la décadence d’une industrie, autrefois source principale de richesse pour un grand nombre de provinces, a proposé à la Reine Régente la sanction d’un décret qui institue dans quelques provinces d’Espagne une ou plusieurs stations bacologiques, qui auront pour mission de développer la culture du mûrier, produire des semences saines, et d’enseigner aux éducateurs les méthodes les plus rationnelles d’élevage.”

If the Minister of Agriculture of Spain considers this Industry of so much importance as to propose to the Queen Regent such an action as I am so strenuously advocating in India, I think such an argument might well have great weight with the Government of India.

The British Empire is more interested in the

prospects of tropical countries than any others, and of the making or marring of the silk trade of the Empire; the standing or falling in the world's competition will depend chiefly on the boldness with which scientific knowledge is taken advantage of, and the sooner it is done in India the better.

Science has done more to improve sericulture than probably any other agricultural industry.

Japan has successfully taken this matter in hand, and is well ahead of us, and there is a sericultural organization in China extremely thorough and increasing.

There ought, I think, to be a school of sericultural training for India and for the colonies; a bureau of sericulture ought to be established for the Empire, and it would be much better established in India.

It requires no costly establishment nor expensive laboratory instruments to start such an institution. In fact the "material" already purchased by the Government of India and sent out to Calcutta is, I believe, sufficient, or almost sufficient, for the purpose, and it appears to be not yet even unpacked. This surely is a cruel waste of opportunity and of money.

Reverting to the Government Report, I see it is arranged that the sericultural experiments shall be managed by the Committee of Silk Merchants up to the 28th of February next, the Government paying Rs. 7,500, the remainder of the expenses

being defrayed by the Committee. What is to be done afterwards?

Probably it will be said that the experiments have proved successful, and that the natives ought to be able to carry on sericulture without Government help.

Those who know anything about the Natives of India will, I think, not expect much persistence or perseverance from them. They will be sure to give up such experimental work.

Silkworm rearing, from its very nature, must always remain in the hands of the native peasantry as a domestic industry, and differs from the industries of indigo and tea, which are carried on by the European capital, enterprise, and knowledge. Is not this a serious argument for Governmental guidance?

I am certain that, without extraneous help, and State instruction, the production of raw-silk in India cannot be improved.

In addition to this there is the question of the supply of mulberry leaf for the experimental work.

Has the Committee any funds for this purpose, or are they likely to lay out a plantation if the experiments are not likely to be carried on permanently.

One of my reasons for writing to you now is that I see the Indian Budget is announced for Tuesday night, and whether it is or is not a subject for mention in the House you will be the best judge; but I am sending copies of this letter

to Mr. Harry Davenport, our Leek member, who, I am sorry informs me will not be able to be present on the night of the Budget, so I also sent them to three other friends in the House, Mr. J. A. Bright, Mr. Woodall, and Mr. Kendrick, who I know wish this industry well, and would not mention it in any factious way. It seems to me to be desirable in the present stage that a question should be asked about it. It is possible that should you not care to mention it yourself you might not object to one or other of these gentlemen mentioning it. If you would prefer that it should be passed over I am sure that if you would kindly say so to them they would yield to your ruling.

Yours very truly,

(Signed), THOMAS WARDLE.

Sir John Gorst.

No. 4.

R. S., & C.,

Dated India Office,

24th Sept., 1889.

Sir,

With reference to your letters of the 12th, 24th, and 30th ultimo., to Sir John Gorst, I am directed by the Secretary of State for India in Council to inform you that no reply has, as yet, been received to the communications which, as you

were advised by the letter from this Office dated 24th June last, were forwarded to the Government of India on the subject of the establishment of an experimental silk laboratory in India.

A further despatch has now been addressed to the Viceroy with a request that Viscount Cross may be informed what steps have been taken, or are in contemplation, with a view to the improvement of the Indian silk industry, and on receipt of a reply you will be again communicated with.

I am, etc.,

(Signed), HORACE WALPOLE.

T. Wardle, Esq.

CHAPTER VIII.

No. 1.

MEMORANDUM ON THE ENGAGEMENT OF A SERICICULTURIST, AND THE PURCHASE OF SILK-REELING MACHINERY, EGGS, ETC., FOR THE KASHMIR STATE. STATEMENT BY SIR GEORGE BIRDWOOD, INDIA OFFICE, 12TH OCTOBER, 1897.

ON the 13th January of the present year I received a letter from Lieutenant-Colonel Sir Adelbert Talbot, K.C.I.E., the Resident in Kashmir, dated the 6th December 1896, in which my assistance was asked in obtaining the services of a scientific and practical silk expert, either a Frenchman or an Italian, to superintend the Kashmir silk industry. I was at the same time informed that Captain Chenevix-Trench, the Assistant-Resident, was proceeding to England on furlough, and had been requested to consult me with regard to the purchase of improved silk machinery and cocoons required by the State Durbar.

In February Captain Chenevix-Trench called here and discussed the matter with me, and he was at once placed in private communication with Sir Thomas

Wardle of Leek. Meanwhile the Government of India had been asked by telegraph (4th February, 1897) whether the employment of a foreigner, and the purchase of silk machinery for Kashmir had been sanctioned, and a reply (7th February) received to the effect that they had no objection to Sir Adelbert Talbot's proposals.

The matter was then (17th February), writes Sir Adelbert Talbot, officially referred to Sir Thomas Wardle, who was directed to consult the Special Assistant with regard to securing a duly qualified Italian sericulturist for Kashmir. Sir Thomas, in reply (24th February) to the India Office letter, suggested that Sir A. Talbot might, before any other steps were taken, be asked by telegraph whether Mr. C. B. Walton of Mussoorie, a gentleman he considered in every way fitted for the post, would be willing to accept the appointment. Sir Thomas Wardle also proposed that Captain Chenevix-Trench and he should be authorised to at once proceed to the Continent to purchase the silkworm eggs and silk-reeling machinery required by the Kashmir Durbar. On this the following telegram was sent (24th February) to the Viceroy: "Wardle highly recommends C. B. Walton, Montrose House, Mussoorie, for sanctioned appointment in Kashmir, and suggests, with Lawrence's approval, Talbot should see Walton before engaging foreigner." On the 16th March Sir A. Talbot informed the Government of India that Mr. C. B. Walton had been selected as sericulturist for Kashmir, and this

was subsequently approved by the Government of India.

Sir Thomas Wardle on the 8th April wrote stating that Mr. Walton had asked him to purchase fifty tavelettes for Kashmir, and Sir Thomas expressed the opinion that tavelettes without the complete improved silk-reeling machinery would be useless; and he urged that three, four, or six of the best silk reeling machines it was possible to obtain on the Continent should be sent out, and that he and Captain Chenevix-Trench should be deputed to France and Italy to make the necessary purchases.

Before it was possible to authorise the purchase of the machinery the sanction of the Government of India had to be received, and the following telegram was therefore sent (15th April) to them:—
“Walton at request of Talbot asks Sir Thomas Wardle to buy and despatch silk-seed and silk-machinery, total cost about £200, besides journey to Italy. Captain Trench wishes to accompany Wardle. Does Kashmir Durbar agree to this, and to bear additional cost of his deputation?”

The Government of India replied (24th April) that the Durbar agreed to the above proposals. Sir Thomas Wardle was then (27th April) informed that his proposals of the 8th April were approved, and he was authorised to at once proceed, with Captain Chenevix-Trench, to Italy and France to buy the required improved silk machinery, and to afterwards submit a report of their journey.

In June Messrs. Wardle and Trench forwarded their joint report to this Office, together with a statement of their deputation expenses. Subsequently in September Sir Thomas Wardle submitted the complete accounts for the French and Italian machinery purchased and forwarded to Kashmir.

The sums paid by this Office on account of the purchase of the machinery for the Durbar are as follows:—

Deputation expenses:—	£	s.	d.	£	s.	d.
Sir Thomas Wardle ...	91	15	4			
Captain Chenevix-Trench	35	3	8			
				<u>126</u>	19	0
Cost of Machinery:—						
Signor Battaglia ...	66	19	9			
M. Berthaud ...	34	8	11			
				<u>101</u>	8	8
Or a total cost of ...				<u>£228</u>	7	8

The above amount (£228 7s. 8d.) will have to be adjusted between the Government of India and the Kashmir Durbar.

A copy of the official correspondence is appended.

GEORGE BIRDWOOD.

List of Correspondence.

Sir Adelbert Talbot to Sir George Birdwood, 6th December, 1896.

India Office to Sir Thomas Wardle, 17th February, 1897, with enclosures.

Sir Thomas Wardle to India Office, 24th February, 1897.

Captain Chenevix-Trench to India Office, 24th February, 1897.

Sir Thomas Wardle to India Office, 8th April, 1897, with enclosure.

India Office to Sir Thomas Wardle, 27th April, 1897.

Sir Thomas Wardle to India Office, 3rd May, 1897.

India Office to Sir Thomas Wardle, 7th May, 1897.

Sir Thomas Wardle to India Office, 11th June, 1897, with report, &c.

India Office to Sir T. Wardle, 12th August, 1897.

India Office to Captain Chenevix-Trench, 12th 1897.

Enclosure 1 in No. 1.

Sialkot, Punjab,

6th December, 1896.

Dear Sir George Birdwood,

I had the pleasure of being introduced to you some years ago, and, although I cannot expect you to remember that, it induces me to write to you on the subject of the silk industry in Kashmir, where I am now Resident, in which I see from the correspondence forwarded with the Secretary of State's Despatch No. 51, Revenue, dated 7th May, 1896, you have taken a great interest.

The Durbar have considered proposals by Mr. Mitchell to give him and his friends a monopoly of silk-growing in Kashmir for a term of years, but prefer to keep the industry in their own hands. To encourage a revival of it as much as possible

they have decided to procure the services of a scientific man, either Frenchman or Italian, on a liberal salary, with share in the profits after the sales have reached £5,000, for a term of five years. My Assistant for Leh, Captain G. Chenevix-Trench, is going to England immediately on furlough, and will consult you as to the best means of giving effect to the wishes of the Kashmir Durbar, and I should be much obliged if you would help him in endeavouring to obtain the services of a scientific but practical man, capable of directing silk operations, and especially of the microscopic observations necessary to ensure healthy seed only being used. Captain Trench knows Kashmir well, and would be able to personally explain matters to the expert, and give any information he might require. He has also been requested by the Durbar to buy such machinery of a modern type as may be necessary to secure the best results. Perhaps you would be kind enough to place him in communication with Mr. Wardle on this point. Captain Trench would telegraph to me the probable cost, and funds would be at once remitted by the Durbar through me.

It is important that the expert should reach Kashmir as soon as possible, say by the 15th March, or at any rate by the end of that month, so that he may supervise next year's operations. The supply of examined seed is unfortunately very limited, only eleven seers or so, and I am informed that it is now too late to get out more; other-

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wise it would have been well for the expert to buy and bring out some himself to supplement the small supply available for next year.

I am very anxious that the efforts of the Durbar to revive this industry should meet with support, and this must be my apology for troubling you.

Yours, &c.,

A. C. TALBOT.

Sir George Birdwood, K.C.I.E., C.S.I.

Enclosure 2 in No. 1.

R. & S. 99/97.

India Office,

17th February, 1897.

Sir,

I am directed by the Secretary of State for India in Council to forward for your information and guidance the enclosed copies of letters received from Sir Adelbert Talbot, Captain Chenevix-Trench, and Mr. Walter Lawrence, regarding the means proposed to be taken by the State Durbar for the development of the silk industry of Kashmir.

Lord George Hamilton will be greatly obliged by your taking measures, in consultation with Sir George Birdwood, to secure the services of a scientific Italian sericulturist for employment under the State Durbar in the work detailed by Sir Adelbert Talbot. It is advisable that the salary

of the appointment should be progressive, beginning at Rs. 500 or 600 a month, and rising by yearly increments of Rs. 50, 75 or 100, a month to a maximum of Rs. 1,000 a month. The exact amount can of course only be fixed after you have made inquiry as to the terms duly qualified experts may be willing to accept.

You will see that the person appointed to the proposed office is to have an interest in the sales of silk after they have reached £5,000 a year.

I have, &c.,

A. GODLEY.

Sir Thomas Wardle, Knt., F.C.S., &c.

Enclosure 1 in above.

Culver, Exeter,

11th January, 1896.

Dear Sir,

I am sending you a letter which Sir Adelbert Talbot, Resident in Kashmir, gave me to give to you, on the subject of sericulture in Kashmir. I had hoped that at the same time I sent the letter I should have been able to have called on you, and obtained your valuable assistance in securing the expert which we want for the undertaking.

I am sorry to say I am quite unable to come to London for a short time, but I am asking Mr. Lawrence to kindly interest himself in the

matter for me, and so make a start, for time is rather short.

Mr. Lawrence will I hope write to you, and when I am able to come to London I hope you will be able to give me an opportunity of seeing you personally.

Believe, &c.,

G. CHENEVIX-TRENCH.

Enclosure 2 in above.

22, Sloane Gardens, S.W.,

12th January, 1897.

Dear Sir George Birdwood,

My friend Captain Chenevix-Trench has asked me to forward you the enclosed. In his letter to me he says that the Kashmir State would be willing to pay Rs. 1,000 per mensem, and an interest in sales after they have reached £5,000.

Might I venture to suggest that the pay should be progressive, say starting at Rs. 500 or Rs. 600.

Yours, &c.,

WALTER LAWRENCE.

Enclosure 3 in No. 1.

Leek, Staffordshire,

24th February, 1897.

Sir,

I have the honour to reply to your letter No. 99 (R. and S.), dated 17th February, 1897, requesting