ANNUAL REPORT

OF THE

AGRICULTURAL AND HORTICULTURAL SOCIETY OF INDIA,

FOR

THE YEAR MDCCCXXXVIII.

CALCUTTA :

PRINTED AT THE BAPTIST MIS[redacted]ESS,
CIRCULAR ROAD.

1839.

REPORT

OF THE

AGRICULTURAL AND HORTICULTURAL SOCIETY OF INDIA,

FOR THE YEAR MDCCCXXXVIII.

The addition of another year to the career of the Society calls for the usual exposition of the affairs of the Institution.

This duty is a pleasing one, for no body can be in more prosperous circumstances or in the enjoyment of greater popularity. This is only what might have been expected when the public attention was once properly directed to the many vast objects of utility which it is the business of the Society to promote. The scheme of the Agricultural and Horticultural Society of India is catholic in its province. Its aim is the prosperity of the nation by effecting the amelioration of the present low condition of the people through the improvement of the agricultural wealth of the land.

Thus every friend to India whether he be the man of commerce, the tropical agriculturist, the private gentleman, the clergyman, the soldier, the lawyer or the physician, has, as it were, an interest more or less direct, in assisting in promoting the attainment of the great ends which are held out to the expectation. When, therefore, we are told that as many as one hundred and forty-eight members joined the ranks of the Institution in one year, and one hundred and twenty in another year, while the body of members must feel grateful for this unwonted acquisition of strength and striking proof of confidence, there is no reason to doubt that new friends will continue to pour in to enable the Executive to perform not only all that has hitherto been promised, but to extend the sphere of usefulness in a still greater range.

The Agricultural and Horticultural Society of India now numbers *four hundred and twenty members*, two hundred and sixty of whom, or more than one-half, have been added with in the last twenty-four months.

The classification of the entire body is as follows :—

	Former years.	Year 1837.	Year 1838.	Total.
Civilians and others in Civil employ, ...	46	41	11	98
Merchants and others engaged in commerce,	25	36	24	85
Indigo planters and other tropical agriculturists, ...	25	21	43	89
Military officers, ...	34	17	18	69
Medical, ...	14	16	10	40
Asiatics, ...	13	9	7	29
Law officers, ...	14	5	1	20
Europeans of no particular profession, ..	6	0	8	14
Clergymen, ...	5	2	2	9
Honorary members, ...	6	1	0	7
	188	148	124	470

The gross total is thus shewn to be 470, but a deduction of 50 is required to be made for lapses, which leaves the actual number of members now on the books of the Society at 420. Of these 332 are paying members. In thus analysing the state of the Society, for the past two years, the Indigo planters are found to double in numbers that of any other class of associates. This circumstance is one of great importance and gratification, for when it is considered that through their exertions solely has the particular article of Indigo been brought to its present state of perfection so as to be unrivalled in excellence, it is not too much to anticipate that cultures of equal consequence to the country will, in a few more years, be brought to like perfection. There is nothing to prevent it—enterprise and capital are all that are required, and the time will come when the cotton, the sugar, the coffee and the tobacco of India must take their places in the list of best priced staples imported into the mother-country.

One source of regret alone requires to be noticed, and that is the apathy which continues to be shown to the labours of the Society by influential Asiatics. The few who have allied themselves with their European brethren, if we may judge from their neglect in attending the meetings, care little about its concerns ; but this possibly arises from a want of ability properly to appreciate the utility of the Institution and to create which will require another generation.

During the past year twenty-one members have been lost to the Society,—ten by death, and eleven by resignation, four being in consequence of departure for Europe.

Among the calamities which has befallen the Society by the hand of death the loss of the late Secretary has been the most painful. No tribute of posthumous respect for his invaluable services can sufficiently express the debt of gratitude which the Society owe, to the name of John Bell. In the space of three years, from a state of most sickly debility, he established, in the economy of the Society, a healthful condition, and eventually a most luxuriant vigour. To his personal exertions the interest that has been created in the public mind regarding the concerns of the Society may be said to be altogether due. He was unsparing in his labours which were carried on with that untiring zeal which is sure to command success. Had his life been spared his previous management is an earnest of what might have followed, and the Society are left to deplore with unmingled feelings of regret the incalculable loss which they have sustained.

A gentleman whose exertions in the early career of the Society gained for him the distinction of *Honorary* election is also to be found among the list of the deceased. Sir Robert Colquhoun, Bart. was one of the warmest of the friends of the Society and it is therefore with deep regret that his loss is recorded.

The remaining names taken from the Society's ranks are Nathaniel Halhed, Esq., F. Campbell, Esq., A. Dobbs, Esq., Jas. Cock, Esq., F. T. Fergusson, Esq., Wm. Jackson, Esq., Capt. Smallpage and Henry Freeth, Esq.

Turning from the contemplation of this affliction the Society would beg to draw attention to the chief subjects that have engaged their attention during the past year. First in the list, from its early occurrence, are the steps that were taken to investigate and call members to a consideration of the present condition of the breed of cattle in India. Some highly interesting communications were received, especially from the Agricultural and Horticultural Society of Western India, to facilitate the transmission of which to the Committee of Agriculture and Commerce of the Asiatic Society of Great Britain and Ireland, who had applied for information on this head, copies were ordered to be printed in a separate form. Further, to assist in the propagation of a finer race of cattle, the Society has established a Committee under whose direction a handsome schedule of rewards has been voted out of the funds as an encouragement to individuals to

import foreign cattle into India. The first exhibition of this nature will occur on the 1st February*.

Much useful information connected with the varieties in the breed of the indigenous cattle of Asia remains to be collected and this opportunity is taken for making an urgent appeal to every person who can furnish information to come forward and assist the Society with their contributions.

The next object which engaged the attention of the Society has been the propagation of the Otaheite sugar-cane for distribution in the provinces of Lower India, and for this purpose, through the co-operation of Dr. Wallich the superintendent of the Botanic Garden, one of the Vice-Presidents of the Society, and the Nursery Committee, twenty-two cases of cane from the isle of Bourboon, four cases from Singapore, and 2,047 canes from Jubulpore have been added to the stock of last year, which altogether has yielded a harvest that has enabled the Society to supply as many as thirty-four thousand, two hundred and sixty-six canes† to different applicants from various parts of Lower Hindustan. The rattoon crop of next year will again be available for distribution, and in this manner the conti-

* The award has since been made, and the result was as follows:

To Mrs. Pattle, premium of 250 Rs. and the Society's *Silver* Medal for the best bred Cow imported from any part of the world.

To W. F. Gibbon, Esq. a premium of 200 Rs. and the *Gold* Medal, for the best wooled Merino Ram, not less than two years' old.

To W. F. Gibbon, Esq. a premium of 150 Rs. and the *Silver* Medal, for the second best wooled Merino Ram, not less than two years old.

† Moulmein, ...	100
Sunderbuns, ...	500
Kishnaghur, ...	50
Berhampore, ...	400
Midnapore, ...	1,000
Benares, ...	2,000
Assam, ...	1,200
Jaunpore, ...	5,000
Howrah, ...	64
Twenty-four Pergunnahs	4,750
Dacca, ...	650
Calcutta, ...	800
Dacca, ...	2,150
Hazareebagh, ...	600
Hooghly, ...	4,080
Colvin and Co.	4,940
Bogra, (Dinagepore,)	200

nued supply of this beautiful variety of sugar-cane can be maintained till the general prevalence of it throughout the country will render a nursery no longer necessary.

The third great object, as it stands in its order of occurrence, is the attention which has been paid to the introduction of the fine-grained cochineal insect into India. The mass of valuable facts which the late Secretary brought together to assist in the establishment of this enterprise will be found recorded in the Transactions of the present year, and the liberal distribution of the Society's gold and silver medals to the successful importers of the insect will sufficiently attest the deep value the Society has set on the efforts of all who have enlisted themselves in the pursuit.

In addition to the twelve former Branch Societies, two additional ones have been formed during the year; one through the personal exertions of Lieut. Colonel Stacy at Dacca, and the other through the influence of General Sir Thomas Anburey at Saugor. Branch Societies form so many *centres*, as it were, of support to the efforts of the Parent Institution, and from them the greatest benefit may be expected in aiding in the introduction of new cultures and the improvement of old ones into the district in which they are placed.

It is with this view that the Society have deemed it advisable to appropriate silver medals and pecuniary rewards to each of these Branch Institutions that the native gardeners and agriculturists may be stimulated to carry out the designs contemplated, by making an appeal to the strongest of their national characteristics, namely, their cupidity. Already most flattering accounts have reached the Society of the progress that has been made, and a lasting good must follow on a little further perseverance.

The Guinea Grass cultivation has been encouraged largely and the distribution of seeds and roots have been so extensive during the past year that there is every probability of every intelligent agriculturist availing himself of this very superior fodder.

It has hitherto been the boast of the Society that they seek to merit the continued support of the Government and the public by disbursing their funds as liberally as they are bestowed, and that they

Camilla, (Tipperah,)	1,600
Tirhoot,	500
Pubna,	600
Moorshedabad	600
Arracan,	600

have not been losers by so doing the present unprecedented state of the Society's circumstances is a sufficient proof. With the same feeling of dependance on patronage to come, an extension of prizes and rewards for the ensuing year have been made. The last report of the Society contains an abstract of premia and medals which were offered to encourage improvement in several articles of husbandry and commerce. These consisted of

Date. 1837.	*Names of Objects.*		*Amount Co.'s Rs.*
April.	For the best work on Indian Agriculture in all its branches, ...	2,000	
	For ditto, on the Agriculture of Bengal, .	1,000	
	For ditto, on the Agriculture of the Western Provinces, ...	1,000	
			4,000
	To close in 1840.		
April.	For the best samples of Sugar, Silk, Cotton, and Tobacco,—Four Gold Medals,—at an assumed value of 120 Rs. each medal, . .	480	
	For the second best ditto, of the above articles,—Four Silver Medals,—at an assumed value of 18 Rs. each medal, . . .	72	
			552
July	For imported Bulls, 1st, 2nd and 3rd best, .	1,200	
	For ditto, Rams, ditto, ...	450	
	For the *best* Bull and Ram, a Gold Medal each, in addition, ...	240	
	For the 2nd *best* Bull and Ram, a Silver ditto each, ...	36	
	For the *best produce* of imported Bulls, half the above amount, ...	600	
	For the *best produce* of imported Rams, do.	225	
	Gold and Silver Medals, as above, ...	240	
	For the best bred Cow, imported from any part of the world, ...	250	
	and the Silver Medal, ...	18	
	For the best woolled Merino, or Saxony Ewe,	100	
	and the Silver Medal, ...	18	
			3,377

1837. July.	For a cultivation of 20 beegahs of the best Guinea Grass,	200	
	and the Gold Medal,	120	
	For a ditto, of 10 ditto, of ditto ditto,	100	
	and a Silver Medal,	18	
	For a ditto, of 5 ditto, of the best Lucerne,	100	
	and the Silver Medal,	18	
	For a ditto, of 2 ditto, of the best Clover,	100	
	and the Silver Medal,	18	
	For a maund of Seed from the Guinea Grass cultivation of 20 beegahs,	100	
	For ½ a maund of ditto, from do. of 10 do.	50	
		——	824
August.	For 100 Otaheite Canes, imported from the Mauritius, or other places beyond the Continent of India,	1,000	
	For the *first* importer of 200 Canes, the *Gold* Medal, (in addition to a rupee per Cane,)	120	
	For the *second* importer of the same number,—the *Silver* Medal, (ditto,)	18	
	For any individual who can exhibit a plantation of 50 beegahs of Otaheite Cane, on, or before the 1st January, 1839,	2,000	
	and the Gold Medal,	120	
		——	3,258
November.	For a maund of the best Caoutchouc, the produce of Assam, manufactured according to the South American mode,	100	
	For 10 seers of ditto, the produce of ditto prepared over an earthen vessel,	50	
	For the best specimens of Caoutchouc, the produce of any other part of India, in similar quantities, and prepared in the same manner,		
	Premia of 100 Rs. and 50 Rs.,	150	
		——	300
	Total Co.'s Rupees,		12,311

and in accordance with different resolutions the following prizes have been distributed.

GUINEA GRASS.

For a cultivation of ten beegahs of Guinea Grass by the late Mr. John Bell, the sum of 100 rupees, and Silver Medal.

For a maund of Seed from the above, 100 rupees. *Total* 200 *rupees and Medal.*

CAOUTCHOUC.

To Lieut. Vetch, for his exertions in making experiments, on and bringing to greater notice, the Caoutchouc of Assam. *Society's Gold Medal.*

To Mr. Rose for the best sample of silk out of four parcels submitted for the prize. *Gold Medal.*

To Mr. George Lay for the second best ditto. *Silver Medal.*

The former consisted of one seer (2 lbs.) of white silk, and 2 lbs of yellow silk, the latter exceeding in weight the above by 1 lb.

To Signor Mutti, for his exertions amidst many difficulties in rearing the standard mulberry tree in the Deccan. *Gold Medal.*

COCHINEAL.

To Capt. Caillol, for having succeeded in bringing from the isle of Bourbon in a living state a quantity of the fine grained Cochineal insect. *Gold Medal.*

To Mons. Richard, superintendant of the Botanic Garden at Bourbon, for the promptness with which he has met the wishes of the Society on the important occasion of introducing the true Cochineal insect into Bengal. *Gold Medal.*

To Capt. Quirouard, Commander of the Alcide, for having been the first successful importer of the true Grana Fina from Bourbon. *Gold Medal.*

To Mr. H. Barchard, for having brought from England by the Ship Duke of Bedford, in November, 1838, the Cochineal insect in a living state. *Silver Medal.*

The following embrace the classification and extent of the Society's offers remaining for public competition.

PREMIUMS FOR WORKS ON AGRICULTURE AND HORTICULTURE.

It having been resolved upon, at a Meeting held on the 12th April, 1837, that Premiums should be offered for the best works on Indian

Agriculture and Horticulture, the following Resolutions, passed on that occasion, are advertized for general information.

1*st*.—For the best work on Indian Agriculture in all its branches, founded on experience in the country, to be presented to the Society on or before the 1st May, 1840, the sum of

TWO THOUSAND RUPEES.

2*nd*.—For the best work on the Agriculture of Bengal, to be presented to the Society on or before the 1st May, 1840,

ONE THOUSAND RUPEES.

3*rd*.—For the best work on the Horticulture of the Western Provinces, to be presented to the Society on or before the 1st May, 1840,

ONE THOUSAND RUPEES.

CONDITIONS.

1*st*.—The Society reserves to itself the right of refusing to grant any of the above Premiums, if the works on the above subjects, are not such as it approves.

2*nd*.—The Authors who may receive any of the above Premiums shall, within six months after the receipt thereof, publish the treatises to which such Premiums shall have been awarded, or the Society shall have the option of publishing, in case the Authors shall neglect to do so within the time above prescribed.

It having been resolved upon, at a Meeting held on the 14th November current, to renew the offer of Gold and Silver Medals to the producers of the best Staple Products of the Bengal Presidency, the Society is desirous of making known the conditions under which the distribution of these Medals is to take place.

SUGAR.

1*st*.—For the best Sample of *unrefined* Sugar, not less than 2 maunds,..... *The Gold Medal.*

For the second best Sample of *unrefined* Sugar as above,..... *The Silver Medal.*

SILK.

2*nd*.—For the best Sample of Silk, not less than 2 seers, ... *The Gold Medal.*

For the second best Sample of Silk, as above,.. *The Silver Medal.*

COTTON.

3*rd*.—For the best Sample of Cotton, raised from foreign seed, not less than 2 maunds, ... *The Gold Medal.*

For the second best Sample of Cotton, raised from foreign seed, as above, ... *The Silver Medal.*

TOBACCO.

4*th*.—For the best Sample of Tobacco, reared from foreign seed, not less than one maund, .. . *The Gold Medal.*

For the second best Sample of Tobacco, reared from foreign seed, as above, ... *The Silver Medal.*

CONDITIONS.

1*st*.—The articles exhibited by Candidates for Medals, must be the produce of the Bengal Presidency, including Agra.

2*nd*.—The competition will be open to all persons whatever, without distinction.

3*rd*.—The articles must not be garbled but bonâ fide the average produce of the land on which they are grown, or of the manufacture.

4*th*.—All candidates for Medals must deliver along with their specimens, statements of the places where the articles were produced, the quality or nature of the soil and of the mode of cultivation and manufacture, and the cost of production.

5*th*.—A moiety of the specimens which shall be declared entitled to the *Gold Medals*, shall be the property of the Society, the remainder will be returned to the candidates.

6*th*.—Candidates are requested to affix to their specimens, a number or mark, and to accompany them with a sealed letter, and to mark the letter addressed to the Secretary with the words "Competition Letter," which letter will not be opened till after adjudication.

7*th*.—When two or more Samples shall be considered to be of equal quality, the Medal will be awarded to the Sample which may appear to have been raised at the least cost, and with reference also to the greatest quantity produced upon a given area.

8*th*.—All candidates are expected to have their specimens in the possession of the Secretary of the Society on or before the 1st May, 1839.

It was also resolved upon that the same premiums will be awarded and, upon the same conditions, for the year from May, 1839, to May, 1840.

N. WALLICH, M. D. } *V. Ps. and*
C. K. ROBISON, } *Acting Secretaries.*

Agricultural Society's Office, Town Hall, Calcutta, Nov. 20, 1838.

PREMIA AND MEDALS FOR THE IMPROVEMENT OF THE BREED OF CATTLE IN INDIA AND ALSO FOR THE BEST PRODUCE.

For Cattle imported between the 1st January to 31st December, 1838, the Show to be held on the 1st February, 1839.

1*st*.—For the best imported Bull not less than 2 years old, premium of 500 rupees and the Gold Medal.

For the second best ditto ditto, a premium of 400 rupees and the Silver Medal.

For the third best ditto ditto, a premium of 300 rupees.

2*nd*.—For the best woolled Ram not less than 2 years old, a premium of 200 rupees and the Gold Medal.

For the second best ditto ditto, a premium of 150 rupees and the Silver Medal.

For the third best ditto ditto, a premium of 110 rupees.

3*rd*.—For the best bred Cow imported from *any part of the world*, a premium of 250 rupees and the Silver Medal.

For the best woolled Merino or Saxony Ewe, a premium of 100 rupees and the Silver Medal.

4*th*.—For the best produce of imported cattle half the above mentioned premia and the Gold and Silver Medals will be given on the 1st February, 1840.

GENERAL REGULATIONS.

1*st*.—The certificates of Stock to be shown must be lodged with the Secretary at the Society's Rooms on or before the 31st Inst.

2*nd*.—The competition is open to Stock from any part of the United Kingdom, New South Wales and the Cape.

3*rd*.—The name and address of the Exhibitor, the name of the breed and their age, must be regularly certified, and the certificate signed by the Exhibitor, agreeably to the form annexed which must be duly lodged on the above day.

The pedigree of the Stock so far as known, must also be given. A list of the Stock entered will be made up by the Secretary on the 31st, and no Stock will be allowed to compete that is not included in that list.

4*th*.—A responsible person on the part of the Exhibitor must attend at the Secretary's Office *on or before* the day *preceding* the Show at 4 o'clock in the afternoon, to give explanation if it should be necessary, to receive orders of admission for the Stock of which they are in charge and all necessary instructions in matters of detail at the competition.

5th.—In estimating the ages above prescribed, the following rules are to be observed, viz. the age of cattle will be calculated from the 1st of January of the year in which they were calved; and of sheep from the 1st March of the year in which they were lambed.

6th.—A ticket or order will be delivered by the Secretary on or before the day preceding the Show to the person in charge of each lot for its being received into the Show ground.

7th.—The competing Stock will be classed and distinguished by *tickets* or *numbers* to be affixed to each lot, immediately after they are placed in the Show ground corresponding with the list made up by the Secretary. By this arrangement the owner's name is not known to the judges.

8th.—The Committee of the Society appointed to conduct the arrangements for the Show, will appoint skilful persons to act as judges.

9th.—A member of the Committee will be appointed to attend the judges, and as soon as it is determined which animal or animals are entitled to prizes, the prize ticket shall be affixed to the animal. When the inspection is finished the judges shall sign and give in their Reports to the Committee, and their award shall be final, provided no valid objection is stated against the prize animal's right to compete; objections must be stated in writing; the ground allotted for the Exhibition is immediately in front of the Town Hall.

By order of the Committee,

HENRY H. SPRY, M. D., *Secretary.*

In addition to the foregoing the Society have placed at the disposal of Dr. Campbell, at Nepaul, the sum of two hundred rupees (£20) and Lieut. Kirke, at Deyrah, two hundred rupees for the purpose of purchasing seed and making experiments for the Society.

For the purchase of cotton seed from parts of the world other than North America, for which a sum has been before voted *one thousand rupees.*

For the importation of Fruit trees from different parts of the world the sum of *five hundred rupees.*

To each of the Branch Societies *two Silver Medals* and fifty rupees.

To every individual who should bring to India till the end of 1839 the true Cochineal insect, the *Silver Medal.*

To encourage the culture of superior varieties of *Fruit* in and about Calcutta, Medals and money presents have been passed as the exhibition may warrant.

The Society has further undertaken to keep up a small plantation in which to grow fruit trees of different kinds, and the Nursery Committee are now prepared to distribute plants to members for their own use. The Society takes this opportunity of returning its best thanks to those gentlemen who have so considerately contributed to the establishment of the nursery, by sending grafts and cuttings.

In the literary department activity has prevailed. The *Fifth* Volume of Transactions was published in the early part of the year. The *sixth* is now in a great state of forwardness and will soon be out. The former of these two volumes was alluded to in the Report of last year and requires therefore no other remark in this place. With regard to the latter it is only proper to mention that many of the papers that will appear in it will be found of great intrinsic value, both for the number of statistical facts embodied in them, and the practical information touching the cultivation of the chief staples of the country and the soil for their propagation. The volume will contain papers on the climate and capabilities of the Tenasserim Provinces on the sugar-cane cultivation,—on the nature and collection of the Caoutchouc or India rubber gum—on the diseases of grain—the Cochineal insect—silk-cotton, and other cultures, besides valuable practical Reports from the different standing Committees of the Society.

The great demand for the back volumes of the Society's Transactions led to the necessity, last June, of ordering a reprint to be made of the first, second and third volumes. The first of these has been effected and the second is almost finished.

In addition to the regular Transactions, the Proceedings of each monthly meeting are now printed as soon after the occurrence of each discussion as possible, for the purpose of furnishing distant members with an account of the doings of the Society, and also to put in the hands of congenial Institutions the nature of the information brought forward for consideration.

In conclusion the Society cannot close this Report without expressing an earnest hope that the account they have here rendered of their conduct during the past year may be considered deserving of the approbation of the members at large, and that the promising prospects now given forth to the public will be testified by their allegiance in joining the ranks of the Society and adding strength to an institution commensurate with its deserts.

Proposed by the President and carried, that this Report be adopted and printed.

HENRY H. SPRY, M. D. *Secretary*.

The balance sheet of the Society's Finances, embrace the following particulars:

Statement of Receipts and Disbursements, from 1st January to 31st December, 1838.

RECEIPTS.

From Members, current and consolidated Subscriptions, collected from 1st January to 31st December, 1838, ...	10,958	0	1			
,, Government, Annual Donation,	1,045	0	0			
,, Ditto, Monthly allowance for 12 months, at 135 13 6 per month, ...	1,630	2	0			
				13,633	2	1
,, Proceeds of surplus Cape Seeds sold, ...	236	0	0			
,, Ditto of Copies of Society's Transactions, ...	271	0	0			
,, Ditto of Sugar-cane (blown down by the storm of 18th Oct.) produced in the Society's Nursery, ...	620	0	0			
				1,127	0	0
,, The Government Saving's Bank, Interest on Company's Paper,	..	..		400	0	0
Total Receipts,	..	..		15,160	2	1

DISBURSEMENTS.

SEEDS.

By Messrs. Allan, Paton and Co., amounts of Mr. Villet's Bill, for Cape Garden and Flower Seeds, ...	1,390	0	0			
,, Charles Huffnagle, Esq., amount of Mr. Landreth's Bill for American Vegetable Seeds,	301	1	9			
				1,691	1	9

FREIGHT.

By Messrs. Carr, Tagore and Co., for 6 cases of Cape Seed, ..	60	0	0			
,, Messrs. Adam, Scott and Co., for 7 bags of Cotton Seed, ..	14	0	0			
,, Messrs. Allan, Paton and Co., for 4 Ploughs, ...	13	4	3			
,, Amount freight on Sundry Parcels, received during the year, ..	17	6	3			
				104	10	6

SOCIETY'S NURSERY.

,, Dr. Wallich,—Mallees wages, Cooly hire and sundry expenses, incurred for cultivating the Society's Nursery, from 1st December, 1837, to 30th November, 1838, ...				1,762	13	9

MEDALS AND PECUNIARY REWARDS.

,, Five Gold Medals supplied by the Mint, ...	652	2	0			
,, Messrs. Pittar and Co., for 12 *ordinary* Silver Medals, and 2 Morocco cases, .. .	161	12	3			
,, Gourmohun Roy, for engraving 2 Silver Medals and making 3 cases, ...	23	0	0			
,, Mr. John Bell, Premium awarded by Resolution passed at a General Meeting, on 12th July, 1837, for a cultivation of Guinea Grass, &c., ..	200	0	0			
,, Prizes to Mallees, awarded at the Exhibition of Vegetables, held on the 29th January, 1838,	227	4	0			
				1,264	2	3

ADVERTISEMENTS.

By Advertising in the Public Prints, from 1st November 1837, to 31st October 1838, Notices of Meeting, distribution of						

	Seed, Sugar-cane, &c., Offers of Premia for certain objects, &c. &c. &c., ...				862	2 0
	ESTABLISHMENT.					
By	Secretary's Salary to 15th November, 1838, Assistant Secretary's Salary from 1st Dec. 1837, to 30th Nov. 1838, Sirkars, Peons and Packerman's Wages, from Dec. 1837 to Nov. 1838, both months inclusive, ...				5,676	6 9
	LIBRARY.					
,,	Books for the Society's Library, . ..				118	12 0
	SOCIETY'S TRANSACTIONS, CIRCULARS, &c.					
By	Serampore Press, for printing and binding Vol. 5, of the Society's Trans. 500 copies, ..	1,209	12	0		
,,	Ditto, for printing Proceedings of the Society for January and February, and for extra copies of Annual Report for 1837, .	135	2	6		
,,	Baptist Mission Press, for printing Proceedings of the Society for March, April, May, June and July, and New Rules of the Society, ...	155	0	0		
,,	Mr. T. Black, for lithographing Maps, &c. . ..	332	0	0		
,,	Mr. Woollaston, for printing copies of Pamphlet No. 1, on Cochineal, ...	116	0	0		
,,	Church Mission Press, for binding up 18 copies of Vol. 3, Transactions, ...	9	0	0		
,,	Cossihur Banorjee, for printing Meeting Notices, Receipts for Quarterly Subscriptions, &c. &c..	66	0	0		
,,	Sundry Circulars, &c. printed, ..	24	0	0		
					2,046	14 6

Experimental Garden at Nepaul.						
By Messrs. Presgrave and Co., on account of Dr. A. Campbell of Nepaul, the yearly amount awarded by the Society for the cultivation of an Experimental Garden at Nepaul, ...				200	0	0
Cochineal Plantation.						
,, Mallees' wages for attending on the Society's Cochineal Plantation, ...				60	8	0
Sundries.						
,, Messrs. Allan, Paton and Co., for 4 Ploughs, ...	50	0	0			
,, Postage and Banghy hire, on letters sent and received, ...	314	8	0			
,, Stationery, Blank Books, &c., for the Secretary's and Collector's Departments, . ..	196	12	6			
,, Petty charges, viz. Wax Cloth, String, Tin Boxes, Cooly and Dinghy hire, &c. &c. ..	139	2	9			
				700	7	3
Government Securities.						
,, A Government Promissory Note of the 4 per cent. loan, for 500 Rupees less accruings of interest thereon, .. .				483	8	10
Total Expenditure, Rs.				14,971	7	7

MEMORANDUM.

Dr. Receipts.				*Cr.* Disbursements.			
By amount of Receipts from 1st January to the 31st December, as per Statement, ...	15,160	2	1	To amount of Disbursements from 1st January to the 31st December, as per Statement, ...	14,971	7	7
By Balance in hand on 31st December 1837, ...	959	6	11	To difference of Balance on 31st Dec. 1837, between Cash Book and printed Statement, supposed to have been disbursed in petty charges, ...	20	11	4
				To Balance in the hands of Mr. Bell's Executors, ...	503	1	7
				To Balance in the Bank of Bengal on 31st December 1838, ...	622	6	0
				To Balance in the hands of the Acting Secretaries, ...	1	14	6
Total, Rs. ..	16,119	9	0	Total, Rs. ..	16,119	9	0

DEPENDENCIES.

Amount invested in Government Securities, lodged in the Government Agency Office, ...	20,400	0	0
Interest in the Saving's Bank on the above, less 400 Rupees drawn out on 31st July 1838, and transferred to the Bank of Bengal, ...	416	11	3
Total, Rs. ..	20,816	11	3

ANNUAL REPORT

OF THE

AGRICULTURAL AND HORTICULTURAL SOCIETY OF INDIA.

FOR

THE YEAR MDCCCXXXVIII.

CALCUTTA :

PRINTED AT THE BAPTIST MISSION PRESS,
CIRCULAR ROAD.

1839.

REPORT

OF THE

AGRICULTURAL AND HORTICULTURAL SOCIETY OF INDIA,

FOR THE YEAR MDCCCXXXVIII.

The addition of another year to the career of the Society calls for the usual exposition of the affairs of the Institution.

This duty is a pleasing one, for no body can be in more prosperous circumstances or in the enjoyment of greater popularity. This is only what might have been expected when the public attention was once properly directed to the many vast objects of utility which it is the business of the Society to promote. The scheme of the Agricultural and Horticultural Society of India is catholic in its province. Its aim is the prosperity of the nation by effecting the amelioration of the present low condition of the people through the improvement of the agricultural wealth of the land.

Thus every friend to India whether he be the man of commerce, the tropical agriculturist, the private gentleman, the clergyman, the soldier, the lawyer or the physician, has, as it were, an interest more or less direct, in assisting in promoting the attainment of the great ends which are held out to the expectation. When, therefore, we are told that as many as one hundred and forty-eight members joined the ranks of the Institution in one year, and one hundred and twenty in another year, while the body of members must feel grateful for this unwonted acquisition of strength and striking proof of confidence, there is no reason to doubt that new friends will continue to pour in to enable the Executive to perform not only all that has hitherto been promised, but to extend the sphere of usefulness in a still greater range.

The Agricultural and Horticultural Society of India now numbers *four hundred and twenty members*, two hundred and sixty of whom, or more than one-half, have been added with in the last twenty-four months.

The classification of the entire body is as follows :—

	Former years.	Year 1837.	Year 1838.	Total
Civilians and others in Civil employ, . .	46	41	11	98
Merchants and others engaged in commerce,	25	36	24	85
Indigo planters and other tropical agriculturists, ...	25	21	43	89
Military officers, ...	34	17	18	69
Medical, ...	14	16	10	40
Asiatics, ...	13	9	7	29
Law officers, ...	14	5	1	20
Europeans of no particular profession, .	6	0	8	14
Clergymen, ...	5	2	2	9
Honorary members, ...	6	1	0	7
	188	148	124	470

The gross total is thus shewn to be 470, but a deduction of 50 is required to be made for lapses, which leaves the actual number of members now on the books of the Society at 420. Of these 332 are paying members. In thus analysing the state of the Society, for the past two years, the Indigo planters are found to double in numbers that of any other class of associates. This circumstance is one of great importance and gratification, for when it is considered that through their exertions solely has the particular article of Indigo been brought to its present state of perfection so as to be unrivalled in excellence, it is not too much to anticipate that cultures of equal consequence to the country will, in a few more years, be brought to like perfection. There is nothing to prevent it—enterprise and capital are all that are required, and the time will come when the cotton, the sugar, the coffee and the tobacco of India must take their places in the list of best priced staples imported into the mother-country.

One source of regret alone requires to be noticed, and that is the apathy which continues to be shown to the labours of the Society by influential Asiatics. The few who have allied themselves with their European brethren, if we may judge from their neglect in attending the meetings, care little about its concerns; but this possibly arises from a want of ability properly to appreciate the utility of the Institution and to create which will require another generation.

During the past year twenty-one members have been lost to the Society,—ten by death, and eleven by resignation, four being in consequence of departure for Europe.

Among the calamities which has befallen the Society by the hand of death the loss of the late Secretary has been the most painful. No tribute of posthumous respect for his invaluable services can sufficiently express the debt of gratitude which the Society owe, to the name of John Bell. In the space of three years, from a state of most sickly debility, he established, in the economy of the Society, a healthful condition, and eventually a most luxuriant vigour. To his personal exertions the interest that has been created in the public mind regarding the concerns of the Society may be said to be altogether due. He was unsparing in his labours which were carried on with that untiring zeal which is sure to command success. Had his life been spared his previous management is an earnest of what might have followed, and the Society are left to deplore with unmingled feelings of regret the incalculable loss which they have sustained.

A gentleman whose exertions in the early career of the Society gained for him the distinction of *Honorary* election is also to be found among the list of the deceased. Sir Robert Colquhoun, Bart. was one of the warmest of the friends of the Society and it is therefore with deep regret that his loss is recorded.

The remaining names taken from the Society's ranks are Nathaniel Halhed, Esq., F. Campbell, Esq., A. Dobbs, Esq., Jas. Cock, Esq., F. T. Fergusson, Esq., Wm. Jackson, Esq., Capt. Smallpage and Henry Freeth, Esq.

Turning from the contemplation of this affliction the Society would beg to draw attention to the chief subjects that have engaged their attention during the past year. First in the list, from its early occurrence, are the steps that were taken to investigate and call members to a consideration of the present condition of the breed of cattle in India. Some highly interesting communications were received, especially from the Agricultural and Horticultural Society of Western India, to facilitate the transmission of which to the Committee of Agriculture and Commerce of the Asiatic Society of Great Britain and Ireland, who had applied for information on this head, copies were ordered to be printed in a separate form. Further, to assist in the propagation of a finer race of cattle, the Society has established a Committee under whose direction a handsome schedule of rewards has been voted out of the funds as an encouragement to individuals to

import foreign cattle into India. The first exhibition of this nature will occur on the 1st February*.

Much useful information connected with the varieties in the breed of the indigenous cattle of Asia remains to be collected and this opportunity is taken for making an urgent appeal to every person who can furnish information to come forward and assist the Society with their contributions.

The next object which engaged the attention of the Society has been the propagation of the Otaheite sugar-cane for distribution in the provinces of Lower India, and for this purpose, through the co-operation of Dr. Wallich the superintendent of the Botanic Garden, one of the Vice-Presidents of the Society, and the Nursery Committee, twenty-two cases of cane from the isle of Bourboon, four cases from Singapore, and 2,047 canes from Jubulpore have been added to the stock of last year, which altogether has yielded a harvest that has enabled the Society to supply as many as thirty-four thousand, two hundred and sixty-six canes† to different applicants from various parts of Lower Hindustan. The rattoon crop of next year will again be available for distribution, and in this manner the conti-

* The award has since been made, and the result was as follows:

To Mrs. Pattle, premium of 250 Rs. and the Society's *Silver* Medal for the best bred Cow imported from any part of the world.

To W. F. Gibbon, Esq. a premium of 200 Rs. and the *Gold* Medal, for the best wooled Merino Ram, not less than two years' old.

To W. F. Gibbon, Esq. a premium of 150 Rs. and the *Silver* Medal, for the second best wooled Merino Ram, not less than two years old.

† Moulmein, ... 100
Sunderbuns, ... 500
Kishnaghur, ... 50
Berhampore, ... 400
Midnapore, ... 1,000
Benares, ... 2,000
Assam, ... 1,200
Jaunpore, ... 5,000
Howrah, ... 64
Twenty-four Pergunnahs 4,750
Dacca, ... 650
Calcutta, ... 800
Dacca, ... 2,150
Hazareebagh, ... 600
Hooghly, ... 4,080
Colvin and Co. 4,940
Bogra, (Dinagepore,) 200

nued supply of this beautiful variety of sugar-cane can be maintained till the general prevalence of it throughout the country will render a nursery no longer necessary.

The third great object, as it stands in its order of occurrence, is the attention which has been paid to the introduction of the fine-grained cochineal insect into India. The mass of valuable facts which the late Secretary brought together to assist in the establishment of this enterprise will be found recorded in the Transactions of the present year, and the liberal distribution of the Society's gold and silver medals to the successful importers of the insect will sufficiently attest the deep value the Society has set on the efforts of all who have enlisted themselves in the pursuit.

In addition to the twelve former Branch Societies, two additional ones have been formed during the year; one through the personal exertions of Lieut. Colonel Stacy at Dacca, and the other through the influence of General Sir Thomas Anburey at Saugor. Branch Societies form so many *centres*, as it were, of support to the efforts of the Parent Institution, and from them the greatest benefit may be expected in aiding in the introduction of new cultures and the improvement of old ones into the district in which they are placed.

It is with this view that the Society have deemed it advisable to appropriate silver medals and pecuniary rewards to each of these Branch Institutions that the native gardeners and agriculturists may be stimulated to carry out the designs contemplated, by making an appeal to the strongest of their national characteristics, namely, their cupidity. Already most flattering accounts have reached the Society of the progress that has been made, and a lasting good must follow on a little further perseverance.

The Guinea Grass cultivation has been encouraged largely and the distribution of seeds and roots have been so extensive during the past year that there is every probability of every intelligent agriculturist availing himself of this very superior fodder.

It has hitherto been the boast of the Society that they seek to merit the continued support of the Government and the public by disbursing their funds as liberally as they are bestowed, and that they

Camilla, (Tipperah,)	1,600
Tirhoot,	500
Pubna,	600
Moorshedabad	600
Arracan,	600

have not been losers by so doing the present unprecedented state of the Society's circumstances is a sufficient proof. With the same feeling of dependance on patronage to come, an extension of prizes and rewards for the ensuing year have been made. The last report of the Society contains an abstract of premia and medals which were offered to encourage improvement in several articles of husbandry and commerce. These consisted of

Date. 1837.	*Names of Objects.*		*Amount Co.'s Rs.*
April.	For the best work on Indian Agriculture in all its branches, ...	2,000	
	For ditto, on the Agriculture of Bengal,	1,000	
	For ditto, on the Agriculture of the Western Provinces, ...	1,000	
			4,000
	To close in 1840.		
April.	For the best samples of Sugar, Silk, Cotton, and Tobacco,—Four Gold Medals,—at an assumed value of 120 Rs. each medal, ..	480	
	For the second best ditto, of the above articles,—Four Silver Medals,—at an assumed value of 18 Rs. each medal, ...	72	
			552
July.	For imported Bulls, 1st, 2nd and 3rd best, .	1,200	
	For ditto, Rams, ditto, ...	450	
	For the *best* Bull and Ram, a Gold Medal each, in addition, ...	240	
	For the 2nd *best* Bull and Ram, a Silver ditto each, ...	36	
	For the *best produce* of imported Bulls, half the above amount, ...	600	
	For the *best produce* of imported Rams, do.	225	
	Gold and Silver Medals, as above,.....	240	
	For the best bred Cow, imported from any part of the world, ...	250	
	and the Silver Medal,.....	18	
	For the best woolled Merino, or Saxony Ewe,	100	
	and the Silver Medal,.....	18	
			3,377

1837. July.	For a cultivation of 20 beegahs of the best Guinea Grass,	200	
	and the Gold Medal,	120	
	For a ditto, of 10 ditto, of ditto ditto,	100	
	and a Silver Medal,	18	
	For a ditto, of 5 ditto, of the best Lucerne,	100	
	and the Silver Medal,	18	
	For a ditto, of 2 ditto, of the best Clover,	100	
	and the Silver Medal,	18	
	For a maund of Seed from the Guinea Grass cultivation of 20 beegahs,	100	
	For ½ a maund of ditto, from do. of 10 do.	50	
		——	824
August.	For 100 Otaheite Canes, imported from the Mauritius, or other places beyond the Continent of India,	1,000	
	For the *first* importer of 200 Canes, the *Gold* Medal, (in addition to a rupee per Cane,)	120	
	For the *second* importer of the same number,—the *Silver* Medal, (ditto;)	18	
	For any individual who can exhibit a plantation of 50 beegahs of Otaheite Cane, on, or before the 1st January, 1839,	2,000	
	and the Gold Medal,	120	
		——	3,258
November.	For a maund of the best Caoutchouc, the produce of Assam, manufactured according to the South American mode,	100	
	For 10 seers of ditto, the produce of ditto prepared over an earthen vessel,	50	
	For the best specimens of Caoutchouc, the produce of any other part of India, in similar quantities, and prepared in the same manner,		
	Premia of 100 Rs. and 50 Rs.,	150	
		——	300
	Total Co.'s Rupees,		12,311

and in accordance with different resolutions the following prizes have been distributed.

GUINEA GRASS.

For a cultivation of ten beegahs of Guinea Grass by the late Mr. John Bell, the sum of 100 rupees, and Silver Medal.

For a maund of Seed from the above, 100 rupees. *Total* 200 *rupees and Medal.*

CAOUTCHOUC.

To Lieut. Vetch, for his exertions in making experiments, on and bringing to greater notice, the Caoutchouc of Assam. *Society's Gold Medal.*

SILK.

To Mr. Rose for the best sample of silk out of four parcels submitted for the prize. *Gold Medal.*

To Mr. George Lay for the second best ditto. *Silver Medal.*

The former consisted of one seer (2 lbs.) of white silk, and 2 lbs. of yellow silk, the latter exceeding in weight the above by 1 lb.

To Signor Mutti, for his exertions amidst many difficulties in rearing the standard mulberry tree in the Deccan. *Gold Medal.*

COCHINEAL.

To Capt. Caillol, for having succeeded in bringing from the isle of Bourbon in a living state a quantity of the fine grained Cochineal insect. *Gold Medal.*

To Mons. Richard, superintendant of the Botanic Garden at Bourbon, for the promptness with which he has met the wishes of the Society on the important occasion of introducing the true Cochineal insect into Bengal. *Gold Medal.*

To Capt. Quirouard, Commander of the Alcide, for having been the first successful importer of the true Grana Fina from Bourbon. *Gold Medal.*

To Mr. H. Barchard, for having brought from England by the Ship Duke of Bedford, in November, 1838, the Cochineal insect in a living state. *Silver Medal.*

The following embrace the classification and extent of the Society's offers remaining for public competition.

PREMIUMS FOR WORKS ON AGRICULTURE AND HORTICULTURE.

It having been resolved upon, at a Meeting held on the 12th April, 1837, that Premiums should be offered for the best works on Indian

Agriculture and Horticulture, the following Resolutions, passed on that occasion, are advertized for general information.

1*st*.—For the best work on Indian Agriculture in all its branches, founded on experience in the country, to be presented to the Society on or before the 1st May, 1840, the sum of

TWO THOUSAND RUPEES.

2*nd*.—For the best work on the Agriculture of Bengal, to be presented to the Society on or before the 1st May, 1840,

ONE THOUSAND RUPEES.

3*rd*.—For the best work on the Horticulture of the Western Provinces, to be presented to the Society on or before the 1st May, 1840,

ONE THOUSAND RUPEES.

CONDITIONS.

1*st*.—The Society reserves to itself the right of refusing to grant any of the above Premiums, if the works on the above subjects, are not such as it approves.

2*nd*.—The Authors who may receive any of the above Premiums shall, within six months after the receipt thereof, publish the treatises to which such Premiums shall have been awarded, or the Society shall have the option of publishing, in case the Authors shall neglect to do so within the time above prescribed.

It having been resolved upon, at a Meeting held on the 14th November current, to renew the offer of Gold and Silver Medals to the producers of the best Staple Products of the Bengal Presidency, the Society is desirous of making known the conditions under which the distribution of these Medals is to take place.

SUGAR.

1*st*.—For the best Sample of *unrefined* Sugar, not less than 2 maunds, ... *The Gold Medal.*

For the second best Sample of *unrefined* Sugar as above, ... *The Silver Medal.*

SILK.

2*nd*.—For the best Sample of Silk, not less than 2 seers, ... *The Gold Medal.*

For the second best Sample of Silk, as above, . . *The Silver Medal.*

COTTON.

3rd.—For the best Sample of Cotton, raised from foreign seed, not less than 2 maunds, ... *The Gold Medal.*

For the second best Sample of Cotton, raised from foreign seed, as above, ... *The Silver Medal.*

TOBACCO.

4th.—For the best Sample of Tobacco, reared from foreign seed, not less than one maund, . . . *The Gold Medal.*

For the second best Sample of Tobacco, reared from foreign seed, as above, ... *The Silver Medal.*

CONDITIONS.

1st.—The articles exhibited by Candidates for Medals, must be the produce of the Bengal Presidency, including Agra.

2nd.—The competition will be open to all persons whatever, without distinction.

3rd.—The articles must not be garbled but bonâ fide the average produce of the land on which they are grown, or of the manufacture.

4th.—All candidates for Medals must deliver along with their specimens, statements of the places where the articles were produced, the quality or nature of the soil and of the mode of cultivation and manufacture, and the cost of production.

5th.—A moiety of the specimens which shall be declared entitled to the *Gold Medals*, shall be the property of the Society, the remainder will be returned to the candidates.

6th.—Candidates are requested to affix to their specimens, a number or mark, and to accompany them with a sealed letter, and to mark the letter addressed to the Secretary with the words "Competition Letter," which letter will not be opened till after adjudication.

7th.—When two or more Samples shall be considered to be of equal quality, the Medal will be awarded to the Sample which may appear to have been raised at the least cost, and with reference also to the greatest quantity produced upon a given area.

8th.—All candidates are expected to have their specimens in the possession of the Secretary of the Society on or before the 1st May, 1839.

It was also resolved upon that the same premiums will be awarded and, upon the same conditions, for the year from May, 1839, to May, 1840.

N. WALLICH, M. D. } *V. Ps. and*
C. K. ROBISON, } *Acting Secretaries.*

Agricultural Society's Office, Town Hall, Calcutta, Nov. 20, 1838.

PREMIA AND MEDALS FOR THE IMPROVEMENT OF THE BREED OF CATTLE IN INDIA AND ALSO FOR THE BEST PRODUCE.

For Cattle imported between the 1st January to 31st December, 1838, the Show to be held on the 1st February, 1839.

1*st*.—For the best imported Bull not less than 2 years old, premium of 500 rupees and the Gold Medal.

For the second best ditto ditto, a premium of 400 rupees and the Silver Medal.

For the third best ditto ditto, a premium of 300 rupees.

2*nd*.—For the best woolled Ram not less than 2 years old, a premium of 200 rupees and the Gold Medal.

For the second best ditto ditto, a premium of 150 rupees and the Silver Medal.

For the third best ditto ditto, a premium of 110 rupees.

3*rd*.—For the best bred Cow imported from *any part of the world*, a premium of 250 rupees and the Silver Medal.

For the best woolled Merino or Saxony Ewe, a premium of 100 rupees and the Silver Medal.

4*th*.—For the best produce of imported cattle half the above mentioned premia and the Gold and Silver Medals will be given on the 1st February, 1840.

GENERAL REGULATIONS.

1*st*.—The certificates of Stock to be shown must be lodged with the Secretary at the Society's Rooms on or before the 31st Inst.

2*nd*.—The competition is open to Stock from any part of the United Kingdom, New South Wales and the Cape.

3*rd*.—The name and address of the Exhibitor, the name of the breed and their age, must be regularly certified, and the certificate signed by the Exhibitor, agreeably to the form annexed which must be duly lodged on the above day.

The pedigree of the Stock so far as known, must also be given. A list of the Stock entered will be made up by the Secretary on the 31st, and no Stock will be allowed to compete that is not included in that list.

4*th*.—A responsible person on the part of the Exhibitor must attend at the Secretary's Office *on or before* the day *preceding* the Show at 4 o'clock in the afternoon, to give explanation if it should be necessary, to receive orders of admission for the Stock of which they are in charge and all necessary instructions in matters of detail at the competition.

5th.—In estimating the ages above prescribed, the following rules are to be observed, viz. the age of cattle will be calculated from the 1st of January of the year in which they were calved; and of sheep from the 1st March of the year in which they were lambed.

6th.—A ticket or order will be delivered by the Secretary on or before the day preceding the Show to the person in charge of each lot for its being received into the Show ground.

7th.—The competing Stock will be classed and distinguished by *tickets* or *numbers* to be affixed to each lot, immediately after they are placed in the Show ground corresponding with the list made up by the Secretary. By this arrangement the owner's name is not known to the judges.

8th.—The Committee of the Society appointed to conduct the arrangements for the Show, will appoint skilful persons to act as judges.

9th.—A member of the Committee will be appointed to attend the judges, and as soon as it is determined which animal or animals are entitled to prizes, the prize ticket shall be affixed to the animal. When the inspection is finished the judges shall sign and give in their Reports to the Committee, and their award shall be final, provided no valid objection is stated against the prize animal's right to compete; objections must be stated in writing; the ground allotted for the Exhibition is immediately in front of the Town Hall.

By order of the Committee,

HENRY H. SPRY, M. D., *Secretary.*

In addition to the foregoing the Society have placed at the disposal of Dr. Campbell, at Nepaul, the sum of two hundred rupees (£20) and Lieut. Kirke, at Deyrah, two hundred rupees for the purpose of purchasing seed and making experiments for the Society.

For the purchase of cotton seed from parts of the world other than North America, for which a sum has been before voted *one thousand rupees.*

For the importation of Fruit trees from different parts of the world the sum of *five hundred rupees.*

To each of the Branch Societies *two Silver Medals* and fifty rupees.

To every individual who should bring to India till the end of 1839 the true Cochineal insect, the *Silver Medal.*

To encourage the culture of superior varieties of *Fruit* in and about Calcutta, Medals and money presents have been passed as the exhibition may warrant.

The Society has further undertaken to keep up a small plantation in which to grow fruit trees of different kinds, and the Nursery Committee are now prepared to distribute plants to members for their own use. The Society takes this opportunity of returning its best thanks to those gentlemen who have so considerately contributed to the establishment of the nursery, by sending grafts and cuttings.

In the literary department activity has prevailed. The *Fifth* Volume of Transactions was published in the early part of the year. The *sixth* is now in a great state of forwardness and will soon be out. The former of these two volumes was alluded to in the Report of last year and requires therefore no other remark in this place. With regard to the latter it is only proper to mention that many of the papers that will appear in it will be found of great intrinsic value, both for the number of statistical facts embodied in them, and the practical information touching the cultivation of the chief staples of the country and the soil for their propagation. The volume will contain papers on the climate and capabilities of the Tenasserim Provinces on the sugar-cane cultivation,—on the nature and collection of the Caoutchouc or India rubber gum—on the diseases of grain—the Cochineal insect—silk-cotton, and other cultures, besides valuable practical Reports from the different standing Committees of the Society.

The great demand for the back volumes of the Society's Transactions led to the necessity, last June, of ordering a reprint to be made of the first, second and third volumes. The first of these has been effected and the second is almost finished.

In addition to the regular Transactions, the Proceedings of each monthly meeting are now printed as soon after the occurrence of each discussion as possible, for the purpose of furnishing distant members with an account of the doings of the Society, and also to put in the hands of congenial Institutions the nature of the information brought forward for consideration.

In conclusion the Society cannot close this Report without expressing an earnest hope that the account they have here rendered of their conduct during the past year may be considered deserving of the approbation of the members at large, and that the promising prospects now given forth to the public will be testified by their allegiance in joining the ranks of the Society and adding strength to an institution commensurate with its deserts.

Proposed by the President and carried, that this Report be adopted and printed.

HENRY H. SPRY, M. D. *Secretary*.

The balance sheet of the Society's Finances, embrace the following particulars:

Statement of Receipts and Disbursements, from 1st January to 31st December, 1838.

RECEIPTS.

From Members, current and consolidated Subscriptions, collected from 1st January to 31st December, 1838, ...	10,958	0	1			
„ Government, Annual Donation,	1,045	0	0			
„ Ditto, Monthly allowance for 12 months, at 135 13 6 per month, ...	1,630	2	0			
				13,633	2	1
„ Proceeds of surplus Cape Seeds sold, ...	236	0	0			
„ Ditto of Copies of Society's Transactions, ...	271	0	0			
„ Ditto of Sugar-cane (blown down by the storm of 18th Oct.) produced in the Society's Nursery, ...	620	0	0			
				1,127	0	0
„ The Government Saving's Bank, Interest on Company's Paper,	..		..	400	0	0
Total Receipts,	..		..	15,160	2	1

DISBURSEMENTS.

SEEDS.

By Messrs. Allan, Paton and Co., amounts of Mr. Villet's Bill, for Cape Garden and Flower Seeds, ...	1,390	0	0			
„ Charles Huffnagle, Esq., amount of Mr. Landreth's Bill for American Vegetable Seeds,	301	1	9			
				1,691	1	9

FREIGHT.

By Messrs. Carr, Tagore and Co., for 6 cases of Cape Seed, ..	60	0	0			
„ Messrs. Adam, Scott and Co., for 7 bags of Cotton Seed, ..	14	0	0			
„ Messrs. Allan, Paton and Co., for 4 Ploughs, ...	13	4	3			
„ Amount freight on Sundry Parcels, received during the year, .	17	6	3			
				104	10	6

SOCIETY'S NURSERY.

„ Dr. Wallich,—Mallees wages, Cooly hire and sundry expenses, incurred for cultivating the Society's Nursery, from 1st December, 1837, to 30th November, 1838, .				1,762	13	9

MEDALS AND PECUNIARY REWARDS.

„ Five Gold Medals supplied by the Mint, ...	652	2	0			
„ Messrs. Pittar and Co., for 12 *ordinary* Silver Medals, and 2 Morocco cases, ...	161	12	3			
„ Gourmohun Roy, for engraving 2 Silver Medals and making 3 cases, ...	23	0	0			
„ Mr. John Bell, Premium awarded by Resolution passed at a General Meeting, on 12th July, 1837, for a cultivation of Guinea Grass, &c., ..	200	0	0			
„ Prizes to Mallees, awarded at the Exhibition of Vegetables, held on the 29th January, 1838,	227	4	0			
				1,264	2	3

ADVERTISEMENTS.

By Advertising in the Public Prints, from 1st November 1837, to 31st October 1838, Notices of Meeting, distribution of						

	Seed, Sugar-cane, &c., Offers of Premia for certain objects, &c. &c. &c., ...				862	2 0
	Establishment.					
By	Secretary's Salary to 15th November, 1838, Assistant Secretary's Salary from 1st Dec. 1837, to 30th Nov. 1838, Sirkars, Peons and Packerman's Wages, from Dec. 1837 to Nov. 1838, both months inclusive, ...				5,676	6 9
	Library.					
,,	Books for the Society's Library, . ..				118	12 0
	Society's Transactions, Circulars, &c.					
By	Serampore Press, for printing and binding Vol. 5, of the Society's Trans. 500 copies, ..	1,209	12	0		
,,	Ditto, for printing Proceedings of the Society for January and February, and for extra copies of Annual Report for 1837, .	135	2	6		
,,	Baptist Mission Press, for printing Proceedings of the Society for March, April, May, June and July, and New Rules of the Society, ...	155	0	0		
,,	Mr. T. Black, for lithographing Maps, &c. . ..	332	0	0		
,,	Mr. Woollaston, for printing copies of Pamphlet No. 1, on Cochineal, ...	116	0	0		
,,	Church Mission Press, for binding up 18 copies of Vol. 3, Transactions, ...	9	0	0		
,,	Cossihur Banorjee, for printing Meeting Notices, Receipts for Quarterly Subscriptions, &c. &c...	66	0	0		
,,	Sundry Circulars, &c. printed, ..	24	0	0		
					2,046	14 6

Experimental Garden at Nepaul.						
By Messrs. Presgrave and Co., on account of Dr. A. Campbell of Nepaul, the yearly amount awarded by the Society for the cultivation of an Experimental Garden at Nepaul, ...				200	0	0
Cochineal Plantation.						
„ Mallees' wages for attending on the Society's Cochineal Plantation, ...				60	8	0
Sundries.						
„ Messrs. Allan, Paton and Co., for 4 Ploughs, ...	50	0	0			
„ Postage and Banghy hire, on letters sent and received, ...	314	8	0			
„ Stationery, Blank Books, &c., for the Secretary's and Collector's Departments, ...	196	12	6			
„ Petty charges, viz. Wax Cloth, String, Tin Boxes, Cooly and Dinghy hire, &c. &c. ..	139	2	9			
				700	7	3
Government Securities.						
„ A Government Promissory Note of the 4 per cent. loan, for 500 Rupees less accruings of interest thereon, ...				483	8	10
Total Expenditure, Rs.				14,971	7	7

Dr. MEMORANDUM. *Cr.*

Receipts.				Disbursements.			
By amount of Receipts from 1st January to the 31st December, as per Statement, ...	15,160	2	1	To amount of Disbursements from 1st January to the 31st December, as per Statement, ...	14,971	7	7
By Balance in hand on 31st December 1837, ...	959	6	11	To difference of Balance on 31st Dec. 1837, between Cash Book and printed Statement, supposed to have been disbursed in petty charges, ...	20	11	4
				To Balance in the hands of Mr. Bell's Executors, ...	503	1	7
				To Balance in the Bank of Bengal on 31st December 1838, ...	622	6	0
				To Balance in the hands of the Acting Secretaries, ...	1	14	6
Total, Rs. ..	16,119	9	0	Total, Rs. ..	16,119	9	0

REPORT.

DEPENDENCIES.

Amount invested in Government Securities, lodged in the Government Agency Office, ...	20,400	0	0
Interest in the Saving's Bank on the above, less 400 Rupees drawn out on 31st July 1838, and transferred to the Bank of Bengal, ...	416	11	3
Total, Rs. ..	20,816	11	3

ANNUAL REPORT

OF THE

AGRICULTURAL AND HORTICULTURAL SOCIETY OF INDIA,

FOR

THE YEAR 1839.

CALCUTTA:

PRINTED AT THE BAPTIST MISSION PRESS,

CIRCULAR ROAD.

1840.

REPORT

OF THE

AGRICULTURAL AND HORTICULTURAL SOCIETY OF INDIA,

FOR THE YEAR 1839.

Cursory Remarks.

THE time has again arrived when the executive are expected to furnish to their brother members the particulars of their year's stewardship. The flourishing state of the Institution renders this duty light and agreeable, for when it is stated that the same support has been accorded to the efforts of the Society that has been experienced for the two preceding years the most sanguine will not be disappointed. The more the utility of the Agricultural and Horticultural Society of India is known, the more varied and important seem the facts and communications that pour in to diversify and enrich its stores.

This may be taken as a clear proof how the intentions of the individuals who constitute the body of the institution are appreciated by the public. Without affectation it can safely be said that every one of the measures of the Society has unalloyed good for its aim. In endeavouring, however, to measure prospectively the terrestrial expanse over which the Society claims to exert its province, the work done and to be done, leaves a fearful distance that humiliates but not dispirits.

The revival of agricultural husbandry in Hindustan.

India—the improvement of her condition in husbandry—the establishment of her agricultural wealth, and the security of her happiness—these are what constitute the great objects and aim of the five hundred who are now enlisted as members of the Society. With the vast natural powers of her land what may she not be made to become? Year by year new articles of produce are brought forward, and the looker on, while he

is startled by the suddenness of the increase and the extent of the improvement, asks how came it that this was never known or done before? A culture once established here is a blessing both to the people and the state. For in India it is not as in petty principalities or islands, where the confinement, by natural limitation, is such that one culture cannot be spread without sacrificing to a certain extent that of another; thus diminishing as it were, the benefits which might otherwise be expected. But here, on the contrary, the millions of untilled acres will admit of the utmost extension, without encroaching in any way on that which may be already in progress. This is a fact of great consideration.

The advantages from English colonization in Hindustan.

Again, habits of intercourse with the superior intelligence of the English character are rendering the inhabitants yearly more and more alive and expert at the application of skill and the adaptation of scientific invention; and whenever the native working farmer can be brought to be so far enriched as to possess an *accumulated stock*, and can, without fear of oppression, from any quarter, point with safety to the hoard of materials which his husbandry has secured for him, or, in other words, when he shall be the owner of CAPITAL which, in times of need, he can fall back on for support till more prosperous times come round, then the regeneration of India may be said to have commenced, and the riches of her soil be considered to have been fairly and efficiently tested.

The economy of the Society.

The consideration of the foregoing subjects, to be dealt justly by, requires much more space than can be afforded in an Annual Report, interesting and absorbing as the topic is: and therefore it must be allowed to give place to matters more immediately connected with the economy of the Society. That the truth of the doctrine here advanced is, however, appreciated, the growing strength of this institution abundantly testifies, and the generous labourers in the cause of benevolence have the best testimony of their European brethren in exile to stimulate them in the exercise of their philanthropic exertions by the additional monthly aid which is continually coming in to contribute towards the good work they have in hand. What can be more satisfactory than this, and if pages were written nothing more gratifying to the members of the Society could be adduced to encourage and cheer them in their onward course.

To turn to the more immediate concerns of the Society, since the close of last year, there has been an accession of ninety-five new members. Of these 27 are civilians in the service of the Government, 22 are military and medical officers, 23 are indigo-planters or residents in the interior engaged in pursuits of agriculture, 15 are mercantile and 8 are of a miscellaneous class.

The total number of members on the list of the Society at the end of December 1838, was 411*. This with the addition of the 95 new elections makes the total number of members up to the present time, to amount to 506. From this must be deducted resignations 9, and deaths 11, in all 20, making the real number now borne on the records to be 486.

The following tabular statement affords the details more fully in comparison with foregoing periods; and, at the same time, represents an analysis of the constitution of the Society.

	In sixteen former years.	In 1837.	In 1838.	In 1839.	Gross total.	Total real number of members of all classes, after deducting lapses, at the close of 1839.
Civilians in the Service of Government, ...	46	41	11	27	125	115
Merchants and traders,	31	36	28	15	110	105
Indigo and other planters, ...	25	21	43	23	112	104
Military officers in the Service of Government,	34	17	18	15	84	68
Medical ditto ditto, ...	14	16	10	7	47	33
Asiatics, ...	13	9	7	1	30	26
Gentleman of the Legal profession, ...	14	5	1	5	25	20
Clergymen, ...	5	2	2	1	10	5
Honorary members,....	6	1	0	1	8	6
Miscellaneous,.....	0	0	0	0	0	4
	188	148	120	95	561	486

Of this number 46 are members who have compounded for their subscriptions, 47 are in Europe, and 6 are honorary, leaving 387 as the actual number of paying members on the books of the Society.

* In the Annual Report for 1838 the number is stated to be 420, but this is an error.

The accession of 94 new members during the present year is a circumstance well worthy of congratulation, for after the great additions made in the year 1837 and 1838 to the ranks of membership (the circle of the European community in this country being limited), there was much reason to suppose that the Annual Report of succeeding years would necessarily present a diminished return.

When the result of the year just closed is viewed in this light the number of 94 may be regarded as a demonstration of public feeling equal if not surpassing that of any previous period.

Casualties. The calamity which the Society has sustained by the hand of death has been severely felt during the past year. Member after member, among those whose devotion to the cause led them to give their time, when it could be but ill spared, to the manifold duties required by the Society, have been taken from us. Perhaps in no year, since the foundation of the Institution in the year 1820, has the bereavement by death and departure for England which the Society has experienced been greater than during the one last passed. Messrs. George Prinsep, Ewart and Cracroft may be instanced as the most prominent of these.

George Prinsep, Esq. The first was always foremost in promoting every measure calculated to advance the interest of the Society and the good of the country. His enterprising spirit was abundantly shown in the projection of more than one great scheme of national improvement, and the practical knowledge which he brought to bear on all points in which he engaged, gave to his opinions that weight and influence that earned confidence whenever expressed, and tended so much to the security of the reputation which the Society now enjoys. Ardent in the cause in which he embarked, he left no means untried to secure success; labour to him, in the ardour of pursuit, was quite lost sight of, and it is much to be feared that the untiring industry of his spirit, in this inclement clime, precipitated him prematurely to his grave. As one of the warmest friends of the Agricultural and Horticultural Society of India, his name stands foremost, and his loss will long be felt with regret.

W. K. Ewart, Esq. The melancholy and distressing death of Mr. Ewart must be fresh in the recollection of the minds of every resident member of the Society. From the first moment of setting foot in India Mr. Ewart entered warmly into the advantages of Indian research. Trained to habits of inquiry he had early learnt to appre-

ciate the value of attested facts, and like all minds once so tempered, never felt contented till the truth could be elicited in her clearest form. Thus his attention was early directed to the value of statistics, and as a member of the late Statistical Committee of the Asiatic Society of Bengal, he did his utmost to impress on those who had not given the subject consideration, the importance of this department of science. He brought these great practical acquisitions with him to the assistance of the Agricultural Society, and, had his life been spared, the institution would, there is little doubt, have had many proud testimonials of his ability and worth. As it is the records bear proof of the interest which he took in that great national object—the improvement and spread of the cotton cultivation throughout the empire, and his constant attendance at the meetings of the members has caused his untimely end to be severely and deeply felt. The other members who have been taken from the Society during the past year by death are Messrs. Cockerell, Oram, C. R. Martin, Wm. Allen, George S. Hills, John Maclean, M. Maclean, F. H. Souter, and R. H. Bain.

Work done by the Society during the past year

Passing now to the consideration of the work which has been done by the Society during the past twelve months, we come first to the call made on the Society by the Government of India to furnish it, for the information of the Court of Directors and Committee of Agriculture and Commerce of the Royal Asiatic Society of Great Britain, with particulars touching the productions and prices of Agricultural articles at the chief mart and an obscure village conjointly in each district of the various provinces of the empire; arranging the returns in such a manner that the course of trade geographically may be best shown.

Collection of Agricultural statistics.

The Society, ever anxious to support the acquirement of information of public utility in every form, appointed for the purpose of carrying into effect the wishes of the Supreme Government, a special Committee, from among its members, to undertake the task of inquiry,—and a report having been presented to the Society by the Committee, in which the mode best calculated, in its opinion, to attain the desired object had been set forth, the same was confirmed; and circular letters agreeably to the plan laid down were addressed to all the medical officers at agency and zillah stations,—blank tabular forms at the same time being furnished in order to give as little trouble as possible, and also to ensure a uniform mode of return.

To the completion of such a plan of procedure much time had necessarily to be allowed, but the replies which have been sent in are so numerous and complete in their details that the Society has abundant reason to be grateful to those gentlemen, whose zeal in the cause of statistical research has induced them thus readily to come forward to promote the end in view.

The propagation of the fine grained cochineal insect in Bengal.

The second object, in point of priority, which has engaged the attention of the Society has been the introduction and propagation, if possible, of the fine-grained cochineal insect in Bengal. In the early part of the year great hopes were entertained that the insects which had been received from England and Bourbon would have lived and have spread; but subsequent experience does not enable the Society to confirm this ardent wish.

The plants have thriven well and are at the present moment in a great state of perfection at the nursery, but, owing to one accident and the other, the insects have never been landed in that state of healthful vigour or in that quantity which could be said to allow of the climate being fairly tested; and, after enduring a state of sickly existence for a few weeks, they have gradually died away till all have disappeared. The Society is now in a better condition to receive insects than ever it was before, as the *nopalarie* is well stocked with the Bourbon plant, and through the generous exertions of MM. Richard and Bedier, who have so kindly forwarded more than one consignment of insects and plants, the Society hopes to be put in possession of a further supply. As a mark of the sense entertained by the Society for the valuable endeavours of both MM. Richard and Bedier, the Society has voted to each of these gentlemen its gold medal.

Prosecution of the cotton culture in Hindustan

The third in order, but first perhaps in importance, is the attention which the Society has paid to the prosecution of its labours in the cause of cotton cultivation in India,—an object the magnitude of which can only be measured by the millions of pounds sterling which may be said to be involved in the success or otherwise of the undertaking.

The more the Society gives its consideration to the improvement of this important culture the more it becomes convinced that capital and skill are alone required to raise the indigenous cottons of the country (the parent stock, be it observed, whence all other lands have been supplied) to a standard worthy of a comparison with the produc-

tions of the west. The accumulated mass of information in support of the fitness of the lands of India to furnish cotton from the seed of the perennial plants of the western world leave no doubt that with care in the selection of the sites, attention to the husbandry of the tree, and the skilful application of modern knowledge to the art of cleaning the article for the market, the export of cotton from India will be a business of yearly increase, and form a most material item in the future custom duties of the state.

With the conviction that the public attention alone requires to be directed to the subject, the opportunity, which the presentation of the memorial of the Manchester merchants to the Society through the Bengal Chamber of Commerce afforded, was seized of preparing a Summary, from the records of the office, of what had been done by the Society and the success which had attended its efforts at introducing American and other varieties of foreign cotton seed into India. And by the addition of an extra number of 150 copies to the ordinary number of 400, the pamphlet had as large a circulation as the Society could afford to give it.

The measure thus brought prominently forward by the leading cotton community of Great Britain was not allowed to rest dormant by those appointed to preside over the destinies of India, and hence we find that about the time the Society had its Summary in hand the Home Government of India was devising means to meet the prayer which had been embodied by the merchants of Manchester in their petition to the Honorable Court of Directors of the India Company.

The despatch conveying the sentiments of the body of the Directors bears date March 15th, 1839, and the able minute of the Right Honorable the Governor General thereon, which has been transmitted for the guidance of the Society, was completed on the 14th August, 1839. The documents themselves and the steps taken in fulfilment of the sentiments contained in them have been so recently before the members and the public that a circumstantial detail in this place is rendered unnecessary. It is sufficient to mention that the Government of India has once more determined to embark, in the most efficient manner that can be devised, in this most laudable national object; and that it has sought to ensure success by obtaining, from America, the services of duly qualified planters in order to give to the undertaking the benefit of the best practical knowledge. The arrangement of the details for carrying the resolution of the Govern-

ment into effect, the Society has been solicited to undertake, and this is now in course of preparation. That success in its most enlarged sense will attend the efforts now to be made must depend on the energy and zeal of the individuals whose province it will be to watch over and attend to the working of the enterprise. The amplest testimony exists that the diversified soil and climate of India are capable of supplying the demands of Europe with cotton of a marketable and profitable quality, and it rests with the executive to justify the expectation of what the soil can do.

Indian caoutchouc or India rubber.

In the rising staple of caoutchouc the Society has received and communicated during the past year, many interesting items of intelligence calculated to stimulate the application of capital to the production of this remarkable produce of the vegetable kingdom. The attention which has been directed to the preparation by men of science, has secured for the manufacturer of it much practical information; but as yet some obstacles remain, which it is desirable should be removed. Caoutchouc obtained from the lactaceous juice of the Ficus Elastica of Assam is liable to decomposition, and the security of the article reaching the English market, in its solid form, is much endangered. Drs. Royle and Ure*, have for some time had the subject under consideration, and it is hoped, from the success which has already attended their inquiries, that their researches will eventually be crowned by the discovery of an efficient remedy for the evil.

The establishment of Tea manufactories in Assam.

The next most important subject which has come under the consideration of the Society is the progress made by the Government of India in establishing a manufactory of Tea in Assam. The papers and documents which have been laid before the Society incontestibly prove how capable the lands of Assam are for the growth of Tea plants, and how vastly abundant the country is in this most valuable shrub. In the management of this new and interesting branch of agricultural pursuit the Society has no concern directly, but the desire of the Government to engage the attention of the members and capitalists, generally, to the facilities which the province of Assam affords for manufacturing tea to any extent, has induced it to make, from time to time, communications to the Society on this highly important culture. In order to attract attention to the subject, the Court of Directors, both

* In a letter to the Journal of Arts, London, March, 1839.

individually and collectively, being prohibited from embarking in the cultivation as a source of commercial profit.

In their despatch dated London 26th September, 1838, they have signified to the Governor General in Council that the Government Tea establishment in Assam must not be increased beyond what is absolutely necessary to bring the trial to a fair practical issue, as they consider that when generally known, the speculation will doubtless be taken up with avidity by the commercial capitalist. And again in their despatch of January 23, 1839, they desire that the best means for encouraging the cultivation of the Tea with as little present loss to Government be suggested with as great prospective benefit to commerce as possible. Already the surmise of the Honorable Court has been fulfilled. A joint-stock company to undertake the severe and hazardous task of bringing the Tea colonies of Assam into cultivation has been formed with a capital of a million sterling, and the Society hails the formation of it as an undertaking that requires the most liberal consideration of the Government, as if successful, it will be one of the grandest achievements that private enterprise has ever effected for the good of India.

Improvement of the indigenous cattle of India.

As a material branch of Indian husbandry the improvement of the present impoverished bullock of the country has attracted the notice of the Society, and in April a full report was brought up from the Cattle Committee and adopted, having for its object the introduction of the middle-horned bull of England into India, and a schedule of prizes on a most liberal scale as an inducement to the public to undertake the introduction of good neat and other cattle into India has been held out.

Oppressive discriminating duties on Tobacco and Rum.

One of the difficulties which Indian Commerce has hitherto laboured under, has been the invidious distinction made by the legislature of the mother-country between staple articles the produce of the British possessions in India and similar articles the produce of the Crown colonies; until within the last three years a distinction of this kind was made between the sugars of the East and West Indies, and it yet continues to be in force with respect to the two commodities of Tobacco and Rum.

To assist, by every legitimate means in its power, to remove so impolitic, to use no stronger expression, distinction, the Society in May last determined on drawing the attention of the constituted authorities of the state to the burthen thus unfairly thrown on the energies of

the country, and therefore moved the various organs of the Government to obtain from the legislature of England a removal of these discriminating duties. The Society trusts that its labour has not been in vain. The receipt of a recent despatch from the Court of Directors, in reply to the representation of the Society, intimates that that influential body has a petition to the imperial Parliament in preparation with which it purposes going to the legislature on the first Meeting of the Session.

State measures for conducting an interchange of vegetable productions between Europe and the East Indies.

The Society in June last, had placed at its disposal a dispatch from the Home Government, addressed to the Governor General of India in reference to a communication which had been transmitted by him touching the importance of an interchange of vegetable productions, and intimating to His Lordship that the Court had resolved on gradually furnishing the means of carrying on, extensively, experiments for naturalizing in India, useful and desirable plants indigenous in other countries.

On the receipt of the communications here adverted to the Society lost no time in constituting a Committee for the purpose of assisting the Government in the prosecution of its views. The recommendation adopted was to issue circulars to all persons scattered over the country, inviting them to furnish the Committee with the extent of their individual knowledge. This has since been done, and the Society purposes to continue to render its services to the promotion of this laudable work with its best ability.

Introduction of Foreign seed corn into India.

Another object of solicitude by the Society, during the past year, has been the introduction of Foreign seed corn into India, and for this purpose a sum of money has been voted to enable the Society to commence this desirable object, and an invitation issued to all persons who may be desirous of trying the benefits likely to result from this measure, to register their names at the office of the Society, and any quantity they may require shall be obtained for them from the seedsmen of the Society.

Spread of Sugar-cane cultivation throughout Hindustan.

Turning now to the consideration of the efforts made by the Society in extending the propagation of the Sugar-cane in India, in order to contribute the best aid in its power to forward the interests of the nation in the promotion of this great necessary staple of commerce, the Society has the pleasing duty of noticing that such has been the avidity

shown by the members and others to possess the valuable varieties of cane grown in the Nursery of the Society that in the space of six weeks from the commencement of the distribution not a cane was left for tardy applicants. The stock supplied amounts to 32,494 canes, and these have gone forth into the different districts of Bengal to meet the growing demand which exists for this profitable and valuable culture. A further crop of cane is expected to be ready for cutting in February, when applicants can again be supplied.

Branch Societies. At the close of last year, the Society had to report the existence of fourteen Branch Societies. During the year just closed an addition of four, Backergunge, Darjeeling, Chittagong and Bauleah, has to be made to this number, making in all seventeen of these most valuable aids to the diffusion of the great designs which it is the object of the Parent Institution to disseminate.

Prizes awarded by the Society. In the Department of rewards for the encouragement of the great objects adverted to in the foregoing paragraphs, the Society has to report the adjudication, at the annual exhibition held in February last, of the large Silver Medal of the Society and 250 rupees to Mrs. Pattle for the best bred Cow.

For Cattle. To W. F. Gibbon, Esq., the Gold Medal of the Society and 200 rupees for the best Wooled Merino Ram.

To W. F. Gibbon, Esq., the large Silver Medal and 150 rupees for the second best Wooled Merino Ram.

For Cochineal. In consideration of the readiness with which Mr. Bedier, Minister of Marine at the Isle of Bourbon, has met the wishes of the Society in promoting the introduction of the fine-grained Cochineal Insect into Bengal, the Society has awarded to that gentleman its Gold Medal.

For bringing the Cocoons of the Eri silk into use. As a means of contribution to the liberal donation of Captain Jenkins, Commissioner of the Assam Provinces, to promote the discovery of an efficient method of bringing the cocoons of the Eri silk worm into use as an article of commercial value, the Society has determined to meet Captain Jenkins' donation of 500 rupees by a similar amount, and a schedule of prizes to the extent of 1000 rupees is now before the public for the purpose of encouraging the discovery.

For Raw Silk. In the article of silk the Gold Medal of the Society for the second time has been awarded to Mr. Rose of Ramnaghur Factory in the collectorate of Moorshedabad. On this occasion there were six competitors.

For Sugar. To J. Balestier, Esq., American Consul at Singapore, the Gold Medal of the Society has been awarded for affording a strong-grained useful sugar which would answer well for refining; and which has been classed as brown to good brown.

Money vote for Foreign seed corn. In order to carry out the intentions of the Society in procuring the introduction of Foreign seed corn into Hindustan, the sum of Five Hundred Rupees has been appropriated for that purpose.

Money vote for purchase of Cotton Seeds. In the way of outlay for Cotton seed the Society has appropriated the sum of 500 rupees for the purchase of the best sorts of indigenous seeds, and 1000 rupees for the purchase of American seeds. The assignment of further sums has been unnecessary, owing to the liberality of donors, who in a spirit of noble generosity, have preferred that their consignments of seeds to the Society should be received as a gift rather than be paid for. To Mr. Waghorn of Egypt, Mr. Jackson of Calcutta, Messrs. Arbuthnot and Co. of Madras, Mr. Richards of Calcutta, Mr. G. U. Adam of Calcutta, Messrs. Adam, Scott and Co. of Calcutta, the thanks of the Society are especially due for the extensive and most acceptable presents of Foreign Cotton seeds which they have made.

Literary Department. In the literary department, the Society has to call attention to the alteration which has, for the past year, been made in the manner of giving the various important communications, as they come before them, as extended a form of publicity as possible, by enlarging the monthly Report of Proceedings. Much of the present popularity, which the Society enjoys, may be traced to the valuable information which, from time to time, is given to the world, while the subject is fresh and acceptable to the public. In this way the intelligence, which the Society is favored with has been disposed of, and in the forthcoming volume of Transactions the reader will, in consequence, find that all the shorter essays and contributions have been recorded in the Reports of Monthly Proceedings. Papers of more lengthy size and which could not, without extending the Monthly Report to undue limits, be so disposed of, have been reserved for the body of the Transactions, and these are now in course of preparation at the press.

Horticultural Department. In the Horticultural Department the Society has every reason to be satisfied. Seeds have been distributed, to a large extent, all over the country. Of the excellence of the Calcutta market in all the varieties of culinary vegetables, the

daily supply in all the chief market places of the city is an incontestible proof, and to the Society is this state of perfection and plenty mainly due. By furnishing the native gardeners with foreign seed at half price, they are able to furnish every year a continued supply which, without this assistance, they could not do, as many of the vegetables, although they grow luxuriantly, give little or no fruitful seed.

The Annual Horticultural Exhibition of the Society further contributes towards the encouragement of this useful object, by the award of medallion and money prizes, and the Society has reason to believe, that these are much sought after by the class of persons for whom they are intended.

Conclusion. In conclusion the Society has to present, for the information of all concerned, the particulars of the different objects for which prizes are held out, and it is hoped that the review of the labours of the Institution for the past year now given, will afford that satisfaction that shall earn for it the continued support of the members and the influx of new and additional support.

The Agricultural and Horticultural Society of India being desirous of effecting the introduction of *Foreign Seed Corn* into India, are prepared to receive and register applications from any persons who may be desirous of procuring Seed for trial in their lands: and will use their best endeavours to obtain the same from Europe, Africa, and America. It is requested that individuals will furnish a reference in Calcutta for the amount of their orders, which will be supplied at invoice cost price.

EXHIBITION OF PRIZES.

Eri Silk.

The Agricultural and Horticultural Society, in conjunction with Captain Jenkins, the Governor General's Agent in Assam, beg to call the attention of the public to the following notification:

1*st*.—To any person who may succeed in discovering an effectual and cheap solvent for the adhesive material which attaches to the Cocoons of the Eri Silk Worm,—so that the Silk can be made useful to commercial purposes;—

The Society's Gold Medal and 200 Rupees.

2*nd*.—For the best and most economical mode of preparing Floss, and also the manufacturing of a fine thread from the floss of the Eri Cocoons;—

THE SOCIETY'S GOLD MEDAL AND 200 RUPEES.

3*rd*.—For the best and most economical method of bleaching Cloth manufactured from the Eri Cocoon, so as to take permanent and fugitive dyes well;—

THE SOCIETY'S GOLD MEDAL AND 200 RUPEES.

CONDITIONS.

No Claimant to any of the above rewards shall be entitled to the prizes, till they have furnished the Silk Committee with the fullest particulars of their discovery; and the Society further reserves to itself, the right of withholding the award of prizes till the experiments of the Claimants have been tested on an efficient scale.

FOR STAPLE PRODUCTIONS.

The following Prizes are offered to the producers of the best Samples of the undermentioned Staples of the Bengal Presidency, agreeable to the resolution of the Society, passed at a Meeting held on the 14th November, 1838.

SUGAR.

1*st*.—For the best Sample of *unrefined* Sugar, not less than 2 maunds,..... *The Gold Medal.*

For the second best Sample of *unrefined* Sugar as above,..... *The Silver Medal.*

SILK.

2*nd*.—For the best Sample of Silk, not less than 2 seers,..... *The Gold Medal.*

For the second best Sample of Silk, as above,..... *The Silver Medal.*

COTTON.

3*rd*.—For the best Sample of Cotton, raised from Foreign Seed, not less than 2 maunds, *The Gold Medal.*

For the second best Sample of Cotton, raised from Foreign Seed, as above,..... *The Silver Medal.*

TOBACCO.

4th.—For the best Sample of Tobacco, reared from Foreign Seed, not less than one maund, *The Gold Medal.*

For the second best Sample of Tobacco, reared from Foreign Seed, as above, ... *The Silver Medal.*

CONDITIONS.

1*st.*—The articles exhibited by Candidates for Medals, must be the produce of Bengal and the North Western Provinces.

2*nd.*—The competition will be open to all persons whatever without distinction.

3*rd.*—The articles must not be garbled, but bonâ fide the average produce of the land on which they are grown, or of the manufacture.

4*th.*—All Candidates for Medals must deliver with their specimens, statements of the places at which the articles were produced, the quality or nature of the soil and of the mode of cultivation and manufacture, and the cost of production.

5*th.*—A moiety of the specimens which shall be declared entitled to the *Gold Medals*, shall be the property of the Society, the remainder will be returned to the Candidates.

6*th.*—Candidates are requested to affix to their specimens, a number or mark, and to accompany them with a sealed letter and to mark the letter addressed to the Secretary with the words 'Competition Letter,' which letter will remain unopened till after adjudication.

7*th.*—When two or more Samples shall be considered to be of equal quality, the Medal will be awarded to the sample which may appear to have been raised at the least cost, and with reference also to the greatest quantity produced upon a given area.

8*th.*—All Candidates are expected to have their specimens in the possession of the Secretary of the Society, on or before the 1st May 1840.

FOR CATTLE.

In accordance with the vote of the Society, at a Meeting held on the 10th April, 1839, the following Schedule of Rewards for Cattle of various kinds to be exhibited at the Annual Show on the 1st of February next, was passed.

IMPORTED NEAT CATTLE.

1*st*.—For the best imported Bull of the year 1839, not less than two years old,—a Premium of 500 Rs. and the Gold Medal.

2*nd*.—For the second best imported Bull of the year 1839, not less than 2 years old,—a Premium of 400 Rs. and the Silver Medal.

The same for the year 1841.

NOTE.—(A preference will be shown to the Devonshire or Middle-horned Bull.)

PRODUCE.

3*rd*.—For the best produce of imported Cattle,—a Premium of 250 Rs. and the Gold Medal.

4*th*.—For the second best produce of Imported Cattle,—a Premium of 200 Rs. and the Silver Medal.

5*th*.—For the best *Bull* Calf of any denomination calved in 1839, —the Gold Medal.

6*th*.—For the best *Cow* Calf of any denomination calved in 1839, the Silver Medal.

SHEEP.

1*st*.—For the best imported Wooled Merino Ram of the year 1839, not less than two years old,—a Premium of 200 Rs. and the Gold Medal.

2*nd*.—For the second best imported Wooled Merino Ram of the year 1839, not less than two years old,—a Premium of 150 Rs. and the Silver Medal.

The same for the year 1841.

3*rd*,—For the best pen of Merino Ewes to the number of six,—a Premium of 100 Rs. and the Silver Medal.

4*th*.—For the best thorough-bred Merino *Ram* Lamb, lambed in 1839,—the Gold Medal.

5*th*.—For the best thorough-bred Merino *Ewe* Lamb, lambed in 1839,—the Silver Medal.

6*th*.—For the best lamb, either Ram or Ewe, cross of a Merino Ram and an indigenous Ewe, lambed in 1839,—the small Silver Medal.

CONDITIONS.

1*st*.—The competition is open to Stock from any part of the world.

2nd.—The pedigree and age of the Stock, so far as known, must be given.

3rd.—The Committee of the Society appointed to conduct the arrangements for the Show, will appoint skilful persons to act as judges.

4th.—The Committee reserve to themselves the right of withholding any of the above rewards, should the numbers of either class brought forward be insufficient, in their opinion, to establish a legitimate competition, or in the opinion of the judges, from inferiority, not be deserving of a prize.

PREMIUMS FOR WORKS ON AGRICULTURE AND HORTICULTURE.

It having been resolved upon, at a Meeting held on the 12th April, 1837, that Premiums should be offered for the best works on Indian Agriculture and Horticulture, the following Resolutions, passed on that occasion, are advertised for general information.

1st.—For the best work on Indian Agriculture in all its branches, founded on experience in the country, to be presented to the Society on or before the 1st May, 1840,

TWO THOUSAND RUPEES.

2nd.—For the best work on the Agriculture of Bengal, to be presented to the Society on or before the 1st May, 1840,

ONE THOUSAND RUPEES.

3rd.—For the best work on the Horticulture of the Western Provinces, to be presented to the Society on or before the 1st May, 1840,

ONE THOUSAND RUPEES.

CONDITIONS.

1st.—The Society reserves to itself the right of refusing to grant any of the above Premiums, if the works on the above subjects are not such as it approves.

2nd.—The Authors who may receive any of the above Premiums, shall, within six months after the receipt thereof, publish the Treatises to which such Premiums shall have been awarded, or the Society shall have the option of publishing, in case the Authors shall neglect to do so within the time above prescribed.

HENRY H. SPRY, M. D., *Secy.*

Proposed by Dr. Wallich, seconded by Mr. Piddington, and resolved, that this Report be adopted and printed.

COLLECTOR'S REPORT

FOR THE YEAR 1839.

By direction of the Finance Committee, I beg to submit a Statement of the total Receipts and Disbursements of the Agricultural and Horticultural Society of India, during the past year, exhibiting with the former balances, a total sum credited of Rs. 23,736 14 7 and a total sum disbursed of, ... 23,188 2 6

Although the amount received during the past twelve months shews a great increase on the collection of the preceding years, yet the sum expended has been greater than ordinarily, arising principally from the following causes:—

1*st*.—The amount of the usual supply of vegetable and flower seeds received from the Cape, England and America, greatly exceeds that of former years, with reference to the increased number of members, and thus causes a difference, as compared with the year 1838, of upwards of twelve hundred rupees.

2*nd*.—The advance on account of American Cotton seed, and the purchase of a supply of Dacca Cotton seed for transmission to Assam, add considerably to the amount of expenditure;—it had been determined by the Society that these items should be defrayed from its fixed assets, but this measure has been obviated by the balance of current receipts being found sufficient to meet this charge, amounting to Eleven Hundred Rupees.

3*rd*.—The reprint of the three first volumes of the Transactions of the Society, has involved an additional expense,—against which, however, is to be placed the extra number of copies (three hundred of each volume) now in hand and available at cost price to members of the Society.

4*th*.—The expence incurred for *Agricultural* seeds from America, for Fruit trees from England, and for various Agricultural implements, received during the past year, forms a new feature in the accounts of the Society;—the total sum disbursed under these heads exceeds three hundred rupees.

5*th*.—The donation to Mrs. Bell also forms an extra item of account.

To enable the Society to meet these additional expences, it has been deemed expedient to obtain a temporary loan from the Bank of Bengal on deposit of Company's Paper, which accounts for the amount of fixed assets being less than that exhibited in the Statement submitted for the year 1838;—this course was considered preferable to selling any portion of the Government Securities, it being probable that from the collection of the current year, a sufficient sum will be accumulated to enable the Society to redeem this loan.

This is the result of the financial operations of the Institution during the past year, and I trust it will meet with the approval of the Society.

A. H. BLECHYNDEN,

Calcutta, Jan. 1st, 1840. *Collector.*

Statement of Receipts and Disbursements from 1st January to 31st December, 1839.

RECEIPTS.

From Members, Subscriptions collected during the year,	12,122	2	6		
„ Government, Annual Donation,	1,045	0	0		
„ Ditto, Monthly Allowance for 12 months, at 135-13-6 per month,	1,030	2	0		
				14,797	4 6
„ Proceeds of Surplus Cape Vegetable seeds sold,	509	0	0		
„ Ditto ditto, American ditto ditto,	10	0	0		
„ Ditto ditto, English ditto ditto,	6	0	0		
„ Ditto of Sugar-cane delivered from the Society's Nursery Garden from Oct. 1838 to April 1839,	1,438	2	0		
„ Mr. Dearman, being the balance of 100 Rs. awarded by the Society for the purchase of Dacca Cotton seed,	15	2	0		
„ Capt. Gordon, being the balance of 200 Rs. awarded in 1838, for an experimental Garden at Nepaul,	31	8	3		
„ The Secretary, being the balance of 350 Rs. awarded for prizes to Mallees at exhibitions of Vegetables held on 1st Feb. and 6th May, 1839,	105	0	0		
„ Proceeds of old seed boxes sold,	10	0	0		
				2,144	12 3

From	Proceeds of copies of volumes of the Transactions of the Society, ...	461	11	9		
„	Ditto, of a Duplicate work (Abercrombie's Gardener) from the Society's Library,.....	3	0	0		
„	Ditto of Stationery, being a consignment of Wedgewood's Copy books, &c. forwarded to the Society, by order of the late Secretary, ...	57	8	0		
					522	3 9
„	The Executors of the Estate of the late Secretary, balance in their hands on 31st Dec. 1838, belonging to the Society, ...	503	1	7		
„	The Acting Secretaries, balance in their hands on the 31st December, 1838,..	1	14	6		
					505	0 1
„	The Bank of Bengal, as a Loan, ...				4,000	0 0
„	Accruings of Interest on the Society's fixed Assets, lodged in the Government Savings' Bank.....				748	8 9
	Total Receipts, Rs.				22,697	13 4
„	Balance in the Bank of Bengal on 31st December, 1838, ...	622	6	0		
„	Balance in the Savings' Bank on ditto,..	416	11	3		
					1,039	1 3
	Grand Total, Rs.				23,736	14 7

DISBURSEMENTS.

FOREIGN VEGETABLE AND FLOWER SEEDS.

By	Messrs. Adam Scott and Co., amount of Mr. Villet's bill, for Cape seeds,.....	1,664	0	0		
„	Messrs. Noble and Sons, for English Vegetable Seeds, ...	371	8	3		
„	Chas. Huffnagle, Esq., amount of Mr. Landreth's bill, for American Vegetable Seeds, ...	880	0	0		
					2,915	8 3

AMERICAN MAIZE AND GRASS SEEDS.

„	Mr. J. J. Dixwell, for American Maize and Grass Seed,				213	11 0

COUNTRY VEGETABLE SEED.

By Sheroo Chunder, Mallee, for Country Vegetable Seed,.... 5 4 0

ENGLISH FRUIT TREES.

„ Noble and Sons, for a consignment of English Fruit Trees,.. 56 2 7

COTTON SEED.

„ Chas. Huffnagle, Esq., an advance for a consignment of Cotton Seed from America, ... 1,000 0 0

„ Thos. Dearman, Esq. for the purchase of Dacca Cotton Seed for transmission to Assam, ... 100 0 0

1,100 0 0

SUGAR-CANE.

„ Capt. Chas. Brown, for Sugar-cane forwarded in 1838, from the Jubbulpore plantation for the Society's Nursery Garden, ... 671 0 0

EXPERIMENTAL GARDENS AT DEYRAH AND DARJELING.

„ Amount awarded by the Society for experimental Gardens at Deyrah and Darjeling, ... 400 0 0

SOCIETY'S NURSERY GARDEN.

„ Dr. Wallich, for Mallees' wages, Cooly hire and Sundry expenses incurred for cultivating the Garden from 1st Dec. 1838 to 30th November, 1839,..... 1,607 8 0

COCHINEAL PLANTATION.

„ Mallee's wages for superintending the Society's Cochineal plantation in Oct. 1838, ... 6 0 0

AGRICULTURAL IMPLEMENTS.

„ Mr. J. J. Dixwell, for several Agricultural Implements transmitted from America,..... 63 8 7

FREIGHT.

„ Freight on Boxes of English, American and Cape Seeds, &c. 386 7 10

PECUNIARY REWARDS.

„ Prizes to Mallees, awarded at the exhibitions of Vegetables held on 1st February and 3rd May, 1839,..... 350 0 0

„ The Branch Society at Hooghly, Annual Donation awarded by the Parent Society for prizes to Mallees, ... 50 0 0

„ The ditto, at Moorshedabad, ditto ditto,.... 50 0 0

„ The ditto, at Azimghur, ditto ditto, ... 50 0 0

„ James Pattle, Esq. for the best Cow exhibited at the Cattle show on 1st February, 1839,..... 250 0 0

750 0 0

MEDALS.

By The Calcutta Mint for Gold and Silver Medals supplied the Society, ...	541	15	0			
„ Gourmohon Roy, for Engraving Medals, ...	25	0	0			
				566	15	0

SOCIETY'S TRANSACTIONS, CIRCULARS, &c.

By Baptist Mission Press for *reprinting* vol. I. of the Transactions of the Society, (300 copies,)	607	0	0			
„ Ditto, for ditto, vol. II. of ditto, (300 copies,)..	967	8	0			
„ Ditto, for printing 500 copies of Annual Report for 1838,.....	50	0	0			
„ Ditto, for printing monthly proceedings from August to December, 1838, (400 copies for each month,)	150	0	0			
„ The Bishop's College Press, for printing Pamphlets, Nos. 2 and 3, containing "Notices on Cochineal,"	242	8	0			
„ The Hurkaru Press for striking off 500 copies of a Report of the Anniversary Dinner of the Society, ...	50	0	0			
„ Mr. T. Black, for Lithographing Plates for vols. II. VI. and VII.	162	0	0			
„ Mr. Tassin for ditto ditto, for vol. II.	80	0	0			
„ Messrs. Rushton and Co. for printing 500 copies of a list of the members of the Society on 1st January, 1839, ...	72	0	0			
				2,381	0	0

PRINTING ACCOUNT.

By Sundry parties for printing labels, tickets, &c. during the year, ...				68	0	0

STATIONARY.

By Messrs. Noble and Sons, for a consignment of Wedgewood's Copy Books, Styles, &c.....	223	14	10			
„ Stationary for printing Circulars on; office books, paper, &c. for the use of the office, ...	167	3	10			
				391	2	8

LIBRARY.

By Books purchased during the year for the Society's Library,				197	5	4

ADVERTISEMENTS.

By Advertising in the Public Prints from 1st Nov. 1838 to 31st Oct. 1839, Notices of Meetings of the Society, Distribution of seeds, sugar-canes, &c. offers of Premia for certain objects, &c. &c. &c.				1,021	3	6

ESTABLISHMENT.

By Amount for Establishment from Dec. 1838 to Nov. 1839, ..				5,881	4	0

INTEREST ACCOUNT.

By Bank of Bengal, amount of Interest on a loan of 4,000 Rs. for 3 months (from 7th September to 6th Dec. 1839), at 5 per cent.				50	0	0

DONATION TO MRS. BELL.

By Amount awarded by the Society to the Widow of its late Secretary, viz:—one year's salary,	3,600	0	0			
„ And from 16th Nov. 1838 to 8th Jan. 1839, one month and 23 days, (the period from the death of the Secretary to the appointment of a successor,)	530	0	0			
				4,130	0	0

SUNDRIES.

By Postage and Petty Charges, ...	274	0	0			
„ Office Furniture, (a new mat,)	34	0	0			
„ Custom House Duty on American Books and Implements, ...	6	13	9			
„ Government Agent, amount of Fees for the withdrawal of Government notes, ...	11	4	0			
				326	1	9
Total Disbursements, Rs...				23,188	2	6
Balance in the Bank of Bengal, on 31st Dec. 1839, ...				483	8	1
Balance in the Savings' Bank, on ditto, ...				65	4	0
Grand Total, Rs.				23,736	14	7

MEMORANDUM,

Dr.				Cr.			
To Balance in hand in the Bank of Bengal on the 31st Dec. 1839,.....	483	8	1	By Balance in hand in the Bank of Bengal on the 31st Dec. 1838.....	622	6	0
To Balance in the Savings' Bank, on the 31st Dec. 1839, ...	65	4	0	By Balance in the Savings' Bank, on the 31st Dec. 1838.....	416	11	3
	548	12	1		1,039	1	3
To Amount of Disbursements during the year 1839, as per statement,.....	23,188	2	6	By Amount of receipts during the year 1839, as per statement, ...	22,697	13	4
Total Rs.	23,736	14	7	Total Rs.	23,736	14	7

DEPENDENCIES.

Amount invested in Government Securities, lodged in the Government Agency Office,....Rs. 15,900 0 0

Amount lodged in the Bank of Bengal in satisfaction of a Loan of Four Thousand, ... Rs. 4,500 0 0

REPORT

OF THE

Agricultural and Horticultural Society

OF INDIA.

Report from the Council to the Society at the General Meeting of the 18th January, 1865.

The Council have to make the following Report to the Members of the Society on the occasion of their present Annual Meeting.

They have to commence, as usual, with a summary of the state of the subscription list, and they regret to observe that though the number elected during the past twelve months, namely one hundred, is a very fair average, yet the number of deaths, resignations, and removals for non-payment, have been so unusually heavy as not to show any advance in the list of paying members over the year 1864.

The usual classified list is appended :—

Classification.	In 30 previous years.	In 1851.	In 1852.	In 1853.	In 1854.	In 1855.	In 1856.	In 1857.	In 1858.	In 1859.	In 1860.	In 1861.	In 1862.	In 1863.	In 1864.	Gross Total.	Total real number at the close of 1864, after deducting lapses.
Honorary Members, ...	13	0	1	0	1	0	2	0	0	1	0	0	0	0	0	18	11
Associate Members, ...	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4	2
Corresponding Members,... ...	1	1	1	1	0	0	0	0	1	0	0	1	0	0	2	8	6
Civilians, ...	300	22	16	18	6	23	23	17	19	28	28	22	13	12	18	565	183
Merchants and Traders, ...	264	20	12	5	16	18	31	11	20	15	18	17	19	24	17	507	153
Indigo and other Tropical Agriculturists, ...	622	19	13	10	7	14	12	10	14	20	15	15	21	20	20	436	134
Military Officers, ...	212	34	18	22	19	26	22	12	14	27	38	26	25	10	21	526	149
Medical Officers, ...	97	4	5	3	4	6	9	3	3	16	11	6	7	5	7	186	50
Asiatics, ...	99	8	8	8	5	5	7	14	19	4	6	8	3	7	9	210	67
Clergy, ...	17	1	1	1	1	2	1	2	0	0	1	0	0	2	0	29	5
Law Officers, ...	51	6	3	1	3	6	2	1	5	2	1	2	4	2	3	92	23
Miscellaneous, ...	15	6	0	0	10	0	0	2	7	5	5	0	12	9	3	74	36
	1,298	122	78	69	72	100	109	72	102	118	123	97	104	91	100	2,655	819

N. B.—Of these 819 Members 186 are Resident in Calcutta 549 in the country and 84 in Europe.

The lapses alluded to in the last column comprise 22 deaths,* 55 resignations, 22 whose names have been removed for non-payment of subscriptions, and 58 removals from the list in accordance with Section 6 of chapter iii of the Bye-Laws, their absence from India having exceeded four years,—making in all 157.

Of the total number (819) in the printed list, 34 are Life Members, 71 are absent from India, 17 are Honorary, Associate and Corresponding, leaving 697 as the number of paying Members on the books of the Society.

As promised in their last report the Council have given their careful attention to the heavy arrears which were then shewn to be outstanding; but notwithstanding that frequent applications have been made to defaulters, they have been obliged to recommend that the large sum of Rs. 6,326 be written off to profit and loss. Of this sum Rs. 2,231 was ordered to be taken off at the May meeting, and Rs 4,095 at the December meeting. After deducting this amount there still remains the sum of Rs. 11,125 unpaid, of which Rs. 1,270 are due from Town Residents, and Rs. 9,855 from Country Members. It is to be hoped that a fair proportion of this sum may be realized during the current year, as Rs. 3,987 comprise the unpaid subscriptions of 1864. The Council would again urge on Members the necessity of more frequent and regular remittances to restore a proper equilibrium between income and expenditure.

The Council are glad to report that the importations of seeds during the last season have proved successful. The consignments from North America have, as usual, given satisfaction, and those from England have succeeded better than, perhaps in any former year. The seeds of field crops from Melbourne have also turned out well, though they, unfortunately, reached too late in the season

* Messr. James Smith, H. Andrew, R. H. Russell, C. S., R T. Martin, F. Brine; Capt T. F. O. Scott; Prince Mahomed Jelaloodeen; Messrs. J. F. Hedger, J. C. Johnson, C. B. Stewart, T. J. Atkinson, James Egerton, T. H. Barry, R. W. Bingham, J. F. Bowers, W. H. Lowe. C. S., Capt. W. Eales; Lt. Coll. A. D. Turnbull; Dr. J Davis; Major D. Ross; Capt. T. Salmon; and Dr. T. J. Morris.

to be largely distributed. Another consignment has been ordered from thence, as also from South Africa. An order for the latter was given last year through the Secretary of the Agricultural and Horticultural Society of Cape Town, but, from some unknown cause, it has not been complied with.

Two Horticultural exhibitions were held during the year. The first at Allipore in connection with the Agricultural exhibition, the second in the Town Hall. Both shows were fair average ones. A new feature in the first show was competition from the country; the produce of gardens at Krishnaghur and Arrah was submitted and gained several prizes. The sum of Rs. 895 was awarded at these shows, and 7 bronze medals.

The distribution of plants has been almost as great as last year. It would probably have exceeded it, judging from returns at the end of September, and the number of uncomplied applications at that date in consequence of an unusually heavy demand during the rainy season. But the severe gale of the 5th of October, which caused such destruction in Calcutta and the surrounding country, affected the Society's garden considerably, and since that period to the close of the year the distribution has, of necessity, almost ceased. The effects of this gale have been so fully detailed in the Gardener's report already published in the proceedings for October, that it is needless to recapitulate them in this place. It may, however, be mentioned that the various buildings, including the conservatory, have been altogether blown down, with the exception of the Gardener's house, and that the loss of fruit grafts, one of the most useful departments of the gardens, has been so great, that the distribution of next season must be necessarily very limited. Most of the choicer ornamental plants have also been destroyed, while of the larger trees, such as Amherstias, Araucarias, Grevilleas, Colvilleas, Poincianas &c. scarcely one remains,—a loss which it will take several years to repair. The total number of plants that have been given out is 11,253, in this is included 2,996 fruit grafts. The demand for sugarcane has been limited, while for Rheea *(Bœhmeria nivea)* there have been many applica-

tions, and thousands of cuttings of this superior fibre-yilding plant have been distributed, which are not included in the above return. A fair proportion of both useful and ornamental plants, nearly one third, has been sent to Mofussil members.

In connection with this subject it may be observed that the Society have been in communication with the Government of Bengal in respect to the formation of a garden on this side of the river. They have suggested as a suitable site for a public garden a portion of the grounds belonging to the Kidderpore Military Orphan Asylum, and intimated their readiness, in the event of the application being granted, to remove their nursery garden to a portion of the ground, and to undertake the management of the entire establishment, provided that the expence to be incurred by such management, does not exceed that now incurred in the maintenance of their nursery garden. No definite resolution has yet been come to on this subject, as it would appear that the premises alluded to have not yet been transferred to Government pending the orders of Her Majesty's Secretary of State for India, to whom the question was submitted some time since.

The various Standing Committees have been actively engaged during the year in reporting on specimens of cotton, tobacco, coffee &c. Those from British Burmah have been especially numerous. The question of Cotton culture in the Punjab has likewise been attracting attention, and the Society have been aiding in the movement by supplying acclimatized seed which is more sought for than direct importations, as less liable to failure. In consequence of the success attending former importations steps have been taken to obtain another supply of New Granada paddy for general distribution.

Among other subjects which have been recently occupying the attention of the Society the improvement of the breed of native cattle, and the murrain which has been raging in the Madras Presidency and Lower Bengal, may be particularly noticed. Some valuable suggestions in respect to the latter have been communicated to the Government of Bengal in reply to a reference to the Society; and a rather lengthy report by a Special Committee has

been submitted in response to a Government letter regarding the former. The periodic flowering of the Bamboo, and the rotation of crops have also been attracting attention; on both of these subjects the Society have furnished information to the Government. In consequence of reference frequently made for information on various points connected with the culture and manufacture of Tea, it has been determined to invite Essays thereon and a prize of Rs. 500 has been offered to any person who shall produce on or before the 1st. of March 1865, the best practical treatise on such culture and manufacture as applicable to the plains, and a like sum for a treatise as applicable to the hills. The publication in a recent number of the Journal, in a translated form, of Jacobson's hand-book for the culture and manufacture of Tea in Java, will, it is believed, also prove serviceable to the daily increasing number of persons interested in this important branch of agricultural industry in Assam, Cachar, Sylhet, Chittagong, the Punjab and our hill provinces.

It may not be out of place to add here, by way of record, that a portion of the sum of Rs. 3000, which was subscribed in 1848, for a portrait of the late Sir John Peter Grant (but which his death while on his return to England prevented the Society from obtaining) has been appropriated during the past year, by a resolution passed at the May meeting, for the manufacture of a Die for a medal to be called the "Grant medal," in memory of their late President, to be awarded for such objects as may hereafter, from time to time, be determined on. To aid the engraver in England, to whom the preparation of the Die may be entrusted, Mr. Colesworthy Grant, the artist, has kindly consented to prepare a likeness of Sir John from a lithograph in his possession.

A silver medal has been placed by the Society at the disposal of the Committees of management of each Divisional Agricultural exhibition in Bengal, to be awarded for the best specimens of such produce as they may select.

Two numbers of the Journal, parts 2 and 3 of vol. xiii, have been published during the year. Part 4 completing this volume, is now in the press, and will appear at the commencement of 1865.

PROCEEDINGS

OF THE

AGRICULTURAL AND HORTICULTURAL SOCIETY OF INDIA.

FEBRUARY,

1839.

CALCUTTA :

PRINTED AT THE BAPTIST MISSION PRESS,
CIRCULAR ROAD.

1839.

AGRICULTURAL SOCIETY OF INDIA.

PROCEEDINGS.

FEBRUARY 13, 1839.

Agricultural Society of India.

A General Meeting was held in the Society's Rooms, Town Hall, on Wednesday, the 13th February, 1839.

The Hon'ble Sir E. Ryan, President, in the Chair.

MEMBERS ELECTED.

The following gentlemen proposed at the Anniversary Meeting were elected members, viz.:

Messrs. T. P. B. Biscoe, C. Scott, Jas. Wood, R. Wooldridge, and Dr. R. H. Bain.

MOTIONS OF WHICH NOTICE WAS GIVEN AT THE LAST MEETING.

The attention of the Meeting was first called to the consideration of the motion made last month by Mr. H. M. Parker, namely, 'That taking into consideration the duties expected to be performed by the Secretary of the Society, the salary be fixed at three hundred rupees a month.' The members who addressed the Meeting were the President, Mr. Parker, Mr. Cracroft, and Dr. Strong. Their sentiments were all confirmatory of the propriety of the proposition, which was carried unanimously.

During the discussion of the above measure, the President took occasion to remind the Society that the Secretary had expressed his willingness to undertake to do the duty of the Collector's office, and read the report of the Committee of Finance, in which his offer had

been embodied; so that it was for the Society to determine whether it would be desirable that the two offices should be separated or not —if the latter, then he would propose that Mr. Blechynden, who had shown himself to be a very useful Assistant Secretary, should be made Collector of the Society, with an increase to his salary of 50 rupees a month. Further, that the gentlemen who formed the Special Finance Committee, be requested to continue their services as a Standing Committee of the Society, and that they should take cognizance of all matters bearing on the ' ways and means' of the Society.

The statement of ' the ways and means' which the Special Committee had prepared showed a disposable balance of about five thousand rupees without encroaching on the ' fixed assets' which left no doubt of the capability of the Society to afford this extra expense, if the proposition were carried.

The sense of the Meeting being confirmatory of this step, notice of a motion was given, which will be found below.

The second point which engaged the attention of the Meeting, was the proposition of Dr. O'Shaughnessy, also submitted at the former assembly of the Society, ' That, in addition to the amount already voted, a sum equal to twelve months' salary be presented by the Society to the widow and orphan daughter of our lamented Secretary, the late Mr. Bell.

Dr. O'Shaughnessy addressed the Meeting in a few impressive words, in support of his proposition, and reminded the Society, that for a period of three or four years, while the Society were low in circumstances,—the late Mr. Bell gave his unremitting energies gratuitously to the advancement of the interests of the Institution; and that now that the Finances were so flourishing, they could well afford to grant to the widow and fatherless child, this substantial proof of respect entertained by the Society, of the worth and services of their deceased Secretary.

Dr. Wallich likewise asked for the grateful sympathy of the members, by giving their support to the vote. The motion was then put from the chair, and carried unanimously.

The President then adverted to a notice of an important motion which had been submitted by Mr. G. Prinsep, to be brought forward at the next Meeting for discussion as that gentleman was unable to be present now. It referred to the reward which the members of the Court of Directors had published to encourage the propagation of the Cochineal insect in their possessions in the East Indies.

NOTICE OF MOTIONS.

No. 1. Proposed by Mr. G. A. Prinsep, seconded by the President, 'That as it appears from documents laid before the Society, that since the year 1807 a resolution of the Court of Directors has continued unrepealed, offering a premium of £2,000 for the introduction of the live Cochineal insect of the fine species into their Indian Territories in a state fit for propagation; application be made to this Government to grant that sum (or 20,000 rupees) to the Society, on the ground of their having, by their arrangements, and at their own expence, effected the object for which that premium was offered by the Company; but under an engagement that the whole sum shall be devoted to the propagation of the Cochineal in different parts of India.'

No. 2. Proposed by the President and seconded by Mr. Piddington, 'That the gentlemen who constituted the *Special* Committee of Finance, be considered a *Standing* Committee for the regulation of all matters connected with the pecuniary transactions of the Society, and that the Assistant Secretary be the Collector of the Society under them, on a salary of fifty rupees a month in addition to his present income of one hundred and fifty rupees.'

The Secretary brought forward a list of gentlemen to be proposed, as members of the Agricultural and Horticultural Society of India. Before the names were read, the President requested to allude to a very interesting letter which he held in his hand from his Excellency the Right Honorable Stewart Mackenzie, Governor of Ceylon, of which the following is the substance. The letter was addressed to the late Secretary.

"*Queen's House, Colombo, Jan.* 17, 1839.

"With regard to your Transactions, I certainly place a very high value upon their publication, and am confident, that by increasing the intercourse throughout the interior of India, and by the continuation and extension of the labours of your own, and similiar Societies, more real good and advancement of the essential comforts, in clothing, and other luxuries, amongst the population of India in general, will be thereby ultimately effected, than has been during our past connexion, with the people of that country. The same doctrine is most applicable also to this island, and if I can open up its resources, by roads, canals, &c., in all directions, and effect the introduction of such an institution as you have recommended, I am well aware how essen-

tially beneficial it would be to this island. It is a vast encouragement to any Society commencing its operations, to have the advantage of communicating freely with one, like the Agricultural Society of India, whose Transactions and Reports you have laid me under so much obligation by presenting to me. The recent establishment here, within the fort, of a small Horticultural Society will, I hope, gradually grow up into one of the character, which you have pointed out.

"I shall feel highly gratified if Sir E. Ryan does me the honor, as you suggest, of proposing me a member of the Agricultural and Horticultural Society of India, though should that be irregular, it will by no means diminish the real interest I take in that most valuable INSTITUTION."

Adverting to the interest thus expressed by His Excellency in promoting the advancement of the great objects of the Society, the President asked whether the Agricultural and Horticultural Society of India would not be testifying their sense of approbation of His Excellency's sentiments as expressed in his letter more fully by enrolling his name among the Honorary Members of the Society, instead of putting him in nomination as an ordinary member. The Meeting approved of the suggestion thrown out by the President, and it was therefore 'Proposed by the President and seconded by Dr. Strong,' that His Excellency the Right Honorable Stewart Mackenzie, be put in nomination as an Honorary Member of this Society.

For election as Ordinary Members.

The Honorable Sir Henry Seton, John Trotter, Esq., C. S., and G. W. Johnson, Esq., Barrister, proposed by the President, and seconded by Dr. Wallich.

Woolriche Whitmore Ryan, Esq., proposed by Dr. Wallich and seconded by Dr. Spry.

Francis Curwen Smith, Esq., C. S., proposed by Dr. Spry, and seconded by T. P. B. Biscoe, Esq.

Wm. Sinclair, Esq. (Chundry, near Maldah,) proposed by Wm. Storm, Esq., and seconded by P. Macarthur, Esq.

J. W. Cragg, Esq., proposed by Wm. Storm, Esq., and seconded by Dr. Spry.

Captain Fenning, Artillery, and Lieutenant Burnett, Artillery, proposed by Dr. Spry and seconded by Dr. Wallich.

Arnold H. Matthews, Esq., (Arumchund, near Allahabad,) proposed by John Donald, Esq. and seconded by Dr. Spry.

Allen Campbell Dunlop, Esq., proposed by D. Hare, Esq. and seconded by Dr. Wallich.

The Annual Report for the past year, on the condition of the Society, was submitted by the Secretary, and will be printed in the monthly proceedings of the Society.

The report of the Cotton Committee recommending the purchase of the better sorts of indigenous cotton seed for transmission to Captain Jenkins, the Governor General's Agent in Assam, was next read.

The award of the Cattle Committee at the exhibition on the 1st instant, was laid on the table.

It was proposed by Mr. Cracroft, seconded by Mr. Piddington, and resolved, ' That the Cattle Committee be requested to lay before the next Meeting for discussion, what prizes they may recommend to be offered for the importation of cattle and sheep, specifying the amount of each, and the description of the animals.'

A list of the prizes awarded to native gardeners at the Annual Horticultural Exhibition on the 1st instant, was also laid on the table.

After this the Secretary circulated round the table, the various presents which had been forwarded for the Library and Museum of the Society.

LIBRARY.

1*st*. *Six copies of "the Report of the Committee, appointed at a Meeting of the Agricultural Society on the* 3*rd day of August* 1838, *to take into consideration the present state and condition of the Colony of Western Australia: embodying a statistical report drawn up to the end of June* 1837, *with a supplement to the close of the year, by His Excellency Sir James Stirling, Governor*." Transmitted by A. Wayler, Esq., Honorary Secretary, on the part of the Western Australian Agricultural Association.

Printed at Perth, Western Australia.

2*nd*. A pamphlet by Mr. H. Piddington, ' *On the Scientific Principles* of *Agriculture, considered as a branch of public education in India;* presented by the author.

3*rd*. *Two copies of ' the proceedings of the Agricultural and Horticultural Society of Bombay;'* presented by the Society.

(*Note*.—From a paragraph in the preface to this report, it would seem that the support which the Agricultural and Horticultural

Society of India derived from the Supreme Government, was over-estimated by the Bombay Society. What the Agricultural and Horticultural Society of India do at present get, is the sum of 2,675 rupees annually.)

4th. A copy of '*Transactions of the Society of Arts,*' Part 2nd, Vol. 51 ; presented by the Society.

5th. '*New England Farmer,*' Vols. 15 and 16 (6 and 7 of New series), presented by Dr. Wallich.

MUSEUM.

1st. Varieties of Barley and Rye, grown on the Estates of several settlers at Swan River ; also, specimens of Wool from 2 Saxon Rams, which were sold at public auction for 8 *and* 10 *guineas :* presented by the Western Australian Agricultural Society.

2nd. A sample of cloth, made from cotton, the produce of seed sent by the Society, to Suddiya, Upper Assam : presented by Dr. Wallich, on behalf of Capt. Jenkins.

3rd. A sample of cotton produced at Hidgelee from Seychelles seed, furnished by the Society : presented by Dr. Alexander Smith.

(*Note.*—The two last named articles were highly approved of by the members who were present. The staple of the latter was considered particularly good.)

4th. Sugar-canes, grown from Otaheite stock, in the garden of the Nizamut at Moorshedabad : presented by Captain Pemberton, Agent to the Governor General, on behalf of his predecessor, Colonel Caulfield.

5th. Specimens of Grain, (*' Ouse Dhan,'*) presented by the Branch Society of Assam.

The thanks of the Meeting were voted to the different donors for their various contributions.

Mr. Piddington submitted for inspection an instrument called Pyknomoter ' for testing the exact point to which sugars of all kinds, whether from cane or goor, should be boiled.' As a proof of the accuracy of this instrument Mr. Piddington states—' that of about twelve thousand maunds of goods, mostly of low quality, (and these are the most liable to failure,) only two hundred and ninety had to be re-boiled.'

COMMUNICATIONS.

1.—*Agricultural Statistics.*

The first communication submitted to the Meeting was a letter from Government, requesting that the Society would undertake the management of the scheme recommended in the Special Report recently made by the Society to the Government as to the best mode of obtaining the price of produce throughout the empire.

To H. SPRY, ESQ., M. D.
Secretary to the Agri-Horticultural Society.

SIR,

I am directed to acknowledge the receipt of your letter dated the 19th instant, submitting the Report of a Special Committee appointed by the Society on the best means of procuring local information in respect to the prices, &c. of agricultural products of India.

2. In reply, I am directed to state, that his Honor the President in Council has ordered the Lithographic Committee to give you the aid of that establishment in preparing forms and statements for circulation to the medical officers, and will be happy to learn, that the Agricultural and Horticultural Society can procure from the medical or any other officers, the information required by the Statistical Committee of Agriculture and Commerce of the Royal Asiatic Society of Great Britain and Ireland. His Honor in Council cannot think that the objects of the Society would be effected with sufficient care by imposing on the public officers, the necessity of furnishing the statements suggested in addition to the business already entailed upon them.

I am, &c.
(Signed) H. T. PRINSEP,
Sec. to the Govt. of India.

Council Camber, Jan. 23, 1839.

The Meeting was not indisposed to undertake the extra labour which the Government had thus delegated to them, and as far as their services went, it should be cheerfully given. The members, however, considered, that the Government in common fairness ought to hold the Society free from any expense, and it was determined, that the Secretary should, before commencing operations, address a letter on the subject to the Chief Secretary, requesting that besides the use of the Government Lithographic Press, which had been placed at the disposal of the Society by his Honor in Council, the trans-

mission of letters free of postage to and from the interior should also be conceded, as well as any other privilege, the withholding of which might cause an expense to the Society.

James Pattle, Esq. therefore proposed, Dr. Wallich seconded, and it was resolved—that the Special Committee remain as now constituted, and give the Society the benefit of their services. Mr. Ewart suggested, that the name of Dr. D. Stewart be added to the Committee, which was done.

2.—*Sugar-Cane from the Island of Otaheite.*

His Excellency Rear Admiral Sir Frederick Maitland announced to the Society through his Secretary, "that Captain Nias, who will on his arrival in India, proceed to New South Wales in H. M. Ship *Herald*, to assume the duties of Senior Naval Officer on the Coast of Australia, will be furnished with a copy of the (late) Secretary's letter, and instructions of the Society for packing the canes, and with His Excellency's orders to further the objects of the Society as therein expressed, as far as the service upon which he is to be employed will admit."

3.—*Caoutchouc and other Products.*

Committee of Agriculture and Commerce of the Royal Asiatic Society.

Professor Royle, Secretary to the Committee of Agriculture and Commerce of the Royal Asiatic Society of Great Britain and Ireland, in a letter to the address of the late Secretary, calls the attention of the Agricultural Society of India to concerns of great importance connected with the resources of the country. The letter and the discussion which ensued, excited great interest.

Royal Asiatic Society, Grafton Street, Bond Street, Oct. 27, 1838.

"You wish to know what are the more immediate objects of our Committee. Its title is a bad one as we cannot here do any thing for the Agriculture of India, except co-operating with and assisting you.

"In Mr. Holt Mackenzie's and my proposal for the formation of this Committee, you will see the general objects touched upon which we contemplated in its formation. On Mr. Mackenzie becoming the Chairman, he addressed the members on the more precise *present* objects of the Committee,—that is, the investigation, chemical examination, and practical application of the different products of India, likely to be useful to manufacturers here. As I have not time myself,

my assistant, Mr. E. Solly, makes a chemical analysis of the different substances we obtain, and then see to what substances, already in use, by manufacturers, they are analogous. They are then presented to manufacturers interested in the kind of product, and these are very willing to submit them to further practical experiments and ascertain if they will answer the purposes of their trade or manufacture. Several very interesting results have already attended this mode of proceeding. I need not allude to the Caoutchouc, which your Society so actively took up, and the zealous and talented officers in Assam have so successfully carried out. You have been addressed on the subject by the Secretary of the Caoutchouc Company, as well as by Mr. Sievier, and I have written to Dr. Spry and previously to Dr. Wallich, who will no doubt make the contents known to your Society as far as they can be of any use to the Society or Collectors. I may repeat that there is not the smallest doubt of this becoming an extensive article of Indian Commerce, if managed with moderate prudence. The London Caoutchouc Company are willing to purchase all that is produced at prices of course proportioned to the quality.

"I have also written to Dr. Spry* for some Burmese varnish (*Chetsee*) which is also found in Munnypore and called Khew, (vide

* *Extract of a letter, from Professor Royle to Dr. Spry.*

London, October 27, 1838.—"There is still some doubt about the Assam caoutchouc as at present prepared whether it is fit for cutting into the finest thread or strong enough for that required for ropes for machinery, &c. But this can only be a doubt for a time as I feel well satisfied that from the quality of the rubber that it will eventually, nay very soon, be prepared of quite as fine, strong, and elastic a quality as the best from Para. Even at the price at present procurable, it must be a remunerating one and it may be nearly doubled or more by careful preparation. I hope you have enlightened the people on the subject of the necessity of preparing it in layers. The process is tedious and laborious if you please, but it is the only manner we at present know in which strength and elasticity are fully attained.

"The bottle or cylindrical form was required because there was no other way of cutting it into threads then known. But a knife has been invented and patented, and which the Caoutchouc Company have bought for £2,500 which enables a person to cut flat pieces into thread with the same facility that you saw done, when in London, with the circular pieces. So that now you may instruct your correspondents to prepare *in flat pieces* if more convenient, as the less bulk it will occupy will be a further advantage in carriage and freight. But be particular in still enforcing the rubber being prepared in layers free from porosity or moisture as in this alone depends the highest price being paid.

Wallich ;) as well as for some wood oil (*Gurjun*) and both Persian and Rangoon Petroleum, if procurable, for the sake of experiment. In the *Athenæum* and *Literary Gazette* you may have seen reports of the analysis by Mr. Solly of the astringent gum of the *Dhak Pulass* or *Butea frondosa*, which is so common all over India. Mr. Brewin, an extensive tanner has called upon me and made trial of some which I recommended to Mr. Beckett late of Allygurh. He approves of it highly and would gladly get 20 tons if he could get any intelligence respecting the price, but I have no doubt it might be afforded at the same rate as Catechu (*Kath*) ; it would be an experiment well worthy trying. If you were to make the fact known of its being in request, residents all over India might be induced to collect it.

"The Barbary wood and root is also in demand here. The supply from the South of Europe fails, and the dyers want it much. We have had some Barbary root from Ceylon tried here. It is pronounced superior to any in the market: I have suggested that the extract which is made in the hills and sold in the bazars by the name of *rasout* might be tried as a dye. Mr. E. Solly's paper on this Barbary will be among the first read when our meetings commence next month, and I shall address you on the subject, as well as on that of the *Butea kino*, which might, I think, also be prepared of a superior quality for medicinal use, as it is particularly eligible from the conjunction of astringent with gummy principles. As the Barbary is no doubt common in the hills near Capt. Jenkins, will you suggest to him the subject as well as of the Butea kino.

"I have written to Dr. Falconer and Capt. Cautley for articles from Northern India.

"You will be tired of all the above instructions ; but I see the people in India complain, first of not knowing in what form a thing is best suited for the market here, when a form is sent and a mode recommended it is found fault with as being tedious and not complied with.

"With respect to the quantities required here I believe there will be no limit to the demand. * *

"If they attempt to raise the price above what is fair it will recoil upon themselves as the South American will immediately be bought and reduce the price again ; and the West India proprietors are growing the caoutchouc tree on their estates. But there is room for all. Has any one thought of my suggestion of planting the *Ficus Elastica* all over the country. It yields good caoutchouc up as high as Saharunpore.

"The *kino* of the Butea or Pulass or Dhak ke gond, is likely to be in great demand."

"The seeds have been received from Dr. A. Campbell and I will make some observation on them on some future occasion."

Dr. O'Shaughnessy begged permission to remark, that he had made *three* of the *four* articles mentioned by Dr. Royle, the subject of extensive experiment. For specimens of the black varnish of Burmah and of Assam, Dr. O'S. was indebted to Dr. Wallich. He applied it to leather, wood and metal, and found that in richness of color, flexibility and impermeability to moisture it was in every respect equal to the article employed by the patent leather manufacturers in Europe. The "*Gurjun*" or "wood-oil" Dr. O'S. observed was properly speaking a balsam obtained from several species of Dipterocarpus, common in many parts of India. By distillation this balsam yields volatile oil, a resin being left behind. The oil Dr. O'S. found to be isomeric or identical in chemical composition with that of the Balsam of Copaiba, and he had accordingly used it extensively in his hospital with exactly the same medicinal effects. He had sent specimens to England by Mr. Johnson of the "*Catherine*" now leaving this port. Not only was this article likely to become of importance in Medicine, but also in the Arts in many of which Copaiba is now used. While Copaiba by the latest "Drug Price Current" was at 5 shillings and 6 pence the lb., twenty lbs. of the essential oil of *Gurjun* may be obtained of the very best quality for about ten shillings.

The *Rasout* alluded to by Dr. Royle and which that gentleman was the first to discover the source, Dr. O'S. stated to abound in a rich and valuable yellow coloring matter. It was moreover of great efficacy in the treatment of intermittent fevers. It would readily be obtained for from 4 to 6*d.* the lb. by proper arrangements in the districts where the Barbary is found.

Two Reports, from Mr. Sievier, Manager of the London Caoutchouc Company, were brought to the notice of the Meeting. (See Appendix, Nos. 1 & 2.)

4.—*Cochineal.*

The Secretary communicated a most acceptable piece of intelligence regarding the prospect of an early supply of fine grained cochineal insects and nopal from the Isle of Bourbon through the kindness of Monsieur Bedier, Commissioner of Marine Affairs at that island.

"J'ai recut tout recemment votre lettre du 39 Aout dernier. Vous n'avez pas à craindre de commettre, d'indiscretion en reclamant de mon zéle pour votre Société. Je vais m'occuper avec M. Richard à vous préparer un nouvel envoi de cochinelle et de nopal, mais afin d'en assurer le succès, nous attendions, pour vous l'expedier le retour de la mousson du S. O. pendant laquelle les traversées d'ici au Bengale sont tres courtes. Il en peu probable que des cochinelles qui vous seraient envoyées dans ce moment pourraient supporter la langueur d'un voyage de plus do 90 jours. Soyez du reste bien convaincu que nous continuerons à vous faire des envois jusqu'au moment où vous serez assuré de la propagation de ce precieux insecte au Bengale, ayant le vif desir de contribuer à procurer à votre immense population cette lucrative et importante culture."

5.—A New Branch Society at Backergunge.

The Secretary read a note from F. Stainforth, Esq., the Judge at Backergunge, communicating the intelligence of the residents at that station being about to establish a Branch Society there, and asking "what assistance the Parent Society is disposed to render."

The Secretary informed the Meeting that as Mr. Stainforth's letter was pressing, he had ventured to reply to it by return of post, and had intimated that the Society would be willing to contribute to the Backergunge Branch Society the support which was afforded to the other Branch Institutions, namely, two silver medals and fifty rupees annually.

6.—Mysore.—School for Gardeners.

A copy of the Proceedings of two Meetings of the Mysore Agri-Horticultural Society was laid before the Society. (See Appendix, No. 3.)

7.—Egypt.—Cotton and Indigo Seed.

A letter was read by the Secretary from Mr. Waghorn at Cairo, offering his services to assist the Society in procuring more cotton and other seeds. Mr. Cracroft spoke of the superiority of the Egyptian Indigo seed, and proposed that a small quantity should be obtained which was agreed to.

A letter from Mr. Chambers, of Calcutta, was submitted by the Secretary, requesting to be supplied with cotton seed for transmission to the Swan River. The Secretary stated, that he had complied with the request, and had furnished Mr. Chambers with a parcel of Seychelles and Egyptian seed.

8.—*Western Australia.*

The letter of Mr. Wayler, Honorary Secretary to the Western Australian Agricultural Society, was also read.

"A communication with India has always been a desire of primary consideration, and its tardy accomplishment has almost precluded expectation in the minds of many. It was anticipated that from that quarter, labor might be drawn to any extent, and it is to the want of such invaluable assistance, that we are making no more rapid progress than we are doing; few will venture to improve or cultivate to the extent of their means, from the uncertainty of gathering the produce of their labors, while the extortionate demands of such of the working class, as may be procured, exhaust the profits of farming operations. Still we *are* progressing, and under such varied disadvantages, at a rate, that is the surprise of all who visit our shores. That many may be induced to become not only visitors, but fellow-colonists, from your less salubrious climate, is the ardent wish of us all."

Before the Meeting broke up, the Secretary called the attention of the Society to the necessity of adopting measures for obtaining a new die for the Society's medals, the present die having a flaw in it. Mr. Cracroft was so good as to mention that as he was about to sail for England shortly, he should be happy to take charge of any commission he might be intrusted with by the Society, that he should willingly attend, at all times to any request he might receive as to the purchase of English seeds and so on, and that as the great expense of a new die for the Society's medals was now the chief consideration, he should be happy, as soon as he reached London, to consult Mr. James Prinsep on the most economical mode of proceeding. The Meeting expressed themselves grateful to Mr. Cracroft for his polite offer, and willingly accepted it.

It should be mentioned that to the whole of the numerous correspondents who had favored the Society with their communications, the thanks of the Meeting were accorded in the order in which they were read.

HENRY H. SPRY, M. D., *Secretary.*

APPENDIX.

No. 1.

London Caoutchouc Company, 36, *King Street, Cheapside,*
14*th Aug.* 1838.

Sir,

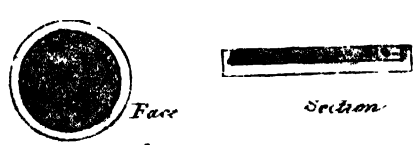
In answer to your communication of the 18th of November, 1837, for which we feel exceedingly indebted, I beg to say there are not at present any works published treating upon the manufacturing properties of Caoutchouc: its notice is solely confined to lectures.

The Company will shortly have the pleasure of sending with this, specimens of the different articles manufactured, and hope the Agricultural Society will favor them with placing the same in their Museum.

In procuring the Caoutchouc for manufacturing purposes, two sorts can be used; one for dissolving for waterproofing fabrics, or for the manufacture of Caoutchouc by destructive distillation: the other for weaving into fabrics, to give them an elastic quality; in the first case it is much better to have it free from bark or extraneous matter, in the second it is absolutely necessary; in fact it is *useless* if not free even from porosity. The mode of manufacture in the second case, is to cut it by circular knives into long and even threads, which are afterwards stretched upon drums to their utmost extent: the least piece of bark or an air-cell will cause it to break.

We can cut it into threads should the Caoutchouc be gathered in the form of a disc, quite as well as if made upon the shape sent by Professor Royle: the bottle shape as alluded to in our former communication, causes considerable waste.

If it should be found more convenient to collect it in the form of a disc, the mould should be in the form of a wooden trencher, but not more than 6 inches in diam. and $\frac{1}{2}$ to $\frac{5}{8}$ of an inch deep—thus



This may be filled by layers put on with a brush, or any other convenient method, layer after layer, until it is $\frac{1}{2}$ to $\frac{5}{8}$ in thickness.

The form sent by Dr. Royle with instructions will save the cutting off of the neck, and is much more suitable to fit the cylinder upon which it is absolutely necessary to place it, previous to cutting.

The disc is cut by a different machine.

I send you a sample of Caoutchouc given to me by George Swinton, Esq. of the India Company's Service, gathered in the Province of Sylhet. I understand from him that it abounds for many hundred miles over the country. This is the best quality I have seen; it might from its colorless quality be made extremely useful in the arts if properly collected. You will perceive upon examination that there are some parts collected colorless and semitransparent: and on other parts of the same mass it is colored, which evidently proceeds from the bark. If you cut the mass through with a sharp knife, it will be better understood, and you will find some pieces of the bark from whence the coloring matter proceeds, if the pieces are taken out and put into water it strongly tinges it. Whether or not the tree when touched should have a portion of the bark removed to prevent this I cannot say, but that it exudes from the tree in a colorless state is quite evident by the samples.

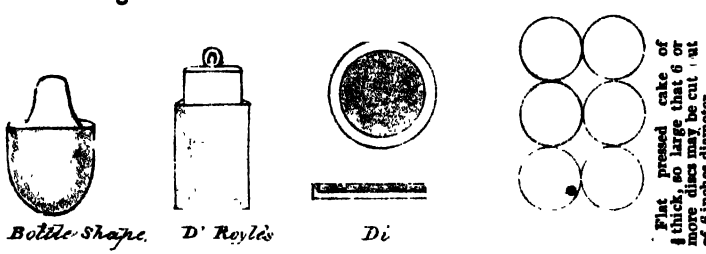
Should it be possible to collect the Caoutchouc in the semitransparent state, it would fetch a high price for varnishes, and could be used in the most delicate tints of portraiture: it would be invaluable to coachmakers by rendering their varnish and colours flexible.

I have by me some of the juice or milk from the Ficus Elastica sent over in a bottle. I find by looking at it through a microscope, that it is composed of small solid angular atoms floating in a serum, in the same manner as you find the red globules of the blood, and that these solid atoms when pressed together or the aqueous part being abstracted by blotting paper so as to bring them into immediate contact, become perfect Caoutchouc fit for immediate use and quite as solid as if dried by inspissation.

This proves that the process of inspissation need not be resorted to, but that the milky juices might be put into bags and pressed by an Hydraulic press precisely in the same manner that spermaceti is obtained from the oil, or stearine from tallow. I should recommend this method to be tried as we should then obtain it perfectly free from air bubbles or dirt.

The exudation from the tree might be collected in barrels, and brought to Calcutta, or any convenient place: there strained through a sieve, and afterwards subjected to the pressure.

On referring to your diagram in your letter you say "Would not Caoutchouc be equally valuable if made on *hollow* earthen vessels" of the bottle form? the South Americans make them precisely the same upon a *solid* clay mould, when a sufficient quantity of Caoutchouc is inspissated upon the surface, a quantity of the moulds with the Caoutchouc upon them are thrown into water, and the clay dissolving is washed out. The form will do for us, but not quite so well as that sent by Dr. Royle. If clay shapes are to be made one would be as easy as the other. You also speak to objections as to the form for the English market. I do not believe it would make any difference if sent in any of the underneath forms, with a breadth proportionate to the length.



The black color shewing the rubber and the yellow, the mould or shape. It would not matter if the large flat mass was 1 inch or 1½ thick.

So great is the demand for Caoutchouc at this time, and I believe it is only as a commencement, that it is a valuable and saleable commodity in any state; its value at present is from 2½*d.* to 2*s.* 3*d.* per ℔. I have no doubt that could a quantity be collected as I have before mentioned in the transparent state, it would reach a price of from 4*s.* to 6*s.* per ℔.

I have the honor to be,
Your most obdt. Servant,
R. W. SIEVIER, *Manager.*

No. 2.

Report of Mr. R. W. Sievier to Dr. Royle.

22nd June, 1838.

I have tried the qualities of the Caoutchouc collected by Captain Veitch, 1st, as a solution for flexible cement, also cut into threads or fibres for the manufacture of elastic fabrics.

I have not yet had time to try what per cent. of Caoutchoucine it will yield by destructive distillation. You will receive with this

3 Bottles of solution marked A, B, C.
3 Samples of the Caoutchouc Do. Do.
3 Ditto ditto, - - - - Thread Do.
3 Ditto ditto, - - - - Strained upon a small reel fit for use.

Two pieces of the Caoutchouc cut thin and placed between two pieces of glass that you may see the different colours—one is transparent, the other opaque. I have tried to exclude the air from them, that they may keep in the same state. The letters A, B, C, are corresponding with the samples of Caoutchouc, viz. Solution marked A, B, C, is from A, B, C, Caoutchouc, as also the thread.

1st. Solution in Naphtha, B and C. These solutions are equal to that made from the best South American Caoutchouc, (Para.) It is better in one respect; viz. it dissolves easier and more Caoutchouc is taken up by the same quantity of spirit.

A will not dissolve so well and is cloudy.

N. B. These initial letters refer to the samples of Caoutchouc collected by Captain Vetch, and so marked by him.

2nd. Thread—for the manufacture of elastic fabrics.

This is by far the most important use that has yet been discovered for Caoutchouc; that from Para has been held in high estimation for this purpose on account of its great purity and strength. You will find a sample of thread from each of the pieces of Caoutchouc A, B, C, also, a piece of A and C cut thin between the glass, that you may see the strata (if so it may be called) that it is forwarded in. C is evidently a number of pieces which have been laid together in a new state and adhered in one mass; and although they are all made in the same manner, and at the same time, there is a considerable difference in their strength, that of the lighter colour being much the best.

A. Thread, on account of so many strata or layers is unserviceable for thread; the layers are very irregular and imperfectly united; this Caoutchouc is opaque, which if gathered from the same tree, and at the same time, is very singular, it makes also the most imperfect solution. (I have examined it with the microscope, which see afterwards.)

B. Thread: when this has had the advantage of six months' exposure to the air, it will be equal to any Caoutchouc from Para*. The

* The Caoutchouc from Para will not work well until it has aged, as we term it.

threads upon the reel have undergone a process which gives them the quality of age, and this marked B is fit for any purpose; this is from sample B.

C. Thread; is a good qualitied Caoutchouc in the lighter coloured strata, as is seen by looking at it through the double glass, but the darker is comparatively rotten, which renders it useless for thread.

I have been obliged in the samples A and C to cut out the bad parts and join the thread at least 40 times in each of the short lengths reeled.

In examining the different parts with a microscope to discover if possible the cause of so much difference in their qualities, I find that A in the lighter parts, which is very strong, is composed more visibly of fibres running lengthways; crossways is represented by the small strips of paper in the sample between the glass. When this Caoutchouc is strained lengthways the fibres are plainly seen by a microscope, having a silky appearance, if stretched crossways in the direction of the strips of paper, the fibre is not half so visible and it quickly breaks. Caoutchouc gathered or inspissated in this manner is perfectly useless for thread.

B. In this hardly any fibre is perceived—it seems a mass.

C. Has but very little.

I have no doubt, if taken up in the East with the spirit it has been begun with, that in a few years the production of Caoutchouc will be as valuable an article to the grower and merchants as indigo. There is still great improvement to be made in the collecting of that sent by Captain Vetch, although it is worth 100 per cent. more than any I have seen sent as an article of commerce from the East Indies.

(Signed) R. W. SIEVIER,
Manager.

P. S. I presume all the samples are collected at the same time and from the same tree, you will remark the great difference in the quality, as well as one being opaque and the other transparent—can this be in the mode of inspissation?

No. 3.

Mysore Agri-Horticultural Society.

To the Secretary to the Agricultural Society of Bengal.

DEAR SIR,

Enclosed I have the pleasure to forward to you a copy of the proceedings of two meetings of the Mysore Agri-Horticultural Society.

I regret that we have lost our late able Secretary Lieut. Munro by the removal of his Regt. from the station; and the loss of many subscribers has very much reduced our means of usefulness; we still hope to be able to continue the Society.

Your's faithfully,

THOS. J. SMITH, *Assistant Surgeon, Secretary.*

Bangalore, January 22, 1839.

At a Meeting of the Subscribers held at the Public Rooms, Bangalore, on Wednesday, 9th January, 1839.

Major General Sir Hugh Gough, K. C. B. in the Chair.

It was Resolved,—That in consequence of a great part of the members of the Committee, including the Treasurer and Secretary, having left or being about to leave the station, the following gentlemen be requested to form the Committee for the year commencing on the 1st January, 1839.

Brigadier Burton,	Captain McCally,
Major Montgomerie, C. B.	,, Cunningham,
,, Stones,	Dr. Boyd.
,, Ley,	

Captain Coffin, *Treasurer.*

Dr. Smith,
Geo. S. Gough, Esq. } *Joint Secretaries.*

The Treasurer submitted his accounts, shewing a balance of Rupees 679-15-5 in favour of the Society to 31st December, 1838.

In consequence of the falling off in the number of members occasioned by so many having left or being about to leave the station, and the consequent low state of the funds, the Patron and Subscribers present at the Meeting, earnestly request a full meeting of the Society on Monday morning the 14th instant, at ½ past 7 o'clock, at the Public Rooms, to form some rules consequent thereon.

Resolved,—That the Officiating Secretary be requested to give publicity to the Rules of the Society amongst the new arrivals at the station and to request those who wish to avail themselves of the advantages of the garden, or to support so useful an institution to send in their names as subscribers to him.

(Signed) WILLIAM MUNRO,

Officiating Secretary.

At a Meeting of the Subscribers held at the Public Rooms on Monday 14th January, 1839.

Present.—Major General Sir Hugh Gough, K. C. B., Brigadier Burton, Major Montgomerie, C. B., Captains McCally, Coffin, Bingham, Whittock, Western, Lieutenants Munro and Gabbett; Drs. Mouat, Smith and Parkison; Rev. G. Trevor, Geo. S. Gough, Esq.

Major General Sir Hugh Gough, K. C. B. in the Chair.

Captain Coffin having stated his inability to take the office of Treasurer, Captain McCally was elected, and the Rev. G. Trevor, Captain Bingham and Captain Western added as Members of the Committee.

Proposed—Brigadier Burton, Seconded—Major Montgomerie, C.B.

That the cordial thanks of the Society be presented to Lieutenant Munro, H. M. 39th Regiment, for his constant and assiduous exertions in the service of the Society, and this Meeting desires to record its grateful sense of the many obligations under which they are placed by the zeal displayed by him on behalf of this institution, which is mainly indebted to him both for its original formation and its subsequent and increasing prosperity.

The Meeting desires also to record its high sense of the services of their late Treasurer Major Ley, who with Lieutenant Munro was one of its earliest supporters, and one of the warmest friends of the Society.—Carried unanimously.

Proposed—Dr. Mouat, Seconded—Lieutenant Munro.

That the sale of fruits and vegetables be in the first instance confined to the Members of the Society, and that the Committee be authorized to take measures if necessary for limiting the other advantages of the Society to Subscribers.—Carried unanimously.

Proposed—Rev. G. Trevor, Seconded—Brigadier Burton.

That in consequence of constant applications to the Secretary for gardeners from all parts of the country, the Committee be requested to make arrangements for instructing such boys as are desirous to learn gardening and to establish a school for this purpose in the garden.—Carried unanimously.

Proposed—Captain Coffin, Seconded—Captain Whittock.

That the thanks of the Meeting be given to Major General Sir H. Gough, K. C. B. for his obliging conduct in the Chair.

THOS. J. SMITH, *Assistant Surgeon, Secretary.*

Bangalore, Jan. 22, 1839.

PROCEEDINGS

OF THE

AGRICULTURAL AND HORTICULTURAL SOCIETY OF INDIA.

APRIL,

1839.

CALCUTTA :

PRINTED AT THE BAPTIST MISSION PRESS,

CIRCULAR ROAD.

1839.

AGRICULTURAL SOCIETY OF INDIA.

PROCEEDINGS.

APRIL 10, 1839.

Agricultural Society of India.

A General Meeting was held at the Society's Rooms, Town Hall, on Wednesday, the 10th April, 1839.

The Hon'ble Sir E. Ryan, President, in the Chair.

The Proceedings of the last Meeting were read and confirmed.

MEMBERS ELECTED.

The following Gentlemen proposed at the last Meeting were elected Members:

Charles Cardew, John Hughes, Allen Webb, C. J. Richards, Arthur Smelt, and W. H. Elliott, Esqrs., and Lieut. James Wemyss.

MOTIONS OF WHICH NOTICE WAS GIVEN AT THE LAST MEETING.

The Motion, No. 1, which stood for discussion, was one by Mr. Piddington, "That the Secretary be authorised to incur the small expense necessary to provide for the formation of a cabinet of soils"—was carried.

Motion, No. 2, by Mr. W. P. Grant, that the Society restrict the prizes offered for bulls in the current year, to bulls of the Devonshire breed, was lost.

The names of the following Gentlemen were read, as candidates for election at the next General Meeting:

W. S. Hudson, Esq. (Deputy Collector at Mymunsing), proposed by Dr. Spry, seconded by Mr. Storm.

W. C. Braddon, Junr. Esq., (Firm of Bagshaw and Co.) proposed by Dr. Spry, seconded by Dr. Wallich.

Geo. Hill, Esq., proposed by Dr. Spry, seconded by Mr Storm.

J. C. Kiernan, Esq., proposed by Mr. G. F. Speed, seconded by Mr. Storm.

The President called attention to the Report of the Cattle Committee, which was then read. *(Vide Appendix.)*

Approaching Exhibition of Horticultural Prize Fruits.

The Secretary next submitted a schedule of prizes for the best fruits to be exhibited at a show which is fixed to take place early next month (May), of which due notice will be given.

LIBRARY.

A copy (No. 9) of the Journal of the Royal Asiatic Society of Great Britian and Ireland, was presented on the part of the Society.

MUSFUM.

Horticultural and Floricultural Department.

1.—A basket of five Apples, weighing collectively 29 ounces, from the garden of Mr. Finch, at Shahpore Oondee, in Tirhoot, presented by Mr. Finch.

2.—A basket of two Pears, grown in the garden of Mr. Charles Steer, at Kishnagur.

The above fruits were much admired for their beauty and flavour.

3.—A fine specimen of Beet Root, grown in the garden of Mr. Barlow, at Hidgellee, with a memorandum of the mode of preparation, drawn up by that gentleman, presented by Dr. Smith, on behalf of Mr. Barlow.

4.—A bag containing 32 lbs. Lucerne Seed, presented by Colonel C. C. Smyth, of the Cavalry.

5 & 6.—Two packets of the celebrated Prangos Seed, of Moorcroft, and a small packet of Melon Seed, from Iskardoh, forwarded by Dr. Falconer, from Thibet and Cashmere.

7.—A parcel containing five pieces of manufactured Mazunguree Silk, and a specimen of the plant (Adhakoree Tetranthera), on which the worm (Phalæna Cynthia?) thrives, presented by Dr. Wallich on the part of Captain Jenkins.

8 & 9.—Two parcels of mixed Dahlia Seeds, from Lieut. Kirke, and another containing Oenothera Mutabilis—from the same officer—all from the valley of the Dhoon.

10 & 11.—Four plants of the tree yielding the fine black varnish called Thpet-tsee, *(Melanarrhæa usitata, Wall.)* and two plants of a

very pretty flower, Clorodendron Squamatum,—presented by Captain Macfarquhar at Tavoy.

These plants had just been landed from the Ganges Steamer. The varnish plants were dead, but the flower plants were alive and transferred to the nursery.

12.—A box containing four fine Mango Trees, commonly known as the Bombay Mango, presented by Captain Talbot at Bareilly. *Made over to the nursery.*

13.—A specimen of cotton grown in the Mymensingh Districts, presented by Mr. Hudson, Deputy Collector.

The cotton was very short in staple and pronounced to be of a very inferior quality.

14.—A specimen of Wood of the Dummer Tree,—presented by F. P. Strong, Esq.

ASSAM TEA.—*Despatch of the Court of Directors to the Bengal Government.*

The subject which next engaged the attention of the Meeting was the despatch from the Court of Directors, which had been placed at the disposal of the Agricultural Society by the Bengal Tea Committee, regarding the cultivation and quality of the Teas grown in the Province of Assam, forwarded from this country in February last year.

REVENUE DEPARTMENT.—No. 12 of 1838.

Our Governor General of India in Council.

1. We now reply to Paras. 49 to 52 of your letter dated the 12th March, 1838, together with the letters and paras. noted on the margin*, in which you bring under our consideration your further proceeding respecting the cultivation of Tea in Upper Assam.

* 30th Jan., 1837, Paras. 18 to 29.
3rd April, 1837, ,, 11 to 20.
4th Sept., 1837, ,, 29 to 34.
20th Oct., 1837, ,, 38 to 43.
12th Feb., 1838, (whole) No. 5.
26th Ditto, 1838, (do.) ,, 6.

2. The knowledge attained by Mr. Bruce, the Superintendent of Tea Culture, with respect to the proper mode of manufacturing the Tea, and the further discoveries made by him and others of the existence of extensive plantations, especially with reference to the fact that the genuine Green Tea plant of China is indigenous to the

Singfoo Country, is highly important and very satisfactory, and we approve of your having authorized the Tea Committee to procure persons from China, acquainted with the peculiar process of Green Tea manufacture. We have forwarded to the Royal Asiatic Society, copies of the printed report by Mr. Bruce, received with your letter of the 26th February, 1838, and have otherwise circulated the tract as suggested by you.

3. We submitted the samples of Tea received with your letter dated the 12th February, 1838, to several Houses of the first character in the London trade, and also to Mr. John Reeves, formerly the East India Company's Tea Inspector in Canton; and, from the replies received, we are enabled to furnish you with the following opinions and observations thereon. First crops Muttuck Teas forwarded by the Tea Committee under date the 12th December, 1837, and marked

(A) Souchong No. 1, Majoo Gohynes, shady tract.

(B) Do. No. 1, Chubwa, sunny ditto.

(C) Souchong No. 1, Deenjoy, ditto.

(D) Paho No. 3, Tingri, shady ditto.

(A) "This Tea is somewhat similar in appearance to the Tea denominated Hung Maey; it has some well made and well twisted leaf, but is too unequal in size from the mixture of large leaves."

(B) "Is a differently made Tea more approaching to Congou, or Souchong Congou kind; it has a dull brownish and rather broken leaf mixed with pale leaves; these latter should be picked out, and then it might be called *Congou**; a brighter black and more perfect leaf is desirable."

* This sample appears the worst of the four, but the quantity is too small to form a correct opinion.

(C) "Is a somewhat similar Tea, but better of the kind; has a good proportion of *well* made and well twisted leaf in it, but a proportion also of pale leaves which should be picked out." "The leaf is too brown, but it is larger and better made than B."

(D) "This, though called Pekoe, is similar to A; the leaf too large, unequal, and brown for Pekoe Tea; the ends of the smaller leaves (the Pekoe) are of a yellow cast instead of white, but there is in this a good proportion of well made leaf. The downy ends are too short; the flavor is light and pleasant, but the strength of A is wanting. The leaves of all the above (A, B, C, and D,) shew after infusion that they are good and young; those of A and D appear like Pekoe, and of B and C like good Congou."

4. The samples above commented on formed enclosure No. 9 in your letter to us dated the 12th February, 1838.

'Assam Ka-hung Souchong, 2d Crop, shady tract, in cannister, forwarded by Tea Committee, under date the 30th December, 1837.

5. This sample, the largest sent, formed enclosure No. 15 in your letter above quoted, and is thus reported on.

"This sample holds out a prospect of being convertible into a useful Tea. There is a large proportion of well twisted leaf in it, but, like the others the leaf is too unequal in size, to be duly appreciated in this country: if more white leaf was left in, it *might* pass for a Pekoe Tea. It is a dull, brownish, blackish leaf, possessing good strength and good flavor though musty, but the leaf is considerably too large and ought to have a bright nearly black appearance, instead of the dullness it has." "The defects of this Tea are, 1st a deadness or dullness of appearance; 2dly, a great inequality in the size of the leaves, being what the Chinese would call Tachar and Son Tea; 3dly, a mixture of pale leaves. The first might probably be got rid of, and a greater brightness of leaf produced, by a longer continuance of rubbing while the Teas are being fired in the pans; the brightness of Tea in the Green Teas is thus produced. The inequality of size may be remedied by cutting down the large leaves as the Chinese do with the larger leaves of the Green Tea when they want to make *Young Hyson*, and thus bring the Tea to a more even appearance. The pale leaves must be picked out, as the Trade set themselves at present very decidedly against mixed leaf Teas."

Assam Souchong, forwarded by Mr. Bruce, from Suddeya, under date the 11th Aug. 1837.

6. This sample formed enclosure No. 19, in your letter before quoted, and is reported to be:

"A much inferior Tea and will only rate as low Congou, the leaf is large and coarse,"—"uneven, dull, brownish, blackish, mixed with largish palish leaves, and has less of the well made leaf, and is more of the Congou kind. It has a little smokey smell and flavour, which probably arises from the charcoal not having burnt clear," or "as though it had been cured with green wood. The expanded leaf after immersion does not look so young or so good as the other samples."

7. On the whole, we consider the samples sent very encouraging, and we have much satisfaction in being enabled to add that, although the quantity of each sort is considerably too small for the purpose of forming an accurate judgment of their relative value, we

are assured by the respectable parties to whom we submitted the samples, that Teas of this kind, if properly manufactured and packed, would be readily purchased for consumption in this country.

8. Particular care should be taken that the wood is of such a description as will not communicate any scent to the Tea; we find that the leaf of all the samples we received "possesses much substance, and though so large and full grown, yet, when expanded, appears to be young, and therefore has all the necessary qualifications for forming a useful Tea."

9. It is suggested by Mr. Reeves, from whose report, which is concurred in by two of the principal Houses in the Tea Trade, we have, for the most part, quoted, that it might be "better to confine the manufacture to one denomination, and call that *Congou*, letting the young shoots of the leaves expand on the trees until the hair is off them, and mixing them with the others which would give strength and body to the Tea, or a small portion might be gathered in the less expanded state and be called 'Pekoe;' the first mode would probably be the best in a commercial point of view, say to make only one sort, and that Congou, and thus form a good black-leafed Tea, such as the Tea trade want just now."

10. We are informed that the samples received from you may be valued relatively as follows:

A—1*s.* 10*d.* to 2*s.* per lb. B—1*s.* 5*d.* ,, C—1*s.* 6*d.* ,, D—1*s.* 7*d.* ,,	The Muttock, enclosure, (No. 9.)
——1*s.* 8*d.* to 1*s.* 10*d.* per lb.	Assam Ka-hung Souchong, 2d crop, shady tract, enclosure, (No. 15.)
——1*s.* 3*d.* the lowest price for common Congou.	Assam Souchong from Suddeya, enclosure, (No. 19.)

11. With respect to the manufacture, in addition to the remarks already transcribed, we transmit to you some observations by Mr. Reeves on the mode adopted by the Chinese, together with his remarks on Mr. Bruce's account of the manufacture in Assam, which you will forward for the information of the Tea Committee.

12. We know that the establishment employed by Mr. Bruce is comparatively small for the undertaking, and that having only two Tea makers, he states he is unable "to collect the Tea leaves at the proper season, the time occupied for gathering at one place is so great that the leaves become too old before he can reach another

plantation," and this circumstance may account for some of the remarks introduced by Mr. Reeves.

13. We observe, however, that you have, to a certain extent, provided for this; but, although we do not hesitate to sanction the expense incurred on this account, as well as the addition to the salary of Mr. Bruce and other pecuniary arrangements hitherto reported to us, it must be borne in mind that the establishment must not be increased beyond what is absolutely necessary to bring the trial to a fair practical issue; which, when generally known, the speculation will doubtless be taken up with avidity by the Commercial Capitalist.

14. We are informed that the cultivation and manufacture of Tea has of late years been very much attended to in Java, and that the produce is sent to the Netherlands, where it finds a ready market.

15. We are aware that in the former reports received from you on this subject, allusion was made by Mr. Gordon, to the fact that Tea was grown and manufactured in Java, South America, St. Helena, &c.; but that it had been looked upon as a failure, owing to the want of a proper altitude above the sea and other requisites which are found in the district of Assam.

16. We are led to believe, however, that good samples of Tea are exported from Java, the leaves of which are well twisted, and closely resemble the Tea received in this country from Canton, and that the flavours are pronounced by the trade to be for the most part "good to fine."

17. It may therefore not be unworthy of inquiring how far the mode of manufacture in Java assimilates with that pursued at Assam or in China.

18. With respect to the packing and the particular description of Tea most likely to suit the London Market, considering the importance of the subject, we have deemed it advisable to transmit to you by the ships named in the margin, two quarter chests of the best chops made by Howqua for the East India Company*, namely, one of Ee Hop and one of Ee Fat. These will guide the manufacturers in Assam, as to the size and colour of the leaf, and the best and most approved mode of packing.

* This Tea is still made by Howqua, but of an inferior quality.

19. When you find yourselves in a condition to do so, you will ship six quarter chests of Tea approaching as nearly the description of the chests now sent to you as practicable and similarly packed, and you will consign them to Mr. William James Thompson, of Dunster

Court, Mincing Lane, to whom we shall give directions to offer them to the Trade. Previously to which however, or simultaneously with it, you will send to us, as a number in the Packet, not less than a quarter chest of the same Tea, in order that we may test the same before we permit any of it to be offered for sale.

20. We are disposed to concur with you in opinion, that the prospect of introducing Tea into this country, grown and manufactured in our own territories, is highly encouraging, and we may hope that, with due attention and perseverance, the objects contemplated by us in the first view we took of the subject may without much apprehension, be considered as in a fair way of attainment.

21. We desire that you will communicate to the Tea Committee, to Mr. Bruce, to Mr. McClelland, and Dr. Griffiths, our approbation of the zeal and ability they have evinced, the former in the conduct of this experiment, generally, and the three gentlemen above named in particular for the able reports they have respectively furnished on the subject.

We are,
Your affectionate Friends,
(Signed) J. L. LUSHINGTON.
R. JENKINS.
H. SHANK.
J. PETTY MUSPRATT.
JOHN SHEPHERD.
J. WARDEN.
JOHN MASTERMAN.
WM. YOUNG.
HY. ST. G. TUCKER.
HY. ALEXANDER.
T. THORNHILL.
GEORGE LYALL,
JOHN COTTON.

London, 26th September, 1838.

The attention which is now engaging the minds of Commercial Capitalists on the subject of this new speculation makes it desirable, in the opinion of the Society, that the utmost publicity should be given to the measures in course of adoption for establishing this lucrative and inviting culture, and in returning the thanks of the Meeting to the Tea Committee for their communication, the Secretary was fur-

ther requested to solicit copies of minutes of proceedings which the Committee themselves have adopted up to the present time, as the Secretary of the Committee had intimated " that he should be most happy to communicate to the Society, copies of such other interesting documents as they may receive connected with the Tea culture in this country."

Establishment of a Public Garden at Secundra, near Agra.

A communication from the Commissioner at Agra was read, intimating that a Public Garden had been formed at Secundra, and placed under the care of Mr. Kaine, formerly of the Saharunpoor Establishment. The area at Secundra is described to contain excellent soil, with good water, and promises to be a most advantageous nursery for the supply of the country round. The Commissioner's application to have seeds sent to him, had been, the Secretary mentioned, complied with, and a large assortment of every kind in the Society's Museum despatched to the address of the Superintendent of the Public Gardens by the last Steamer.

Prangos and Melon Seeds from Thibet and Cashmere.

Dr. Falconer in a highly interesting despatch to the Secretary, communicates the despatch by dâk of a small packet containing melon seeds from Iskardoh, and some excellent seeds of the Prangos Pabularia or Prangos grass of Moorcroft, collected by Dr. Falconer, in his recent tour through the valley of Cashmere and Thibet. The melons are described to be of an excellent quality and have a most delicious flavour, like Bokhara and Yarkund, they enjoy a high reputation throughout the neighbouring countries. The Prangos Pabularia Dr. Falconer found growing extensively around the valley in Cashmere, occupying the sloping sides of hills, also in vast abundance in the valley of Goress upon the Kishna Gunga between Cashmere and Thibet, and in the country of Hussoorah or Astore, which occupies the eastern side of the Indus opposite Ghilgit. He says that it is every where known by the name of Prangos, and its celebrity in these countries is chiefly owing to the search which has been made after it by Europeans. Neither in Cashmere nor in Goress, nor in Iskardoh, nor at any point where Dr. Falconer came upon it could he find out that it was collected as a winter forage for cattle or sheep.

In Cashmere the Affghans are said in certain seasons of the year, to feed their horses on it for a short time as part of a course of

training, but if the seeds happen to be given to any extent they lead to blindness.

Dr. Falconer did not visit Droz, where Moorcroft chiefly collected it, (vide vol. 1, Transactions of the Agricultural and Horticultural Society of India,) but he gathered all the information he could regarding it, and in that part of Thibet, Dr. Falconer pronounces the Prangos plant a most valuable production.

The reconcilement of Dr. Falconer's experience with the observations of the lamented Moorcroft appears to be thus—" the country about Droz is exceedingly bare and bleak, in the expressive phrase used to me in describing it—*sokhteh—sunglah—a burnt up tract of rocks*—and the sides of the hills leave very little grass or other herbage convertible into fodder but are sheeted over with the Prangos and a species of Artemesia, and the Thibetians, in the absence of other herbage, are compelled to collect these plants, which nature, with a kind provision, has endowed to a considerable extent with nutritious qualities. But in the other parts of Thibet, where I went, as at Goress and Astore, there is great abundance of the grasses and other rich herbage; and the Prangos, although also in abundance, is neglected. The same is the case in Cashmere." With regard to its prophylactic virtues against rot in sheep, as described by Moorcroft, Dr. Falconer was unable to obtain any satisfactory proof.

Dr. Falconer in conclusion of his valuable communication mentions his intention of forwarding a collection of fruit trees from the public gardens at Saharunpore for the Society.

Further illustration of the Resources of Assam.

On behalf of Captain Jenkins, Dr. Wallich presented to the Society a very valuable communication from that officer, consisting of an original paper with an English translation annexed, together with five pieces of the Mezangurree silk to which the paper relates. Also two specimens of the *Adakhoree Tetranthera*, on which the worm producing this sort of silk feeds.

This variety of silk manufacture is highly esteemed by the Assamese gentlemen, and the native Member of the Society, who furnishes the account, states that the produce from 1000 cocoons is generally estimated at 20 tolahs of silk (nearly half pound), and the price which the silk fetches is from 6 to 8 rupees a seer.

Darjeling.

Colonel Lloyd, in a letter to the Secretary, states that Cotton is largely cultivated by the hill people in Sekim, and by the Meehees, who inhabit the forest at the foot of the Mountains, but that the plant is of a very inferior description. In consequence of this, Colonel Lloyd applies for seeds of different descriptions for introduction into these States. The Secretary stated that he had complied with Colonel Lloyd's requisition and forwarded to him an extensive assortment of Cotton seeds.

For the various presents and communications, offered on this occasion, the thanks of the Society were given to their respective Donors.

HENRY H. SPRY, *M. D.*,
Secretary.

APPENDIX

REPORT OF THE CATTLE COMMITTEE.

The primary object contemplated by the institution of the Cattle Committee was "to improve the breed of Cattle in India." This *improvement* consists, mainly in an endeavour to raise the fattening qualities the indigenous bullock as well as to obtain a greater abundance of milk.

The indigenous breed of India excel in beauty of symmetry and the possession of great capabilities for draught, besides the valuable quality of a ready adaptation to a rough and scanty fare.

The terms of the Resolution require your Committee to specify the description of the animals they may deem best calculated for their purpose. To set about the work in safety it is necessary to take the experience of cattle breeding in England for a guide, as it is in that country that the greatest attention has hitherto been paid to the *art* of breeding. There, experience has shown that the reasonableness of assumed notions have not in all cases been borne out,—indeed there is no fact more certainly ascertained than this, that crossing a breed even with a better one does not necessarily improve it, on the contrary, great mischief has been done by injudicious crossing.

With this experience for their guide, your Committee are desirous of exercising the utmost caution in their mode of procedure in encouraging the importation of foreign breeds.

While your Committee therefore are desirous of avoiding any charge of partiality towards the countries whence they wish to derive

Cattle, and, in a Catholic spirit, have laid the exhibition open to Africa, America, Europe and Australia, yet it must not be concealed that the well known merits of the English breeds induce your Committee to lean with a favorable bias towards that quarter.

The extraordinary qualities of the Short Horns, would at first point to this class of Cattle as the one of all others best calculated for your Committee's purpose, but this breed, from physical causes, could not probably be maintained in this country; nor perhaps in the present low state of Agricultural husbandry is it desirable. The same objection might apply to the Long Horns. The Polled Cattle are hardy and good, but butchers object to their meat.

The next class Cattle that we look to is the middle horn breed, and here your Committee think a reasonable hope may be entertained of finding those qualities most likely to supply the deficiencies in the indigenous breeds;—*the grand secret of breeding being, to suit the breed to the soil and climate.*

Where the ground is not too heavy the Devonshire Oxen are unrivalled at the plough, and the climate is the mildest in England. They have a quickness of action which no other breed can equal, and which very few horses exceed. During harvest time, and in *catching weather*, they are sometimes trotted along with the empty waggons at the rate of six miles an hour, a degree of speed which no other English Ox but the Devon has been able to stand. They possess moreover great docility of temper and also stoutness and honesty for work. Their next quality is their disposition to fatten, and in this respect very few rival them, they do not indeed attain the great weight of some breeds, but, in a given time, they acquire more flesh, and *with less consumption of food,* and the flesh is beautiful in its kind; —it is of that mottled, marbled character so pleasing to the eye as well as to the taste. Some very satisfactory experiments have been made on this point.

Here then your Committee think they possess a quality much wanted in this country, for although no beef can be better tasted than that of the small (Guanee) bullocks of India, yet your Committee have reason to believe that they are by no means economical Beeves to fatten.

Your Committee are thus explicit and somewhat prolix in this, their Report, in order to explain to those who have not yet given the subject much attention, why it is, your Committee desire to encourage the importation of Cattle from England.

Your Committee have purposely abstained from allotting prizes

for imported Cows, in as much as the improvement of the *indigenous* breed is the object sought, and not the introduction of an entire new class;—this can only be effected by the constant influx of bulls, and to this point your Committee have confined their attention in the Cattle Department.

The money prizes allotted may appear at first large, but your Committee have been led to fix these sums in consequence of the heavy demand made as "passage money" for bulls, and think sufficient encouragement would not be held out unless they dealt thus liberally.

For the same reasons that your Committee have excluded the appropriation of prizes to imported Cows, do they exclude Merino Ewes, and beg therefore now to submit for the Society's consideration their Schedule of prizes for the year 1839; which if approved of, they beg to recommend should be advertized in the London Times Newspaper, for the information of those persons, residing in England, who may take an interest in promoting the Agricultural husbandry of India, that copies be also sent to the Royal Asiatic Society of Great Britain and Ireland, and to Capt. Grindlay's East India Rooms, St. Martin's Place, and that it be also advertized in the Indian Newspapers.

(Signed) WM. STORM.
WM. F. GIBBON.
CHARLES HUFFNAGLE.
C. R. PRINSEP.
W. P. GRANT.
NATH. ALEXANDER.

Schedule of Prizes for Cattle of various kinds to be exhibited at the annual show on the 1st February, 1840.

IMPORTED NEAT CATTLE.

1st.—For the best imported Bull of the year 1839, not less than two years old,—a Premium of 500 Rs. and the Gold Medal.

2nd.—For the second best imported Bull of the year 1839,—not less than two years old,—a Premium of 400 Rs. and the Silver Medal.

The same for the year 1841.

NOTE.—(A Preference will be shown to the Devonshire, or Middle-horned Bull.)

PRODUCE.

3rd.—For the best produce of Imported Cattle,—a Premium of 250 Rs., and the Gold Medal.

4th.—For the second best produce of Imported Cattle,—a Premium of 200 Rs. and the Silver Medal.

5th.—For the best *Bull* Calf, of any denomination calved in 1839, —the Gold Medal.

6th.—For the best *Cow* Calf, of any denomination calved in 1839, —the Silver Medal.

SHEEP.

1st.—For the best imported Woolled Merino Ram of the year 1839,—not less than two years old,—a Premium of 200 Rs. and the Gold Medal.

2nd.—For the second best imported Woolled Merino Ram of the year 1839,—not less than two years old,—a Premium of 150 Rs. and the Silver Medal.

The same for the year 1841.

3rd.—For the best pen of Merino Ewes to the number of six,—a Premium of 100 Rs. and the Silver Medal.

4th.—For the best thorough bred Merino *Ram* Lamb, lambed in 1839,—the Gold Medal.

5th.—For the best thorough bred Merino *Ewe* Lamb, lambed in 1839,—the Silver Medal.

6th.—For the best Lamb, either Ram or Ewe, cross of a Merino Ram and an indigenous Ewe, lambed in 1839,—the small Silver Medal.

CONDITIONS.

1st.—The competition is open to stock from any part of the world.

2nd.—The Pedigree and age of the stock, so far as known, must be given.

3rd.—The Committee of the Society appointed to conduct the arrangements for the show, will appoint skilful persons to act as Judges.

4th.—The Committee reserve to themselves the right of withholding any of the above awards, should the numbers of either class brought forward be insufficient in their opinion to establish a legitimate competition, or in the opinion of the Judges from inferiority, not be deserving of a prize.

PROCEEDINGS

OF THE

AGRICULTURAL AND HORTICULTURAL SOCIETY OF INDIA.

APRIL,

1839.

CALCUTTA:

PRINTED AT THE BAPTIST MISSION PRESS,

CIRCULAR ROAD.

1839.

AGRICULTURAL SOCIETY OF INDIA.

PROCEEDINGS.

APRIL 10, 1839.

Agricultural Society of India.

A General Meeting was held at the Society's Rooms, Town Hall, on Wednesday, the 10th April, 1839.

The Hon'ble Sir E. Ryan, President, in the Chair.

The Proceedings of the last Meeting were read and confirmed.

MEMBERS ELECTED.

The following Gentlemen proposed at the last Meeting were elected Members:

Charles Cardew, John Hughes, Allen Webb, C. J. Richards, Arthur Smelt, and W. H. Elliott, Esqrs., and Lieut. James Wemyss.

MOTIONS OF WHICH NOTICE WAS GIVEN AT THE LAST MEETING.

The Motion, No. 1, which stood for discussion, was one by Mr. Piddington, "That the Secretary be authorised to incur the small expense necessary to provide for the formation of a cabinet of soils"—was carried.

Motion, No. 2, by Mr. W. P. Grant, that the Society restrict the prizes offered for bulls in the current year, to bulls of the Devonshire breed, was lost.

The names of the following Gentlemen were read, as candidates for election at the next General Meeting:

W. S. Hudson, Esq. (Deputy Collector at Mymunsing), proposed by Dr. Spry, seconded by Mr. Storm.

W. C. Braddon, Junr. Esq., (Firm of Bagshaw and Co.) proposed by Dr. Spry, seconded by Dr. Wallich.

Geo. Hill, Esq., proposed by Dr. Spry, seconded by Mr Storm.

J. C. Kiernan, Esq., proposed by Mr. G. F. Speed, seconded by Mr. Storm.

The President called attention to the Report of the Cattle Committee, which was then read. *(Vide Appendix.)*

Approaching Exhibition of Horticultural Prize Fruits.

The Secretary next submitted a schedule of prizes for the best fruits to be exhibited at a show which is fixed to take place early next month (May), of which due notice will be given.

LIBRARY.

A copy (No. 9) of the Journal of the Royal Asiatic Society of Great Britian and Ireland, was presented on the part of the Society.

MUSEUM.

Horticultural and Floricultural Department.

1.—A basket of five Apples, weighing collectively 29 ounces, from the garden of Mr. Finch, at Shahpore Oondee, in Tirhoot, presented by Mr. Finch.

2.—A basket of two Pears, grown in the garden of Mr. Charles Steer, at Kishnagur.

The above fruits were much admired for their beauty and flavour.

3.—A fine specimen of Beet Root, grown in the garden of Mr. Barlow, at Hidgellee, with a memorandum of the mode of preparation, drawn up by that gentleman, presented by Dr. Smith, on behalf of Mr. Barlow.

4.—A bag containing 32 lbs. Lucerne Seed, presented by Colonel C. C. Smyth, of the Cavalry.

5 & 6.—Two packets of the celebrated Prangos Seed, of Moorcroft, and a small packet of Melon Seed, from Iskardoh, forwarded by Dr. Falconer, from Thibet and Cashmere.

7.—A parcel containing five pieces of manufactured Mazunguree Silk, and a specimen of the plant (Adhakoree Tetranthera), on which the worm (Phalæna Cynthia?) thrives, presented by Dr. Wallich on the part of Captain Jenkins.

8 & 9.—Two parcels of mixed Dahlia Seeds, from Lieut. Kirke, and another containing Oenothera Mutabilis—from the same officer—all from the valley of the Dhoon.

10 & 11.—Four plants of the tree yielding the fine black varnish called Theet-tsee, *(Melanarrhœa usitata, Wall.)* and two plants of a

very pretty flower, Clorodendron Squamatum,—presented by Captain Macfarquhar at Tavoy.

These plants had just been landed from the Ganges Steamer. The varnish plants were dead, but the flower plants were alive and transferred to the nursery.

12.—A box containing four fine Mango Trees, commonly known as the Bombay Mango, presented by Captain Talbot at Bareilly. *Made over to the nursery.*

13.—A specimen of cotton grown in the Mymensingh Districts, presented by Mr. Hudson, Deputy Collector.

The cotton was very short in staple and pronounced to be of a very inferior quality.

14.—A specimen of Wood of the Dammer Tree,—presented by F. P. Strong, Esq.

ASSAM TEA.—*Despatch of the Court of Directors to the Bengal Government.*

The subject which next engaged the attention of the Meeting was the despatch from the Court of Directors, which had been placed at the disposal of the Agricultural Society by the Bengal Tea Committee, regarding the cultivation and quality of the Teas grown in the Province of Assam, forwarded from this country in February last year.

REVENUE DEPARTMENT.—No. 12 of 1838.

Our Governor General of India in Council.

1. We now reply to Paras. 49 to 52 of your letter dated the 12th March, 1838, together with the letters and paras. noted on the margin*, in which you bring under our consideration your further proceeding respecting the cultivation of Tea in Upper Assam.

* 30th Jan., 1837, Paras. 18 to 29.
3rd April, 1837, ,, 11 to 20.
4th Sept., 1837, ,, 29 to 34.
20th Oct., 1837, ,, 38 to 43.
12th Feb., 1838, (whole) No. 5.
26th Ditto, 1838, (do.) ,, 6.

2. The knowledge attained by Mr. Bruce, the Superintendent of Tea Culture, with respect to the proper mode of manufacturing the Tea, and the further discoveries made by him and others of the existence of extensive plantations, especially with reference to the fact that the genuine Green Tea plant of China is indigenous to the

Singfoo Country, is highly important and very satisfactory, and we approve of your having authorized the Tea Committee to procure persons from China, acquainted with the peculiar process of Green Tea manufacture. We have forwarded to the Royal Asiatic Society, copies of the printed report by Mr. Bruce, received with your letter of the 26th February, 1838, and have otherwise circulated the tract as suggested by you.

3. We submitted the samples of Tea received with your letter dated the 12th February, 1838, to several Houses of the first character in the London trade, and also to Mr. John Reeves, formerly the East India Company's Tea Inspector in Canton; and, from the replies received, we are enabled to furnish you with the following opinions and observations thereon. First crops Muttuck Teas forwarded by the Tea Committee under date the 12th December, 1837, and marked

(A) Souchong No. 1, Majoo Gohynes, shady tract.

(B) Do. No. 1, Chubwa, sunny ditto.

(C) Souchong No. 1, Deenjoy, ditto.

(D) Paho No. 3, Tingri, shady ditto.

(A) "This Tea is somewhat similar in appearance to the Tea denominated Hung Maey; it has some well made and well twisted leaf, but is too unequal in size from the mixture of large leaves."

(B) "Is a differently made Tea more approaching to Congou, or Souchong Congou kind; it has a dull brownish and rather broken leaf mixed with pale leaves; these latter should be picked out, and then it might be called *Congou**; a brighter black and more perfect leaf is desirable."

* This sample appears the worst of the four, but the quantity is too small to form a correct opinion.

(C) "Is a somewhat similar Tea, but better of the kind; has a good proportion of *well* made and well twisted leaf in it, but a proportion also of pale leaves which should be picked out." "The leaf is too brown, but it is larger and better made than B."

(D) "This, though called Pekoe, is similar to A; the leaf too large, unequal, and brown for Pekoe Tea; the ends of the smaller leaves (the Pekoe) are of a yellow cast instead of white, but there is in this a good proportion of well made leaf. The downy ends are too short; the flavor is light and pleasant, but the strength of A is wanting. The leaves of all the above (A, B, C, and D,) shew after infusion that they are good and young; those of A and D appear like Pekoe, and of B and C like good Congou."

4. The samples above commented on formed enclosure No. 9 in your letter to us dated the 12th February, 1838.

Assam Ka-hung Souchong, 2d Crop, shady tract, in canister, forwarded by Tea Committee, under date the 30th December, 1837.

5. This sample, the largest sent, formed enclosure No. 15 in your letter above quoted, and is thus reported on.

"This sample holds out a prospect of being convertible into a useful Tea. There is a large proportion of well twisted leaf in it, but, like the others the leaf is too unequal in size, to be duly appreciated in this country: if more white leaf was left in, it *might* pass for a Pekoe Tea. It is a dull, brownish, blackish leaf, possessing good strength and good flavor though musty, but the leaf is considerably too large and ought to have a bright nearly black appearance, instead of the dullness it has." "The defects of this Tea are, 1st a deadness or dullness of appearance; 2dly, a great inequality in the size of the leaves, being what the Chinese would call Tachar and Son Tea; 3dly, a mixture of pale leaves. The first might probably be got rid of, and a greater brightness of leaf produced, by a longer continuance of rubbing while the Teas are being fired in the pans; the brightness of Tea in the Green Teas is thus produced. The inequality of size may be remedied by cutting down the large leaves as the Chinese do with the larger leaves of the Green Tea when they want to make *Young Hyson*, and thus bring the Tea to a more even appearance. The pale leaves must be picked out, as the Trade set themselves at present very decidedly against mixed leaf Teas."

Assam Souchong, forwarded by Mr. Bruce, from Suddeya, under date the 11th Aug. 1837.

6. This sample formed enclosure No. 19, in your letter before quoted, and is reported to be:

"A much inferior Tea and will only rate as low Congou, the leaf is large and coarse,"—"uneven, dull, brownish, blackish, mixed with largish palish leaves, and has less of the well made leaf, and is more of the Congou kind. It has a little smokey smell and flavour, which probably arises from the charcoal not having burnt clear," or "as though it had been cured with green wood. The expanded leaf after immersion does not look so young or so good as the other samples."

7. On the whole, we consider the samples sent very encouraging, and we have much satisfaction in being enabled to add that, although the quantity of each sort is considerably too small for the purpose of forming an accurate judgment of their relative value, we

are assured by the respectable parties to whom we submitted the samples, that Teas of this kind, if properly manufactured and packed, would be readily purchased for consumption in this country.

8. Particular care should be taken that the wood is of such a description as will not communicate any scent to the Tea; we find that the leaf of all the samples we received "possesses much substance, and though so large and full grown, yet, when expanded, appears to be young, and therefore has all the necessary qualifications for forming a useful Tea."

9. It is suggested by Mr. Reeves, from whose report, which is concurred in by two of the principal Houses in the Tea Trade, we have, for the most part, quoted, that it might be "better to confine the manufacture to one denomination, and call that *Congou*, letting the young shoots of the leaves expand on the trees until the hair is off them, and mixing them with the others which would give strength and body to the Tea, or a small portion might be gathered in the less expanded state and be called 'Pekoe;' the first mode would probably be the best in a commercial point of view, say to make only one sort, and that Congou, and thus form a good black-leafed Tea, such as the Tea trade want just now."

10. We are informed that the samples received from you may be valued relatively as follows:

A—1*s.* 10*d.* to 2*s.* per lb.
B—1*s.* 5*d.* ,,
C—1*s.* 6*d.* ,, } The Muttock, enclosure, (No. 9.)
D—1*s.* 7*d.* ,,

——1*s.* 8*d.* to 1*s.* 10*d.* per lb. { Assam Ka-hung Souchong, 2d crop, shady tract, enclosure, (No. 15.)

——1*s.* 3*d.* { the lowest price for common Congou. } Assam Souchong from Suddeya, enclosure, (No. 19.)

11. With respect to the manufacture, in addition to the remarks already transcribed, we transmit to you some observations by Mr. Reeves on the mode adopted by the Chinese, together with his remarks on Mr. Bruce's account of the manufacture in Assam, which you will forward for the information of the Tea Committee.

12. We know that the establishment employed by Mr. Bruce is comparatively small for the undertaking, and that having only two Tea makers, he states he is unable "to collect the Tea leaves at the proper season, the time occupied for gathering at one place is so great that the leaves become too old before he can reach another

plantation," and this circumstance may account for some of the remarks introduced by Mr. Reeves.

13. We observe, however, that you have, to a certain extent, provided for this; but, although we do not hesitate to sanction the expense incurred on this account, as well as the addition to the salary of Mr. Bruce and other pecuniary arrangements hitherto reported to us, it must be borne in mind that the establishment must not be increased beyond what is absolutely necessary to bring the trial to a fair practical issue; which, when generally known, the speculation will doubtless be taken up with avidity by the Commercial Capitalist.

14. We are informed that the cultivation and manufacture of Tea has of late years been very much attended to in Java, and that the produce is sent to the Netherlands, where it finds a ready market.

15. We are aware that in the former reports received from you on this subject, allusion was made by Mr. Gordon, to the fact that Tea was grown and manufactured in Java, South America, St. Helena, &c.; but that it had been looked upon as a failure, owing to the want of a proper altitude above the sea and other requisites which are found in the district of Assam.

16. We are led to believe, however, that good samples of Tea are exported from Java, the leaves of which are well twisted, and closely resemble the Tea received in this country from Canton, and that the flavours are pronounced by the trade to be for the most part "good to fine."

17. It may therefore not be unworthy of inquiring how far the mode of manufacture in Java assimilates with that pursued at Assam or in China.

18. With respect to the packing and the particular description of Tea most likely to suit the London Market, considering the importance of the subject, we have deemed it advisable to transmit to you by the ships named in the margin, two quarter chests of the best chops made by Howqua for the East India Company*, namely, one of Ee Hop and one of Ee Fat. These will guide the manufacturers in Assam, as to the size and colour of the leaf, and the best and most approved mode of packing.

* This Tea is still made by Howqua, but of an inferior quality.

19. When you find yourselves in a condition to do so, you will ship six quarter chests of Tea approaching as nearly the description of the chests now sent to you as practicable and similarly packed, and you will consign them to Mr. William James Thompson, of Dunster

Court, Mincing Lane, to whom we shall give directions to offer them to the Trade. Previously to which however, or simultaneously with it, you will send to us, as a number in the Packet, not less than a quarter chest of the same Tea, in order that we may test the same before we permit any of it to be offered for sale.

20. We are disposed to concur with you in opinion, that the prospect of introducing Tea into this country, grown and manufactured in our own territories, is highly encouraging, and we may hope that, with due attention and perseverance, the objects contemplated by us in the first view we took of the subject may without much apprehension, be considered as in a fair way of attainment.

21. We desire that you will communicate to the Tea Committee, to Mr. Bruce, to Mr. McClelland, and Dr. Griffiths, our approbation of the zeal and ability they have evinced, the former in the conduct of this experiment, generally, and the three gentlemen above named in particular for the able reports they have respectively furnished on the subject.

We are,
Your affectionate Friends,
(Signed) J. L. LUSHINGTON.
R. JENKINS.
H. SHANK.
J. PETTY MUSPRATT.
JOHN SHEPHERD.
J. WARDEN.
JOHN MASTERMAN.
WM. YOUNG.
HY. ST. G. TUCKER.
HY. ALEXANDER.
T. THORNHILL.
GEORGE LYALL,
JOHN COTTON.

London, 26th September, 1838.

The attention which is now engaging the minds of Commercial Capitalists on the subject of this new speculation makes it desirable, in the opinion of the Society, that the utmost publicity should be given to the measures in course of adoption for establishing this lucrative and inviting culture, and in returning the thanks of the Meeting to the Tea Committee for their communication, the Secretary was fur-

ther requested to solicit copies of minutes of proceedings which the Committee themselves have adopted up to the present time, as the Secretary of the Committee had intimated "that he should be most happy to communicate to the Society, copies of such other interesting documents as they may receive connected with the Tea culture in this country."

Establishment of a Public Garden at Secundra, near Agra.

A communication from the Commissioner at Agra was read, intimating that a Public Garden had been formed at Secundra, and placed under the care of Mr. Kaine, formerly of the Saharunpoor Establishment. The area at Secundra is described to contain excellent soil, with good water, and promises to be a most advantageous nursery for the supply of the country round. The Commissioner's application to have seeds sent to him, had been, the Secretary mentioned, complied with, and a large assortment of every kind in the Society's Museum despatched to the address of the Superintendent of the Public Gardens by the last Steamer.

Prangos and Melon Seeds from Thibet and Cashmere.

Dr. Falconer in a highly interesting despatch to the Secretary, communicates the despatch by dâk of a small packet containing melon seeds from Iskardoh, and some excellent seeds of the Prangos Pabularia or Prangos grass of Moorcroft, collected by Dr. Falconer, in his recent tour through the valley of Cashmere and Thibet. The melons are described to be of an excellent quality and have a most delicious flavour, like Bokhara and Yarkund, they enjoy a high reputation throughout the neighbouring countries. The Prangos Pabularia Dr. Falconer found growing extensively around the valley in Cashmere, occupying the sloping sides of hills, also in vast abundance in the valley of Goress upon the Kishna Gunga between Cashmere and Thibet, and in the country of Hussoorah or Astore, which occupies the eastern side of the Indus opposite Ghilgit. He says that it is every where known by the name of Prangos, and its celebrity in these countries is chiefly owing to the search which has been made after it by Europeans. Neither in Cashmere nor in Goress, nor in Iskardoh, nor at any point where Dr. Falconer came upon it could he find out that it was collected as a winter forage for cattle or sheep.

In Cashmere the Affghans are said in certain seasons of the year, to feed their horses on it for a short time as part of a course of

training, but if the seeds happen to be given to any extent they lead to blindness.

Dr. Falconer did not visit Droz, where Moorcroft chiefly collected it, (vide vol. 1, Transactions of the Agricultural and Horticultural Society of India,) but he gathered all the information he could regarding it, and in that part of Thibet, Dr. Falconer pronounces the Prangos plant a most valuable production.

The reconcilement of Dr. Falconer's experience with the observations of the lamented Moorcroft appears to be thus—" the country about Droz is exceedingly bare and bleak, in the expressive phrase used to me in describing it—*sokhteh—sunglah—a burnt up tract of rocks*—and the sides of the hills leave very little grass or other herbage convertible into fodder, but are sheeted over with the Prangos and a species of Artemesia, and the Thibetians, in the absence of other herbage, are compelled to collect these plants, which nature, with a kind provision, has endowed to a considerable extent with nutritious qualities. But in the other parts of Thibet, where I went, as at Goress and Astore, there is great abundance of the grasses and other rich herbage; and the Prangos, although also in abundance, is neglected. The same is the case in Cashmere." With regard to its prophylactic virtues against rot in sheep, as described by Moorcroft, Dr. Falconer was unable to obtain any satisfactory proof.

Dr. Falconer in conclusion of his valuable communication mentions his intention of forwarding a collection of fruit trees from the public gardens at Saharunpore for the Society.

Further illustration of the Resources of Assam.

On behalf of Captain Jenkins, Dr. Wallich presented to the Society a very valuable communication from that officer, consisting of an original paper with an English translation annexed, together with five pieces of the Mezangurree silk to which the paper relates. Also two specimens of the *Adakhoree Tetranthera*, on which the worm producing this sort of silk feeds.

This variety of silk manufacture is highly esteemed by the Assamese gentlemen, and the native Member of the Society, who furnishes the account, states that the produce from 1000 cocoons is generally estimated at 10 tolahs of silk (nearly half pound), and the price which the silk fetches is from 6 to 8 rupees a seer.

Darjeling.

Colonel Lloyd, in a letter to the Secretary, states that Cotton is largely cultivated by the hill people in Sekim, and by the Mechees, who inhabit the forest at the foot of the Mountains, but that the plant is of a very inferior description. In consequence of this, Colonel Lloyd applies for seeds of different descriptions for introduction into these States. The Secretary stated that he had complied with Colonel Lloyd's requisition and forwarded to him an extensive assortment of Cotton seeds.

For the various presents and communications, offered on this occasion, the thanks of the Society were given to their respective Donors.

HENRY H. SPRY, *M. D.*,
Secretary.

APPENDIX.

REPORT OF THE CATTLE COMMITTEE.

The primary object contemplated by the institution of the Cattle Committee is "to improve the breed of Cattle in India." This *improvement* consists, mainly in an endeavour to raise the fattening qualities of the indigenous bullock as well as to obtain a greater abundance of milk.

The indigenous breed of India excel in beauty of symmetry and the possession of great capabilities for draught, besides the valuable quality of a ready adaptation to a rough and scanty fare.

The terms of the Resolution require your Committee to specify the description of the animals they may deem best calculated for their purpose. To set about the work in safety it is necessary to take the experience of cattle breeding in England for a guide, as it is in that country that the greatest attention has hitherto been paid to the *art* of breeding. There, experience has shown that the reasonableness of assumed notions have not in all cases been borne out,—indeed there is no fact more certainly ascertained than this, that crossing a breed even with a better one does not necessarily improve it, on the contrary, great mischief has been done by injudicious crossing.

With this experience for their guide, your Committee are desirous of exercising the utmost caution in their mode of procedure in encouraging the importation of foreign breeds.

While your Committee therefore are desirous of avoiding any charge of partiality towards the countries whence they wish to derive

Cattle, and, in a Catholic spirit, have laid the exhibition open to Africa, America, Europe and Australia, yet it must not be concealed that the well known merits of the English breeds induce your Committee to lean with a favorable bias towards that quarter.

The extraordinary qualities of the Short Horns, would at first point to this class of Cattle as the one of all others best calculated for your Committee's purpose, but this breed, from physical causes, could not probably be maintained in this country; nor perhaps in the present low state of Agricultural husbandry is it desirable. The same objection might apply to the Long Horns. The Polled Cattle are hardy and good, but butchers object to their meat.

The next class Cattle that we look to is the middle horn breed, and here your Committee think a reasonable hope may be entertained of finding those qualities most likely to supply the deficiencies in the indigenous breeds;—*the grand secret of breeding being, to suit the breed to the soil and climate.*

Where the ground is not too heavy the Devonshire Oxen are unrivalled at the plough, and the climate is the mildest in England. They have a quickness of action which no other breed can equal, and which very few horses exceed. During harvest time, and in *catching weather*, they are sometimes trotted along with the empty waggons at the rate of six miles an hour, a degree of speed which no other English Ox but the Devon has been able to stand. They possess moreover great docility of temper and also stoutness and honesty for work. Their next quality is their disposition to fatten, and in this respect very few rival them, they do not indeed attain the great weight of some breeds, but, in a given time, they acquire more flesh, and *with less consumption of food*, and the flesh is beautiful in its kind; —it is of that mottled, marbled character so pleasing to the eye as well as to the taste. Some very satisfactory experiments have been made on this point.

Here then your Committee think they possess a quality much wanted in this country, for although no beef can be better tasted than that of the small (Guanee) bulloçks of India, yet your Committee have reason to believe that they are by no means economical Beeves to fatten.

Your Committee are thus explicit and somewhat prolix in this, their Report, in order to explain to those who have not yet given the subject much attention, why it is, your Committee desire to encourage the importation of Cattle from England.

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for imported Cows, in as much as the improvement of the *indigenous* breed is the object sought, and not the introduction of an entire new class;—this can only be effected by the constant influx of bulls, and to this point your Committee have confined their attention in the Cattle Department.

The money prizes allotted may appear at first large, but your Committee have been led to fix these sums in consequence of the heavy demand made as "passage money" for bulls, and think sufficient encouragement would not be held out unless they dealt thus liberally.

For the same reasons that your Committee have excluded the appropriation of prizes to imported Cows, do they exclude Merino Ewes, and beg therefore now to submit for the Society's consideration their Schedule of prizes for the year 1839; which if approved of, they beg to recommend should be advertized in the London Times Newspaper, for the information of those persons, residing in England, who may take an interest in promoting the Agricultural husbandry of India, that copies be also sent to the Royal Asiatic Society of Great Britain and Ireland, and to Capt. Grindlay's East India Rooms, St. Martin's Place, and that it be also advertized in the Indian Newspapers.

(Signed) WM. STORM.
WM. F. GIBBON.
CHARLES HUFFNAGLE.
C. R. PRINSEP.
W. P. GRANT.
NATH. ALEXANDER.

Schedule of Prizes for Cattle of various kinds to be exhibited at the annual show on the 1st February, 1840.

IMPORTED NEAT CATTLE.

1st.—For the best imported Bull of the year 1839, not less than two years old,—a Premium of 500 Rs. and the Gold Medal.

2nd.—For the second best imported Bull of the year 1839,—not less than two years old,—a Premium of 400 Rs. and the Silver Medal.

The same for the year 1841.

NOTE.—(A Preference will be shown to the Devonshire, or Middle-horned Bull.)

PRODUCE.

3rd.—For the best produce of Imported Cattle,—a Premium of 250 Rs., and the Gold Medal.

4th.—For the second best produce of Imported Cattle,—a Premium of 200 Rs. and the Silver Medal.

5th.—For the best *Bull* Calf, of any denomination calved in 1839, —the Gold Medal.

6th.—For the best *Cow* Calf, of any denomination calved in 1839, —the Silver Medal.

SHEEP.

1st.—For the best imported Woolled Merino Ram of the year 1839,—not less than two years old,—a Premium of 200 Rs. and the Gold Medal.

2nd.—For the second best imported Woolled Merino Ram of the year 1839,—not less than two years old,—a Premium of 150 Rs. and the Silver Medal.

The same for the year 1841.

3rd.—For the best pen of Merino Ewes to the number of six,—a Premium of 100 Rs. and the Silver Medal.

4th.—For the best thorough bred Merino *Ram* Lamb, lambed in 1839,—the Gold Medal.

5th.—For the best thorough bred Merino *Ewe* Lamb, lambed in 1839,—the Silver Medal.

6th.—For the best Lamb, either Ram or Ewe, cross of a Merino Ram and an indigenous Ewe, lambed in 1839,—the small Silver Medal.

CONDITIONS.

1st.—The competition is open to stock from any part of the world.

2nd.—The Pedigree and age of the stock, so far as known, must be given.

3rd.—The Committee of the Society appointed to conduct the arrangements for the show, will appoint skilful persons to act as Judges.

4th.—The Committee reserve to themselves the right of withholding any of the above awards, should the numbers of either class brought forward be insufficient in their opinion to establish a legitimate competition, or in the opinion of the Judges from inferiority, not be deserving of a prize.

PROCEEDINGS

OF THE

AGRICULTURAL AND HORTICULTURAL SOCIETY OF INDIA.

JULY,

1839.

CALCUTTA:

PRINTED AT THE BAPTIST MISSION PRESS,

CIRCULAR ROAD.

1839.

PROCEEDINGS.

JULY 10, 1839.

Agricultural Society of India.

A General Meeting was held at the Society's Rooms, Town Hall, on Wednesday, the 10th July, 1839.

(Fifteen Members Present.)

C. K. Robison, Esq. Vice President, on taking the Chair announced the regret of the Hon'ble the President at being unable from other business to attend.

Dr. Wallich informed the Meeting that he had, for the day, undertaken to officiate for the Secretary who was prevented from being in his place by indisposition.

The Proceedings of the last Meeting were then read and confirmed.

MEMBERS ELECTED.

The Gentlemen proposed at the last Meeting were elected Members of the Society; viz

Messrs. H. T. Stewart, J. W. Laidlay, A. K. Lindesay, H. Falconer, M. D., Arch. Sconce, L. J. H. Grey, R. C. Halkett and Lieut. Col. Presgrave.

FOR ELECTION.

The names of the following gentlemen were read as candidates for election at the next Meeting:—

Colonel Thomas Fiddes (Town Major)—proposed by Dr. Spry, seconded by Mr. C. K. Robison.

H. C. Halkett, Esq. C. S. (Jessore)—proposed by Mr. W. H. L. Rainey, seconded by Dr. Spry.

F. Lowth, Esq. C. S. (Jessore)—proposed by Mr. W. H. L. Rainey, seconded by Dr. Spry.

F. Courjon, Esq. of Comillah—proposed by Mr. John Allan, seconded by Mr. W. Storm.

Lieut. J. Eliot, (Artillery, Akyab)—proposed by Dr. E. W. Clarributt, seconded by Dr. Spry.

W. P. Downing, Esq.—proposed by Dr. Spry, seconded by Dr. Wallich.

A. S. Annand, Esq. (Magistrate and Collector at Tipperah)—proposed by Mr. Charles Cardew, seconded by Dr. Spry.

Frederick A. Lushington, Esq. (Joint Magistrate and Deputy Collector at Moorshedabad)—proposed by Mr. Alexander Beattie, seconded by Mr. C. J. Richards.

PRESENTATIONS TO THE SOCIETY.

LIBRARY.

Two copies of the second volume of the Farmer's Cabinet—*Presented by the Philadelphia Society for promoting Agriculture.*

MUSEUM AND NURSERY.

A few varieties of Maize, and a small quantity of Grass and other Seeds—*Presented by the Philadelphia Society for promoting Agriculture.*

A small quantity of Pernambuco, Peruvian and Fernando Po Cotton seed, grown at the Palmasdeeah Plantation, near Sook Saugor —*Presented by Mr. L. Quantin.*

Two grafts of Orange trees and two grafts of Pear trees—*Presented by Nawaub Tohowerjung.*

A fresh supply of Cactus plant with Cochineal from the Isle of Bourbon—*Presented by Mons. Richard,* Superintendent of the Botanical Garden at that Island.

Note.—Dr. Wallich stated that the *Plant* had arrived in excellent condition, but he regretted to say there were very few insects alive on them. He begged of members who might have any practical knowledge of the treatment of the insect to assist him with their advice.

MOTION OF WHICH NOTICE WAS GIVEN AT THE LAST MEETING.

The motion proposed at the last Meeting by Mr. Piddington, seconded by Mr. Robison,—That with a view of aiding the labours of

those scientific gentlemen at home who have interested themselves on the subject of an interchange of plants between Asia and Europe, a Committee be formed for the purpose of suggesting such plants and trees as may be thought desirable for introduction into India, and those that can be furnished in return,—was the subject which first engaged the attention of the Meeting.

Mr. Piddington in addressing the Meeting, as the proposer of the above motion, stated that he did not consider it necessary for him to say much on the subject,—as the object to which it had reference was one, the utility of which, could not fail to be recognized by every member of the Society; yet he begged to call the attention of the meeting to a few staple articles of commerce, among many others that might be named if time permitted, which appeared to him to require some slight comment. In the first place, he would allude to that great staple of Indian Commerce, Indigo. We had now for many years been cultivating the Asiatic species, without endeavoring to discover whether the Indigos of other countries might not possess equal if not superior qualities. Mr. Piddington then mentioned the African and American varieties as being superior both for production and for manufacturing purposes, and instanced the Egyptian Indigo and that of the Caraccas,—the latter, he had found, by experiments on a large scale, to be a species of Indigo from which it is scarcely possible to make a bad colour; and reckoning the loss on a crop, on account of its inferiority in colour, at the moderate rate of 5 per cent. what a saving would be effected by the culture of that species, which would afford a good colour. Mr. Piddington then went into detail to prove that the plant that is now so largely cultivated in India, is not, by any means the best variety.

The several sorts of Oil seeds were next alluded to by Mr. Piddington. The African Sesamum, which gives a greater produce of oil than the common black sort:—the White Sesamum of Southern India, and several other varieties of this highly useful product, which might be successfully introduced.

The trees producing Gums of several qualities were then adverted to. In the vast tracts throughout India, in many parts the Babool only grew;—now if we could introduce those trees which produce the Gum Senegal, Gum Arabic, &c. &c. which are so well known to give a price in the market very much beyond that obtained for the Gums now cultivated, what great advantages would be conferred on the country! The subject of an interchange of plants

between Asia and other parts of the world was one which had engaged the attention of the Society many years ago, and Mr. Piddington reminded the Members of the Circular which was issued in the year 1832 regarding it. In addition to the foregoing, Mr. Piddington alluded to several other articles of commercial value, and stated in conclusion, that the Society would doubtless have it in its power to aid materially those gentlemen at home who had undertaken the inquiry, and he would therefore beg to propose that a Committee be appointed for that purpose.

The Meeting having taken the subject into consideration agreed that the following gentlemen be now requested to form themselves into a Committee, with power to add to their number:—Drs. Wallich and O'Shaughnessy, Baboo Ramcomul Sein, Major Carter, Messrs. Storm, Robison, Willis, Watson, Piddington, D. W. H. Speed, Johnson, Cowie and Dr. Spry.

NOTICE OF MOTION.

Proposed by Major Carter, seconded by Mr. Piddington,—

"That the sum of five hundred rupees be assigned for obtaining from abroad a quantity of Seed Corn, for distribution or sale. The amount of each description to be determined by the Committee or Society."

REPORT OF THE COTTON COMMITTEE.

Dr. Wallich read to the Meeting a report drawn up by the Cotton Committee on the only samples of Cotton, which had been submitted to compete for the Medals of the Society.—*(See Appendix.)*

In connection with this Report, and with reference to the wish of the Members of the Committee, for more detailed information on the mode of culture, &c. of the trees, from which the above samples of Cotton had been produced,—the following extract of a letter from Mr. Quantin, dated from Palmasdeeah Plantation near Sook Sangor, in reply to the application of the Secretary, was brought to the notice of the Meeting.

"I have only one Peruvian Cotton tree, which was 21 feet high, which gave me 360 pods, and had not the storm blown down the tree, I would have collected about 100 pods more. As the tree is blown down, I have cut off all the branches and left the stalk only, which is thriving well; the soil is mixed, a little sandy; the trees I

had left to chance, only watered several times during the severity of the weather, March, April, and May. The sample ticketted "Peruvian Cotton, second year's growth," *is the produce of the former year's trees not cut down.*" Mr. Quantin proposes extending the cultivation.

AGRICULTURAL CAPABILITIES OF THE PROVINCE OF MERGUI.

Dr. Wallich read to the Meeting an interesting communication from Dr. Helfer, dated Mergui, May 28th, to the address of the Secretary.—After offering his services to the Society in any way they may be available in that quarter, Dr. Helfer adds,—

"The Tenasserim Provinces being the Southern and Eastern-most of the Presidency of Bengal, participate much more of the nature of the Malay countries and of Indo-China at the same time, than of India proper, and have consequently many productions peculiar to them not to be found in the rest of India. The Southern parts, and chiefly Mergui province must, according to its latitude, be already included within the cyclus of intertropical countries, the violence of the monsoon being already broken, and a more equally distributed rain to a uniform approaching series of seasons assimilating it to the climate of Penang and Singapore.

"Hence also the productions of these countries promise to thrive well in these parts, and I have instituted an experimental introduction of the Clove and Nutmeg Tree. Should these succeed, they could with great probability from here be transported to a more northern latitude, gradual acclimatisation being the great secret in the introduction of foreign vegetable productions. In this way for instance, the Date tree has been gradually brought from the Deserts of Arabia into the secluded valleys of Geneva where it now blossoms and produces fruit.

"And so we may hope that the valuable Spices of the Molluccas after having made their first stage at Penang, and their second at Mergui, their third at Moulmein, may finally be introduced into Bengal.

"The true Cajeput Oil tree is growing in abundance in these parts; should the Society wish any number of seedlings for introduction in Bengal, I will be happy to send them.

"As Coffee thrives beautifully in these Provinces a supply of *sprouting* Coffee seeds would be highly desirable for distribution among the Natives. All the Coffee hitherto sent *dry* proved a failure, the power of germination was extinct."

Experimental Plantation Near Amherst Town.—Intended Introduction of Chinese Labourers into the Tenasserim Provinces.

Mr. Blundell, Commissioner in the Tenasserim Provinces, in a letter dated Maulmain, 10th June, acknowledges the receipt of a consignment of Seeds forwarded by the Society in April last:—"Every thing," writes Mr. Blundell, "reached me in perfect safety; the Coffee Plants in especial fine order. The Cotton Seeds have, I regret to say, nearly all proved bad, with the exception of the Malta Cotton. These and Maize are the only seeds that have yet been put in the ground, the other being reserved till the strength of the Monsoon is passed. My friend Mr. Riley has taken charge of all these Seeds and Plants at his Establishment near Amherst Town, and he will duly report the result of his experiments. I heartily wish we had a few more individuals here to engage in Agricultural pursuits, but doubtless if Mr. Riley succeeds, others will soon follow. One great advantage enjoyed here is the adaptation of the climate to the European constitution;—land is abundant and of every description, but on the other hand the price of labour is enormous, owing to our very scanty population. Mr. Riley proposes to obviate this by the introduction of Chinese labourers from the Straits."

Report of the Progress made in the Garden of the Branch Agricultural Society at Saugor.

Capt. White, Secretary to the Branch Agricultural Society, lately established at Saugor, Central India, gives the following interesting particulars relative to the progress of their Institution:—"A European has been employed as a Superintendant, and to keep a diary of proceedings, as well as of the productions of the Garden. The Coffee plants, of which there are a great number, thrive exceedingly well and bear berries, although this year not in such profusion as in general. We are anxious to know, whether the berries have to undergo any particular process in the drying before being

burnt for use. The Otaheite Sugar Canes are large and luxuriant, and a small quantity of goor has been made therefrom by way of experiment. The Cotton is very productive; the Georgia has not succeeded so well as anticipated: this probably may be owing to their having been planted in the wrong season. The Arracan Tobacco, will, I have no doubt, be speedily acclimated, and become very fine; at present the leaf is small. The Rhubarb seeds from Dr. Wallich have been sown and vegetated, but I much fear the plants will not thrive, having been put into the ground only last month, and I should think the proper period to be the commencement of the cold season (October.)" With regard to Horticultural experiments, Captain White adds—" The vegetable productions have not been noted in the Society's Garden; in that of Sir Thomas Anburey's several very large Cabbages from Cape seed (Drum-head) were produced; the largest weighed 19 lbs., the stock cut short and without a single green leaf: in circumference it was 39 inches. The Tomatas are the largest I have ever seen, or heard of: one weighed 42 Co.'s Rs., and was 17 inches in circumference. The Leeks have been most carefully cultivated, and are not only in great abundance but very fine, the weight 1¼ lbs., circumference 7 inches, and length 13 inches, entirely white. The Lettuces of every description exceedingly large; a Coss Lettuce weighed nearly 1½ lbs. divested of the green leaves. Parsnips of a very large size, are still in the General's Garden; the seed did not vegetate very freely, but what did come up have thriven wonderfully well, and some have just shewn the appearance of going to seed. The Scorzonaira I expect next year will be very fine; one small bed has seeded very freely, and the few roots we tasted were exceedingly good, resembling very much in flavor to Artichoke bottoms. Of the American Seeds, the Squash, Pumpkin, Mangul Wurzel and the different kinds of Radishes have vegetated, the bush and long green Squash are very luxuriant, and appear to be a very delicate and delicious vegetable."

Climate and Capabilities of the Province of Chota Nagpore.

The next communication read to the Meeting, was one from Major Steel, in charge of the Ramghur Local Battalion. This gentleman, in a letter dated Dorunda, Chota Nagpore, May the 13th, thus expresses himself: " The climate is cool and agreeable

during the night; in the day an occasional hot wind prevails; but never long,—the winds have been too variable. The people are an honest, simple race, but as superior in integrity to the other inhabitants I have met with as possible. Any thing might be made of them, and I feel convinced the soil contains great practicabilities. If you can supply me with some Cotton, Coffee and Tobacco, I shall be most happy to distribute them to some of the most intelligent Zemindars, so as to be able to give you an account of the results, as well as some of the best Sugar Canes that you have at your disposal." "The capabilities of these Provinces appear to me to require only to be proved to render it a place of much more consequence than it has hitherto attained in the eyes of the commercial community."

A large supply of different kinds of seeds has been forwarded to Major Steel.

Great Extension of Cane Culture in the Districts of Azimghur, Benares and Jaunpore.

Dr. Lindesay, Civil Surgeon at Benares, in a letter dated May 15, speaks most highly of the flourishing state and rapid increase in the culture of Cane in that neighbourhood :—"The Sugar Cultivation," writes Dr. Lindesay, "is extending every year. I drove over from Jaunpore yesterday, and was much struck with the great spread of thriving young Cane. An intelligent planter thinks that this year will nearly double the last, (so quickly is it progressing.) This year there was a fall of rain at an unusual time (February) which while it destroyed the wheat and barley enabled the cultivators to plough and plant Cane without irrigating."

Expected Arrival of Seeds and Plants from England.

Dr. Wallich brought to the notice of Members the receipt of a letter by the last Overland Mail, from Messrs. Noble and Sons, Seedsmen and Florists;—mentioning the despatch by the "Malcolm" at the latter end of March last, of a large consignment of Garden Seeds and Fruit trees. As the "Malcolm" is now shortly expected, the arrival of these seeds so early in the season will admit of a fair trial being given to them.

As in some measure connected with the foregoing, Dr. Wallich read a letter from an old correspondent and well-wisher of the Society, Mr. J. J. Dixwell of Boston. This gentleman promises to use his best endeavours to transmit by the first favorable opportunity, a large quantity of American Maize of different varieties, a large assortment of Grains, Grasses and other Agricultural Seeds, for the use of the Society. Mr. Dixwell adds—"We have lately introduced a new Potatoe of wonderful prolificness, and coming to perfection under an uncommonly high temperature. All the late crops are too old to send you, but I will endeavour to forward some of the first of the next crop."

Establishment of an Experimental Garden at Kishnaghur.

Mr. Steer, the Magistrate of Kishnaghur, in letters to the address of the Secretary, intimates the formation of an experimental Garden at that Station. Mr. Steer mentions that it was his intention in the first instance to have endeavoured to have established a Branch Society, he was however unable to carry his wishes into effect; "but," adds Mr. Steer,—"the natives who put their names down as Subscribers, have expressed such disappointment in the failure of the proposition that I have determined to gratify them with a garden of some sort. It will be too contemptible a concern to be termed a Branch Society; we must, therefore, be independent of you in the first instance. The object of our Society will not be so much the cultivation of European Vegetables, Flowers, &c. as the improvement of those staple articles, Tobacco, Sugar and Cotton, of which there is a large Cultivation in this Zillah."

Dr. Wallich stated that the Secretary had despatched a large quantity of Cotton, Tobacco, &c. seeds, and also a boat load of fruit trees to Mr. Steer, to assist in stocking this newly formed Garden.

Proposed Formation of an Experimental Garden near the City of Allahabad.

The next letter that was read was from Mr. R. Montgomery, Magistrate at Allahabad, in which that gentleman intimates his intention of establishing an experimental garden on a piece of land belonging to the Government, close to the Station, and requests to be furnished with an assortment of such seeds as are at present

available. With respect to the produce of a supply of Cotton seeds received last year from the Society, Mr. Montgomery mentions that "the Cotton trees seemed to flourish very well, but did not flower till January, and produced Cotton in the end of March, whilst the Cotton of this part of the Country is sown in the end of June, and the produce collected in November. Perhaps I was too late in sowing it, which I believe was the case;—of the five kinds of cotton seeds sent me, only three kinds, viz. the Bourbon, Seychelles and Sea Island came to perfection, and the *Bourbon* succeeded the best of all. I will have a little of it put in parcels and sent for the inspection of the Society."

In compliance with the request conveyed at the close of this communication, Dr. Wallich mentioned that a liberal supply of Cotton and other Agricultural Seeds had been forwarded to Mr. Montgomery by the last steamer.

With reference to the resolution passed at the last Meeting, regarding the award of the Society's Gold Medal to Mr. W. G. Rose for the best specimen of Silk, "on his furnishing the requisite information to the satisfaction of the Silk Committee," Dr. Wallich drew attention to a letter which had been lately received from Mr. Rose, in which that gentleman expresses his readiness to afford every information on the mode of cultivation, manufacture, cost of production, &c. of the staple alluded to, as soon as a little leisure time will admit of his doing so.

Letters were read from the Secretaries of the American Philosophical Society at Philadelphia, and from the Philadelphia Society for promoting Agriculture, conveying the thanks of their respective Institutions for the donation of vols. 3 to 5 of the Transactions of the Agricultural and Horticultural Society of India.

For all the foregoing presents and communications, the thanks of the Society were awarded.

HENRY H. SPRY, *M. D., Secretary.*

APPENDIX.

Report of the Cotton Committee.

Report of the Cotton Committee on Competition Samples of Peruvian Cotton submitted for the Society's Prizes.

The Committee consider the two Samples of Cotton, submitted by Mr. Quantin, for their judgment and labelled "Peruvian Cotton 1st year's crop sown in June 1838," and "Peruvian Cotton, 2nd year's crop," to be undeserving of either of the Society's Medals;—1st, owing to the smallness of the quantity furnished, and, 2ndly, on the ground of there being no sufficient report in accompaniment as to its production.

The specimen of "Peruvian Cotton sown in June, 1833, is *bad in colour* and of *bad quality*."

The specimen of "Peruvian Cotton, 2nd year's crop," is of *good colour* and *good quality;* so good indeed as to deserve particular inquiry. It is quite equal to any imported into England from Peru or the coast of America.

The sample would without doubt have been entitled to a Medal had the grower produced a sufficient quantity, and accompanied it with the full and particular Report required by the published conditions of the Agricultural Society.

(Signed) JOS. WILLIS,
D. B. SYERS,
CHAS. HUFFNAGLE,
WM. STORM,
H. H. SPRY, M. D.

PROCEEDINGS

OF THE

AGRICULTURAL AND HORTICULTURAL SOCIETY OF INDIA.

SEPTEMBER,

1839.

INCLUDING A REPORT ON THE MANUFACTURE OF TEA, AND ON THE EXTENT AND PRODUCE OF THE TEA PLANTATIONS IN ASSAM.

CALCUTTA:

PRINTED AT THE BAPTIST MISSION PRESS,
CIRCULAR ROAD.

1839.

AGRICULTURAL SOCIETY OF INDIA.

PROCEEDINGS.

SEPTEMBER 11, 1839.

Agricultural Society of India.

A General Meeting was held at the Society's Rooms, Town Hall.

C. K. Robison, Esq., Vice President, in the Chair.

Thirty Members and one visitor present.

The proceedings of the last Meeting were read and confirmed.

MEMBERS ELECTED.

The following gentlemen proposed at the August Meeting were elected Members, viz. :—The Venerable Archdeacon Dealtry and Major Henderson,—Messrs. Geo. Sinclair,—Geo. Scott,—J. F. Harvey,—H. T. Raikes,—C. S. Stowell,—David J. Money,—Edward Riley,—G. U. Yule, and C. D. Russell.

FOR ELECTION.

The names of the following gentlemen were read as Candidates for election at the next Meeting.

Captain Mylius, (Cameronians)—proposed by Dr. Corbyn, seconded by Dr. Spry.

Welby Brown Jackson, Esq. (Commr. of Moorshedabad)—proposed by Mr. F. W. Russell, seconded by Dr. Spry.

Major Colnett, (Barrack Master at Fort William)—proposed by Dr. Spry, seconded by Dr. Corbyn.

William Prinsep, Esq.—proposed by Dr. Spry, seconded by Mr. C. K. Robison.

Lieutenant Eld, (Munnipore Levy)—proposed by Major R. Becher, seconded by Dr. Spry.

B. H. Hodgson, Esq. (Resident at the Court of Nepaul)—proposed by Dr. Wallich, seconded by Dr. Spry.

Lieutenant Rowley Hill, (Oude Cavalry)—proposed by Dr. Spry, seconded by Dr. Wallich.

P. Macdonald, Esq. (of Midnapore)—proposed by Mr. H. Piddington, seconded by Mr. D. Hare.

PRESENTATIONS TO THE SOCIETY.

LIBRARY.

1. No. 10 of the Transactions of the Society of Arts, London. —*Presented by the Society of Arts.*

2. Six Copies of the Proceedings of the Committee of Agriculture and Commerce of the Royal Asiatic Society of Great Britain and Ireland for the year 1838.—*Presented by the Royal Asiatic Society.*

3. Proceedings of the Quarterly Meeting of the Agricultural and Horticultural Society of Madras.

In allusion to a former notice of this Society on the subject of pecuniary receipts, the Secretary brought to the notice of the Meeting the circumstance that the expression of the Madras Committee's report had reference to the Bombay Agricultural Society as well as to the Agricultural and Horticultural Society of India.

4. A Pamphlet on the objects and history of the Thames Improvement Company.—*Presented by Mr. Johnson on the part of his brother, the author.*

5. Abercombie's Practical Gardener and improved System of Modern Horticulture, adapted to small or large gardens and designed for Gentlemen who manage their own gardens.—*Purchased by the Society.*

6. A translated account of the prosperous condition of the Tea Plant on the Neilgherries, and of the advantages to be derived from cultivating it on a grand scale in the elevated parts of India. By M. Perrottet, Botanist to the French Government.—*Presented by the Bengal Tea Committee.*

MUSEUM.

1. A Machine for cleaning Cotton which has been made at Glasgow under the auspices of the Glasgow East India Association. —*Presented by the Bengal Chamber of Commerce.*

This Machine has been sent to India, experimentally, for the purpose of being tried as an efficacious invention for cleaning Cotton. It is on the principle of the Churka which was sent to the East India Association of Glasgow by the Chamber of Commerce at Bombay. It is about the same size, weighs about sixty pounds, and may be easily moved from place to place as the common churka. By it the Seeds which accompanied the native Machine from Bombay were effectually separated from the Kupas or Cotton, and without injury to the staple, but no impression is made on the broken leaf and other impurity, for which there would seem to be no remedy but an improved system of picking.

Soft Seeds are liable to the same contingency, and in order to prevent them from passing between the rollers, it was found necessary at Glasgow, to first dry the Kupas on a kiln, which procedure will be obviated in the climate of India by exposure to the sun.

In presenting the foregoing simple and apparently very efficient apparatus, the Glasgow Chamber only ask in return to be furnished with a report of the result, which has attended its use. And further entreat, that so far as lies in the power of the Chamber of Commerce of Bengal, that that body will do its best to reserve the orders for making a number of them for Mr. Houldsworth, to whose skill and attention, the Association at Glasgow is indebted for the improvement. If many are required, they would not cost above £4 sterling each. The two now exhibited may be worked separately or together, and any number which there is power to work may be united by simply lengthening the shaft. Each will only require one person to feed it.

The Directors of the East India Association of Glasgow have sent two each to Bombay and Madras, and the Court of Directors of the East India Company have ordered four for their Bombay Presidency.

The Members present took a great interest in the exhibition of this Machine, and the Cotton Committee were desired to test it more fully, and to favor the Society with a report on the result of the trials.

2. A sample of Cashmere Angora-goat wool obtained at the Cape of Good Hope from an animal imported into the Colony from New South Wales.—*Presented by Captain Charlton.*

3. Specimen of Caoutchouc from Sylhet.—*Presented by Dr. Spry.*

4. Sample of Cotton, grown at Rajmahal.—*Presented by Mr. Richards.*

5. A small basket of Potatoes, the produce of Darjeling.—*Presented by Dr. Wallich on behalf of Dr. Campbell.*

They are of this season's produce and although considered by Dr. Campbell of an inferior kind, they appear to Dr. Wallich greatly preferable to any which can be procured in the Calcutta Market at this time of the year.

6. Three specimens of indigenous Bengal Cotton. No. 1, the same kind as that lately furnished by the Society for trial in Assam. No. 2 is of a coarser but longer fibre, and No. 3 is a black-seeded Cotton.—*Presented by Mr. Dearman, Secretary to the Dacca Branch Agricultural Society.*

Mr. Dearman thinks, that No. 3 is fully equal to Egyptian, or Sea Island in silkiness. He states, that he obtained a clue to the discovery of this as well as to No. 2 specimen, by examining some old records; but he only became aware of their being still to be found in cultivation within the last few weeks. The specimen No. 3, was considered by the Meeting as a very superior indigenous Cotton, and Mr. Dearman was requested to supply the Society with further particulars. What is remarkable with regard to the specimen marked No. 3, is that Mr. Dearman states, that it is obtained from a tree whcih is PERENNIAL *of four or five years growth.*

7. Eight cobs of Maize, from acclimated American Seed, grown at Palmadeeah, near Sook Saugor.—*Presented by Mr. Quantin.*

8. Four samples of Sugar, manufactured at Amherst.—*Presented by Mr. Riley. The whole of the samples have been pronounced of a superior quality. No. 1 is of good colour and fine strong grain. No. 2, middling quality. No. 3, a shade better, and No. 4, very coarse brown Sugar, which would meet with a ready sale in the Calcutta Market in any quantity.*

9. Six samples of Grains, from the Nerbudda Territory. No. 1 is best wheat called "Julalya," grown only in the Southern banks of the Nerbudda, in the Hoshingabad District. No. 2 is a second best wheat called "Kulya;" it also grows in Hoshingabad. No. 3, "Parbutteea" or white Cheenna, a very fine grain, found only where the Julalya wheat grows. No. 4, is common Cheenna*. No. 5, white Til†, flower white and blue. No. 6, black Til‡. *Major Ousely, who presents these grains to the Society through Dr. Wallich, not having observed them noticed any where, he wishes to have information regarding them. They were referred to the Agricultural Committee.*

* Cicer Arietinum.—H. H. S.
† Verbesina ———.—H. H. S.
‡ Verbesina Sativa.—H. H. S.

MOTION OF WHICH NOTICE WAS GIVEN AT THE LAST MEETING.

The motion proposed at the last Meeting by Mr. Piddington, and seconded by Mr. Hare—"That as a number of valuable Agricultural papers are not strictly admissible in the Society's Transactions, from having been printed in other books and pamphlets, it be referred to the Committee of Papers to ascertain whether the Society can without expense publish an Appendix or volume of such useful papers"—was carried.

Introduction of Foreign Seed Corn into India.

The Report of the Corn-Committee was brought up and read. The propriety of affording the Landholders of India an opportunity of trying different varieties of the European, African, and American cereal grains on their Estates, was first adverted to and highly approved of, as being likely to be attended with benefit to the interests of the country at large; and the Committee in consequence, in order to give as extended a range as practicable to this recommendation, begs to offer for the approval of the Society, a public notification to the effect that the Agricultural and Horticultural Society of India, being desirous of effecting the introduction of foreign seed corn into India, is desirous to receive and register applications from all persons who are desirous of procuring seed for trial on their lands; and will use their best endeavours to obtain the same from Europe, Africa and America. A reference for payment to be furnished at the same time. In addition to this the Committee desire to recommend, and the same was adopted, that a quantity not exceeding a ton of each kind, be obtained for the use of the Members of the Society.

Plans adopted to secure such Plants and Trees as may be thought desirable for introduction into India, as well as those that can be furnished in return.

The Committee appointed to assist in carrying out the views of the Honorable the Court of Directors, contained in their despatch of the 30th February last, have twice assembled.

The Committee report as a part of the business of their Meetings having read correspondence and Minutes of Council by the Most

Noble the Marquis of Hastings, contained in their journals, regarding the establishment in the year 1823 of a garden at Titaghur near Calcutta, as a branch of the Honorable Company's Botanic Garden, where among other things it is stated that "a great number of curious plants, have been introduced for the trial of naturalizing them to the climate of Bengal. Food, Manufactures, and Medicines being the objects which decided the choice." Also parts of a paper conjointly addressed by the Honorable Holt Mackenzie and Dr. Royle, to the Members of the Royal Asiatic Society of Great Britain:

A list of Trees and Shrubs of Asia suitable for introduction into temperate latitudes furnished by Loudon in his Arboretum et Fruticetum Britannicum.

A list of Medicinal plants and gum-yielding trees amounting to 86 in number, collected by Dr. Spry in 1831, while residing in Southern Bundlekund.

A list of useful grasses and other articles by Mr. Johnson, and lastly, a list of plants calculated for introduction and propagation throughout Lower and Upper Hindoostan by Dr. Spry.

The Committee recommend that a circular letter be addressed to all persons who may be likely to assist in forwarding the views of the Society, and desire that the information sought may be classed under three heads.

1st. Food comprising esculent grains of all kinds, Medicinal plants, fruits and roots.

2nd. Fodder and food for cattle and domestic animals; comprising grasses, seeds, fruits, roots and leaves: also any ornamental shrubs and flowers.

3rd. Manufacturing and commercial articles such as oils, gums, dyes and barks, or any other known or unknown staples of commerce: also oaks, firs, teak-trees, &c.

The Committee desire to state that any suggestion, even of a single article only, will be deemed valuable; as it is solely by the union of the scattered *practical* knowledge of individuals, that the surest information can be obtained, and the development and consequent improvement of the resources and wealth of India and England be mutually promoted.

The value of Guzerat as a Cotton Province.

A communication was read by the Secretary which had been forwarded to him by Mr. Owen Potter, of the firm of T. and S. Kelsall

of Calcutta, on the subject of the cotton trade in Guzerat. Mr. Potter when at Manchester, lately addressed this communication to the Chamber of Commerce in that city, and the substance of it formed a portion of the business which was submitted to the Honorable the Court of Directors on the occasion of the Manchester Deputation waiting on the Court at the India House. Mr. Potter states that in the spring of 1837 he was occupied in Guzerat in purchasing, cleaning, packing, and shipping cotton. The chief cotton ports are Surat, Baroche, Tankaria Bunder, Gogo, and Bownugger. All these ports are within a short distance of each other. The extent of cotton cultivation in their vicinity is very great, as will be seen by the following statement of exports :

	1836.	1837.
From Baroche, ...	42,000 bales,.....	20,000 bales.
—— Tankaria Bunder,..	20,000 bales,.....	12,000 bales.
—— Surat, ...	25,000 bales,.....	15,000 bales.
—— Gogo and Bownugger including the Dholera Cotton,..	60,000 bales,.....	45,000 bales.
Total,..	147,000 bales.	

Each bale weighing about ..... 400 lbs.

Nearly the whole of the Cotton here mentioned grows within 40 miles of the port at which it is shipped. The country is flat and the freight to Bombay amounts to no more than two per cent. on the value of the Cotton. These localities on the coast are more frequently inundated than any others, and great portions of the seed when sown are frequently entirely washed away. At Omrawutte Cotton is grown at the rate of two pounds for twopence in moderately favorable seasons; and did good roads but only exist, this articl could be delivered at Bombay at a handsome remunerating price. It is now carried on the backs of bullocks, and, as it now is, the extra cost amounts to a penny a lb. more. The Government levy their tax in this part of the country on kind, taking one half of the produce for the payment of their land tax : each pound of Cotton therefore stands the grower in twopence, with the additional penny to Bombay.

The Cotton of Omrawutte which is situated nearly 500 miles from any port, Mr. Potter describes as little inferior to that grown in Guzerat, which is looked upon as the garden of the western side of

India. But from the circumstance of the land tax being levied at a much higher ratio than in the Berar Province, much valuable Cotton land still remains uncultivated. In Guzerat the rate of taxation often proves 50 per cent. on the market value of the Cotton.

Mr. Potter alludes to the total absence of all port conveniences for shipping the Cotton at any of the places before mentioned, and states that for the want of sufficient accommodation the porters are obliged to sling the cotton bales on bamboos, and each bearing an end on their shoulders wade up to their waist in mud and water before they can approach even a boat large enough to convey ten or twenty bales to the vessels. There is some little accommodation at Surat. At Baroche there was formerly a commodious pier, but of late years, though the trade of the place has rapidly increased, the pier has been allowed to fall into ruins, and in 1837 was utterly useless.

The Cotton pod in Guzerat is overhung by a tender brown leaf, which, when the dew is on the plant early in the morning, is soft, yields to the hand, and will not break; consequently all the early pickings are free from leaf. Mr. Potter thinks that a system of rewards and fines might be introduced among the Patells of the Cotton Villages with advantage; and he adds that little improvement in the preparation of the Cotton for the English market can be expected, till British capital and industry are employed in the undertaking immediately, on the spot where the Cotton is grown. Under judicious management, Mr. Potter is convinced that Europeans may find ample remuneration by turning their attention to the culture of Cotton. No attempt has yet been made to any extent, and generally Mr. Potter does not doubt, that Agriculture under the immediate management of Europeans would become common.

Mr. Potter concludes by a reference to the benefits to be expected to Cotton Culture from *judicious* irrigation. And he alludes to the advantages obtained in Egypt and Peru to the Cotton-grower by this mode of procedure.

Facility of the Province of Amherst for the Cultivation of Sugar.

The Secretary next submitted a paper by Mr. Edward Riley, on the nature of the Sugar-cane grown in Amherst, and the mode of cultivation adopted by the natives, with the qualities of the indigenous Cane as compared to the Otaheite kind, in order to arrive at correct data for extending this useful cultivation. The indigenous

Canes grown in the Amherst Province consist of the Ratan and Red Cane varieties, the former being in more general use, on account of its extreme hardness. The latter, however, is superior in quality, and generally attains a height of five feet.

Mr. Riley then enters into details regarding the mode of procedure to be adopted in clearing the lands, and the cost of preparing a Sugar estate. He remarks that very few Burmese will work even six months consecutively. With apathy peculiar to their character, the Burmese look no further than present gains,—the only labour required to produce a fair crop of rattoons would be merely banking the plants during the rains and trashing them properly, neither of which duties however are done. The paper concludes by reports on the four samples of Sugar which are recorded as having been presented to the Society among the presentations to the Museum.

Progress of the Foreign Cotton Cultivation in Central India.

The Secretary next read a portion of a letter from Mr. McLeod in charge of the Saugor District, acknowledging the receipt of the late consignment of foreign Cotton Seeds, and communicating some interesting details connected with the progress of the cultivation of a very encouraging character. Mr. McLeod considers that it is the prevalence of black basalt where this is of a sufficiently friable character *(mind* in fact) that renders the Saugor country, Nursingpore and especially Berar so pre-eminently a Cotton country. The vigor with which Cotton thrives in it is astonishing. In Berar (the Nagpore country) the black basalt soil yields two crops of Cotton a year; the rabbee or spring harvest crop being the most esteemed. All the Cotton that Mr. McLeod sowed last year is left standing, and besides this there are the Pernambuco and Egyptian varieties in their third year. Sufficient Cotton has been procured to make one or two bales, and next year, as there are upwards of ten beegahs (3½ acres) in Cotton cultivation, Mr. McLeod hopes to be able to send to the Society a respectable supply. Mr. McLeod has sown with both the common country and Deccanee plough, but the success of the latter method is doubtful, as all the country people state that unless the Cotton seed be sown on the surface, and in land not worked deep, it all runs to leaf and stalk, yielding little flower. Some of the Cotton planted in the garden close to the water courses have yielded a crop and flourished with a vigour far exceeding all

the rest. Mr. McLeod feels confident that the *Mannua* or *Déo Kupass* of the natives is identical with the Pernambuco—an inquiry which he considers deserving of the consideration of the Society. The staple of this kind of Cotton is extremely long, far exceeding all other kinds, but it is weak. Another indigenous perennial, known as the *Nadan Ban*, and of which the Brahmins make their threads, Mr. McLeod finds to be stronger and finer than any of the *imported* kinds, but from the length and slenderness of the stalks, and abundance and fruitiness of the leaves, it is extremely difficult to pick clean.

A New Horticultural Garden at Darjeling.

A letter from Dr. Campbell, the officer administering the Civil and Political duties at Darjeling, was read by the Secretary. Dr. Campbell offers to get the English gooseberry, currant, and raspberry trees, lately landed from the *Malcolm*, which the Society determined at their last Meeting should be despatched to Darjeling for acclimitation, with as little delay as possible, after their arrival at Titalya. No enclosed ground for them is yet ready, but Dr. Pearson has offered to give them a place in his garden, until a suitable place can be got ready. Dr. Campbell states, that it has been suggested to him by Mr. Low, who is at Darjeling, and has shewn the greatest anxiety to forward the views of European settlers, to make this consignment the nucleus of an experimental garden for the Society, and to this end, Dr. Campbell, Mr. Low and Dr. Pearson offer a donation of 50 Rupees each for the promotion of this interesting object. Dr. Campbell supposes, that many in Calcutta, who are interested in the welfare of the new Hill Colony, will be desirous of aiding the project.

The subject underwent a long discussion at the Meeting, and it was determined to give the new Horticultural garden support by supplying from time to time, such plants and seeds as were likely to be suited for the Darjeling climate, while an extract of Dr. Campbell's note, having reference to the raising of subscription to the promotion of the Fruit Tree Cultivation, was ordered to be furnished to the Darjeling Committee.

Arrival of American Garden Seeds.

The Secretary informed the Meeting, that the arrival of the , from Boston, enabled him to have the pleasure of announc-

ing the receipt of five cases of American Garden Seeds, of different sorts, which had been procured through the kind assistance of Mr. Huffnagle, of this city.

For all the foregoing communications the thanks of the Society was accorded.

The following proposition was moved by Mr. Charles Dearie, seconded by Mr. W. F. Gibbon, and carried by the Meeting :—

"That in future, so long as our monthly proceedings are printed and circulated, to save time at the monthly Meetings of the Society, the Secretary instead of reading the whole of the proceedings of the previous meeting, shall merely read the heads of such subjects, as may have come before it, which it is presumed will afford (in connection with the printed Reports) sufficient information to Members."

HENRY H. SPRY, M. D., *Secy.*

ADVERTISEMENT.

AGRICULTURAL AND HORTICULTURAL SOCIETY OF INDIA.

The Agricultural and Horticultural Society of India, being desirous of effecting the introduction of *Foreign Seed Corn* into India, are prepared to receive and register applications from any persons who may be desirous of procuring Seed for trial in their lands, and will use their best endeavours to obtain the same from Europe, Africa, and America. It is requested that Individuals will furnish a reference in Calcutta for the amount of their orders, which will be supplied at invoice cost price.

EXHIBITION OF PRIZES.

Eri-Silk.

The Agricultural and Horticultural Society, in conjunction with Captain Jenkins, the Governor General's Agent in Assam, beg to call the attention of the public to the following notification :

1st.—To any person who may succeed in discovering an effectual and cheap solvent for the adhesive material which attaches to the Cocoons of the Eri-Silk-Worm,—so that the Silk can be made useful to commercial purposes ;—

The Society's Gold Medal and 200 Rupees.

2nd.—For the best and most economical mode of preparing Floss, and also the manufacturing of a fine thread from the floss of the Eri-Cocoons;—

THE SOCIETY'S GOLD MEDAL AND 200 RUPEES.

3rd.—For the best and most economical method of bleaching Cloth manufactured from the Eri-Cocoon, so as to take permanent and fugitive dyes well;—

THE SOCIETY'S GOLD MEDAL AND 200 RUPEES.

CONDITIONS.

No Claimant to any of the above rewards shall be entitled to the prizes, till they have furnished the Silk Committee with the fullest particulars of their discovery; and the Society further reserves to itself, the right of withholding the award of prizes till the experiments of the Claimants have been tested on an efficient scale.

FOR STAPLE PRODUCTIONS.

The following Prizes are offered to the producers of the best Samples of the undermentioned Staples of the Bengal Presidency, agreeable to the resolution of the Society passed at a Meeting held on the 14th November, 1838.

SUGAR.

1st.—For the best Sample of *unrefined* Sugar, not less than 2 maunds,..... .... *The Gold Medal.*

For the second best Sample of *unrefined* Sugar, as above, ... *The Silver Medal.*

SILK.

2nd.—For the best Sample of Silk, not less than 2 seers,..... *The Gold Medal.*

For the second best Sample of Silk, as above, ... *The Silver Medal.*

COTTON.

3rd.—For the best Sample of Cotton, raised from Foreign Seed, not less than 2 maunds, ... *The Gold Medal.*

For the second best Sample of Cotton, raised from Foreign Seed, as above, ... *The Silver Medal.*

TOBACCO.

4th.—For the best Sample of Tobacco, reared from Foreign Seed, not less than one maund,.... *The Gold Medal.*

For the second best Sample of Tobacco, reared from Foreign Seed, as above, ... *The Silver Medal.*

CONDITIONS.

1st.—The articles exhibited by Candidates for Medals, must be the produce of Bengal and the North Western Provinces.

2nd.—The competition will be open to all persons whatever, without distinction.

3rd.—The articles must not be garbled, but bonâ fide the average produce of the land on which they are grown, or of the manufacture.

4th.—All Candidates for Medals must deliver with their specimens, statements of the places at which the articles were produced, the quality or nature of the soil, and of the mode of cultivation and manufacture, and the cost of production.

5th.—A moiety of the specimens which shall be declared entitled to the *Gold Medals*, shall be the property of the Society, the remainder will be returned to the Candidates.

6th.—Candidates are requested to affix to their specimens, a number or mark, and to accompany them with a sealed letter and to mark the letter addressed to the Secretary with the words 'Competition Letter,' which letter will remain unopened till after adjudication.

7th.—When two or more Samples shall be considered to be of equal quality, the Medal will be awarded to the sample which may appear to have been raised at the least cost, and with reference also to the greatest quantity produced upon a given area.

8th.—All Candidates are expected to have their specimens in the possession of the Secretary of the Society, on or before the 1st May, 1840.

FOR CATTLE.

In accordance with the vote of the Society, at a Meeting held on the 10th April, 1839, the following schedule of Rewards for Cattle of various kinds to be exhibited at the Annual Show on the 1st of February next, was passed.

IMPORTED NEAT CATTLE.

1st.—For the best imported Bull of the year 1839, not less than two years old,—a Premium of 500 Rs. and the Gold Medal.

2nd.—For the second best imported Bull of the year 1839, not less than two years old,—a Premium of 400 Rs. and the Silver Medal.

The same for the year 1841.

NOTE.—(A Preference will be shown to the Devonshire or Middle-horned Bull.)

PRODUCE.

3rd.—For the best produce of Imported Cattle,—a Premium of 250 Rs. and the Gold Medal.

4th.—For the second best produce of Imported Cattle,—a Premium of 200 Rs. and the Silver Medal.

5th.—For the best *Bull* Calf of any denomination calved in 1839, —the Gold Medal.

6th.—For the best *Cow* Calf of any denomination calved in 1839, —the Silver Medal.

SHEEP.

1st.—For the best imported Wooled Merino Ram of the year 1839, not less than two years old,—a Premium of 200 Rs. and the Gold Medal.

2nd.—For the second best imported Wooled Merino Ram of the year 1839, not less than two years old,—a Premium of 150 Rs. and the Silver Medal.

The same for the year 1841.

3rd.—For the best pen of Merino Ewes to the number of six,—a Premium of 100 Rs. and the Silver Medal.

4th.—For the best thorough bred Merino *Ram* Lamb, lambed in 1839,—the Gold Medal.

5th.—For the best thorough bred Merino *Ewe* Lamb, lambed in 1839,—the Silver Medal.

6th.—For the best Lamb, either Ram or Ewe, cross of a Merino Ram and an indigenous Ewe, lambed in 1839,—the small Silver Medal.

CONDITIONS.

1st.—The competition is open to Stock from any part of the world.

2nd.—The Pedigree and Age of the Stock, so far as known, must be given.

3rd.—The Committee of the Society appointed to conduct the arrangements for the Show, will appoint skilful persons to act as Judges.

4th.—The Committee reserve to themselves the right of withholding any of the above rewards, should the numbers of either class brought forward be insufficient, in their opinion, to establish a legitimate competition, or in the opinion of the Judges from inferiority, not to be deserving of a prize.

HENRY H. SPRY, M. D., *Secy.*

A. and H. Society's Room, Town Hall,
Calcutta, Sept. 12, 1839.

Report on the Manufacture of Tea, and on the Extent and Produce of the Tea Plantations in Assam. By C. A. Bruce, Superintendent of Tea Culture.

[Presented by the Tea Committee and read at the Meeting of the Society on Wednesday, 14th August, 1839.]

I submit this report on our Assam Tea with much diffidence, on account of the troubles in which this frontier has been unfortunately involved. I have had something more than Tea to occupy my mind, and have consequently not been able to commit all my thoughts to paper at one time; this I hope will account for the rambling manner in which I have treated the subject. Such as my report is, I trust it will be found acceptable, as throwing some new light on a subject of no little importance to British India, and the British public generally. In drawing out this report, it gives me much pleasure to say, that our information and knowledge respecting Tea and Tea tracts are far more extensive than when I last wrote on this subject;—the number of tracts now known amounting to 120, some of them very extensive, both on the hills and in the plains. A reference to the accompanying map will shew that a sufficiency of seeds and seedlings might be collected from these tracts in the course of a few years to plant off the whole of Assam; and I feel convinced, from my different journeys over the country, that but a very small portion of the localities are as yet known.

Last year in going over one of the hills behind *Jaipore*, about 300 feet high, I came upon a Tea tract, which must have been two or three miles in length, in fact I did not see the end of it; the trees were in most parts as thick as they could grow, and the Tea seeds (smaller than what I had seen before) fine and fresh, literally covered the ground: this was in the middle of November, and the trees had abundance of fruit and flower on them. One of the largest trees I found to be two cubits in circumference, and full forty cubits in height. At the foot of the hill I found another tract, and had time permitted me to explore those parts, there is no doubt but I should have found many of the Naga Hills covered with Tea. I have since been informed of two more tracts near this. In going along the foot of the Hills to the westward, I was informed that there was Tea at *Teweack*, or near it: this information came too late, for I had passed

it, just a little to the east of the Dacca river, at a place called *Cheriedoo*, a small hill projecting out more than the rest on the plain to the northward, with the ruins of a brick temple on it; here I found Tea, and no doubt if there had been time to examine, I should have found many more tracts. I crossed the Dacca river at the old fort of *Ghergong*, and walked towards the Hills, and almost immediately came upon Tea. The place is called *Hauthoweah*. Here I remained a couple of days going about the country, and came upon no fewer than thirteen tracts. A Dewaniah who assisted me to hunt out these tracts, and who was well acquainted with the leaf, as he had been in the habit of drinking tea during his residence with the Singphoes, informed me that he had seen a large tract of Tea plants on the Naga mountains, a day's journey west of *Chiridoo*. I have no reason to doubt the veracity of this man; he offered to point out the place to me, or any of my men, if they would accompany him; but as the country belonged to Raja Poorunda Sing, I could not examine it. I feel convinced the whole of the country is full of Tea.

Again, in going further to the south-west, just before I came to *Gabrew* hill, I found the small hills adjoining it, to the eastward, covered with Tea plants. The flowers of the Tea on these hills are of a pleasant delicate fragrance, unlike the smell of our other Tea-plants; but the leaves and fruit appear the same. This would be a delightful place for the manufacture of Tea, as the country is well populated, has abundance of grain, and labour is cheap. There is a small stream called the *Jhangy* river, at a distance of two hours walk; it is navigable, I am informed, all the year round for small canoes, which could carry down the Tea, and the place is only one and a half day's journey from *Jorehaut*, the capital of Upper Assam. Southwest of *Gabrew Purbut* (about two days' journey) there is a village at the foot of the hill, inhabited by a race called Norahs; they are Shans, I believe, as they came from the eastward, where Tea abounds. I had long conversations with them, and the oldest man of the village, who was also the head of it, informed me, that when his father was a young man, he had emigrated with many others, and settled at *Tipum* opposite *Jaipore* on account of the constant disturbances at *Munkum*; that they brought the Tea plant with them and planted it on the *Tipum* hill, where it exists to this day; and that when he was about sixteen years of age, he was obliged to leave *Tipum*, on account of the wars and disturbances at that place, and take shelter at the village where he now resides. This man said he was now eighty years of age, and that his father died a

very old man. How true this story is, I cannot say, and do not see what good it would do the old man to fabricate it. This was the only man I met with in my journeys about the country who could give any account of the Tea plant, with the exception of an Ahum, who declared to me that it was Sooka, or the first Kacharry raja of Assam, who brought the Tea plant from *Munkum;* he said it was written in his *Putty*, or history. The *Ahum-Putty* I have never been able to get hold of; but this I know, that the information about the Tea plant pointed out by the old Norah man, as being on the *Tipum* hill, is true; for I have cleared the tract where it grew thickest, about 300 yards by 300, running from the foot of the hill to the top. The old man told me his father cut the plant down every third year, that he might get the young leaves.

To the west of *Gabrew* I did not find any Tea; but to the westward of the *Dhunseeree* river I found a species, though not the same as that we use. If the people on the west side of the *Dhunseeree* river were acquainted with the true leaf, I think Tea would be found. I planted it all along the route I went, which may lead to its eventual discovery; but people should be sent to search for the plant who are really acquainted with it. I think a vast quantity of Tea would be brought to light if this were done. A reference to the map will shew how our tracts are distributed all over the country. But how much Tea they would all produce if fully worked, I will not pretend to say, but in the course of this subject I will mention such matters relative to the tracts and the plants on them, that every one may make his own calculation. Until lately we had only two Chinese Black Tea makers. These men have twelve native assistants; each Chinaman with six assistants can only superintend one locality, and the Tea leaves from the various other tracts, widely separated, must be brought to these two places for manufacture. The consequence is, that an additional number of labourers must always be employed to bring the leaves from so great a distance. The leaves suffer when brought in large quantities from a distance, as they soon begin to ferment, and the labour of only preparing them so far in process, that they may not spoil by the morning, is excessive. The men have often to work until very late to accomplish this. When labour falls so very heavy, and on so very few, it cannot be expected that it can be equally well executed, as if more had been employed. The leaves last gathered are also much larger than they ought to be, for want of being collected and manufactured earlier; consequently the Tea is inferior in quality. I

mention this to shew the inconvenience and expense of having so few Tea makers.

The samples of Black Tea made by the twelve assistants having been approved of by the Tea Committee in Calcutta, it was my intention to have distributed the men amongst the different tracts; but the late disturbances on our frontier have prevented this arrangement, and I have been obliged to employ ten men in Assam (two others having gone to Calcutta in charge of Tea) at the tract called *Kahung*, which is becoming a very extensive and important Tea locality, so many others being near it, which can all be thrown into one. When we have a sufficient number of manufacturers, so that we can afford to have some at each tract, or garden, as they have in China, then we may hope to compete with that nation in cheapness of produce; nay, we might, and ought, to undersell them; for if each tract or garden had its own Tea maker and labourers, the collecting of the leaves would not perhaps occupy more than twelve days in each crop; after which the men might be discharged, or profitably employed on the Tea grounds. But now, for the want of a sufficient number of labourers and Tea makers, there is a constant gathering of leaves throughout the month; and as I said before, those gathered last can only make inferior Teas; besides, the great loss by the leaves getting too old and hereby unfit for being made into any Tea; and all this entirely for want of hands to pluck the leaves. It is true we have gained twelve Black Tea makers this year, in addition to the last; and twelve more native assistants have been appointed, who may be available next year to manufacture Tea independently, as they were learning the art all last year. We have also had an addition to our establishment of two Chinese Green Tea manufacturers, and twelve native assistants have been placed under them to learn; but what are these compared to the vast quantity of Tea, or the ground the Tea plants cover, or might be made to cover in three years, but a drop of water in the ocean? We must go on at a much faster pace in the two great essentials—Tea manufacturers, and labourers,—in order to have them available at each garden, when the leaves come into season.

If I were asked, when will this Tea experiment be in a sufficient state of forwardness, so as to be transferable to speculators? I would answer, when a sufficient number of native Tea manufacturers have been taught to prepare both the black and the green sort; and that under one hundred available Tea manufacturers, it would not be

worth while for private speculators to take up the scheme on a large scale; on a small one it would be a different thing. In the course of two or three years we ought to have that number. Labourers must be introduced in the first instance to give a tone to the Assam Opium-eaters; but the great fear is that these latter would corrupt the new comers. If the cultivation of Tea were encouraged, and the Poppy put a stop to in Assam, the Assamese would make a splendid set of Tea manufacturers and Tea cultivators.

In giving a statement of the number of Tea tracts, when I say that *Tingri*, or any other tract is so long and so broad, it must be understood, that space to that extent only has been cleared, being found to contain all the plants which grew thickly together; as it was not thought worth while at the commencement of these experiments to go to the expense of clearing any more of the forest for the sake of a few straggling plants. If these straggling plants were followed up, they would in all probability be found gradually becoming more numerous, until you found yourself in another tract as thick and as numerous as the one you left; and if the straggling plants of this new tract were traced, they would by degrees disappear until not one was to be seen. But if you only proceeded on through the jungles, it is ten to one that you would come upon a solitary Tea plant, a little further on you would meet with another; until you gradually found yourself in another new tract, as full of plants as the one you had left, growing absolutely so thick as to impede each others growth. Thus I am convinced one might go on for miles from one tract into another. All my Tea tracts about *Tingri* and *Kahung* are formed in this manner, with only a patch of jungle between them, which is not greater than what could be conveniently filled up by thinning those parts that have too many plants. At *Kahung* I have lately knocked three tracts into one, and I shall most probably have to continue doing the same until one tract shall be made of what now consists of a dozen. I have never seen the end of *Juggundoo's* Tea tract, nor yet *Kujudoo's* or *Ningrew's*. I feel confident that the two former run over the hills and join, or nearly join, some of our tracts in the *Muttack* country. Nor have I seen the end of *Kahung* tract, all about that part of the country being one vast succession of Tea from *Rungagurra* on the *Debrew*, to *Jaipore* on the *Buri Dehing*. It may be seen on inspecting the map how thickly the Tea localities are scattered;—those that are known, and they are but a small portion compared to those that are unknown. There is the *Namsong*

tract on the *Naga* hills, the largest that has yet been seen, and the extent of which is not ascertained. The tracts on the *Gubind* hills are unknown; and this is likewise the case with *Haut Holah* and *Cheridoo;* so that there is a large field for improvement throughout, to say nothing of the *Singpho* tracts, which may be found to be one unbounded link to *Hookum;* and who knows but it crosses the Irrawaddy to China? Many Tea tracts I know have been cut down in ignorance by the natives, to make room for the rice field, for firewood, and fences. Many of these tracts have sprung up again, more vigorous than before. Witness that at *Ningrew*, where the natives say that every thing was cut down, and the land planted with rice, except on the high ground.

With respect to the Tea plant being most productive on high or low ground, I cannot well say, as all our tracts are on the plains; but from what little I have seen of the hill tracts, I should suppose they were not more productive. In China the hill tracts produce the *best* Teas, and they may do the same here. Almost all my tracts on the plains are nearly on the same level, I should think. *Nudwa* perhaps is a little higher than *Tingri*, and *Tingri* a little higher than *Kahung*, but I believe they are equally productive; although if I leaned towards any side, with my limited experience, I should say that the low land, such as at *Kahung*, which is not so low as ever to be inundated by the strongest rise in the river, is the best. The plants seem to love and court moisture, not from stagnant pools but running streams. The *Kahung* tracts have the water in and around them; they are all in heavy tree-jungles, which makes it very expensive to clear them. An extent of 300 by 300 will cost from 200 to 300 rupees; i. e. according to the manner in which the miserable Opium-smoking Assamese work. This alone ought to point out the utility of introducing a superior race of labourers, who would not only work themselves, but encourage their women and children to do the same; —in plucking and sorting leaves they might be profitably turned to account for both parties. This I have not been able to instil into the heads of the Assamese, who will not permit their women to come into the Tea gardens. Indeed unless more labourers can be furnished, a large amount of Tea must not be looked for at present. Last season it was with the greatest difficulty that I could get a sufficient number of hands to gather the leaves. The plucking of the leaves may appear to many a very easy and light employment, but there are not a few of our coolies who would much rather be em-

ployed on any other job; the standing in one position so many hours occasions swellings in the legs, as our plants are not like those of China only three feet high, but double that size, so that one must stand upright to gather the leaves. The Chinese pluck theirs squatting down. We lie under a great disadvantage in not having regular men to pluck the leaves; those that have been taught to do so, can pluck twice as many as those that have not, and we can seldom get hold of the same men two seasons running. I am of opinion that our trees will become of a smaller and more convenient size after a few years cultivation; because, trimming of the plants and taking all the young leaves almost as soon as they appear, month after month and year after year, and the plants being deprived of the rich soil they had been living on from time unknown, must soon tell upon them. Transplanting also helps to stunt and shorten the growth of these plants. The Chinese declared to me, that the China plants now at *Deenjoy*, would never have attained to half the perfection they now have, under ten years in their own country.

I may here observe, that the sun has a material effect on the leaves; for as soon as the trees that shade the plants are removed, the leaf, from a fine deep green, begins to turn into a yellowish colour, which it retains for some months, and then again gradually changes to a healthy green, but now becomes thicker, and the plant throws out far more numerous leaves than when in the shade. The more the leaves are plucked the greater number of them are produced; if the leaves of the first crop were not gathered, you might look in vain for the leaves of the second crop. The Tea made from the leaves in the shade is not near so good as that from leaves exposed to the sun; the leaves of plants in the sun are much earlier in season than of those in the shade; the leaves from the shady tract give out a more watery liquid when rolled, and those from the sunny a more glutinous substance. When the leaves of either are rolled on a sunny day, they emit less of this liquid than on a rainy day. This juice decreases as the season advances. The plants in the sun have flowers and fruit much earlier than those in the shade, and are far more numerous; they have flowers and seeds in July, and fruit in November. Numerous plants are to be seen that by some accident, either cold or rain, have lost all their flowers, and commence throwing out fresh flower-buds more abundantly than ever. Thus it is not unfrequent to see some plants in flower so late as March (some of the China plants were in flower in April) bearing at once the old

and the new seeds, flower-buds, and full-blown flowers—all at one and the same time. The rain also greatly affects the leaves; for some sorts of Tea cannot be made on a rainy day; for instance the *Powchong* and *Mingchew*. The leaves for these ought to be collected about 10 A. M. on a sunny morning, when the dew has evaporated. The *Powchong* can only be manufactured from the leaves of the first crop; but the *Mingchew*, although it requires the same care in making as the other, can yet be made from any crop, provided it is made on a sunny morning. The Chinese dislike gathering leaves on a rainy day for any description of Tea, and never will do so, unless necessity requires it. Some pretend to distinguish the Teas made on a rainy and on a sunny day, much in the same manner as they can distinguish the shady from the sunny Teas—by their inferiority. If the large leaves for the Black Tea were collected on a rainy day, about seven seers, or fourteen pounds, of green leaves would be required to make one seer, or two pounds, of Tea; but if collected on a sunny day, about four seers, or eight pounds, of green leaves, would make one seer, or two pounds, of Tea;—so the Chinamen say. I tried the experiment, and found it to be correct. Our season for Tea making generally commences about the middle of March; the second crop in the middle of May; the third crop about the first of July; but the time varies according to the rains setting in sooner or later. As the manufacture of the *Sychee* and the *Mingchew* Black Teas has never been described, I will here attempt to give some idea how it is performed.

Sychee Black Tea.—The leaves of this are the *Souchong* and *Powchong*. After they have been gathered and dried in the sun in the usual way (see my former account of Black Tea) they are beaten and put away four different times; they are then put into baskets, pressed down, and a cloth put over them. When the leaves become of a brownish colour by the heat, they throw out and have a peculiar smell, and are then ready for the pan, the bottom of which is made red hot. This pan is fixed in masonry breast high, and in a sloping position, forming an angle of forty degrees. Thus the pan being placed on an inclined plane, the leaves when tossed about in it cannot escape behind, or on the sides, as it is built high up, but fall out near the edge close to the manufacturer, and always into his hands, so as to be sweat out easily. When the bottom of this pan has been made red hot by a wood fire, the operator puts a cloth to his mouth to prevent inhaling any of the hot vapour. A man on the left of him

stands ready with a basket of prepared leaves; one or two men stand on his right with dollahs, or shallow baskets, to receive the leaves from the pan, and another keeps lifting the hot leaves thrown out of the pan into the dollah, that they may quickly cool. At a given signal from the Chinaman, the person with the basket of prepared leaves seizes a handful and dashes it as quick as thought, into the red hot pan. The Chinaman tosses and turns the crackling leaves in the pan for half a minute, then draws them all out by seizing a few leaves in each hand, using them by way of a brush, not one being left behind. They are all caught by the man with the dollah or basket, who with his disengaged hand continues lifting the leaves, and letting them fall again, that they may quickly cool. Should a leaf be left behind in the pan by any accident, the cloth that is held ready in the mouth is applied to brush it out; but all this is done as quick as lightning. The man that holds the basket of leaves watches the process sharply; for no sooner is the last leaf out of the pan, than he dashes in another handful, so that to an observer at a little distance, it appears as if one man was dashing the leaves in, and the other as fast dashing them out again—so quickly and dexterously is this managed. As soon as one basket has received about four handsful of the hot leaves from the pan, it is removed, and another basket placed to receive the leaves; and so on, until all is finished. A roaring wood fire is kept up under the pan to keep the bottom red hot, as the succession of fresh leaves tends greatly to cool the pan, which ought always to be scrubbed and washed out after the process is over. In China these pans are made of cast iron, and if great care is not taken they will crack in the cooling; to prevent which, one man keeps tapping the inside of the edge of the pan briskly with a wet broom, used in the cleaning of the vessel, while another pours cold water in gently, thus it cools in a few seconds, and is ready for another batch of Tea. The leaves are rolled and tatched the same as the other Teas, and put into the drying basket for about ten minutes. When a little dry, people are employed to work and press the leaves in the hands in small quantities, of about one and a half to two rupees' weight at a time, for about half a minute; they are then put into small square pieces of paper and rolled up; after this they are put into the drying basket, and permitted to dry slowly over a gentle fire for some hours, until the whole is thoroughly dry. This Tea is not sold in the China market, it is used principally as offerings to the priests, or kept for high days and holidays. It is said to be a

very fine Tea, and there is not one man in a hundred who can make it properly. The *Powchong* Tea is made in the same way as the *Sychee* with this exception, that it is not formed into balls.

Mingchew Black Tea.—The leaves *(Powchong)* are plucked and dried in the sun, and are then beaten and dried in the shade for half an hour ; this is done three succcssive times, and the leaves are very much shaken by a circular motion given to them in a sieve, so as to keep them rolling and tumbling about in the centre of it. This treatment continues until they are very soft ; they are then allowed to remain for a short time ; the contents of the first sieve are then placed in the centre of a close worked bamboo basket with a narrow edge, and the leaves are divided into four equal parts. The contents of the second sieve are placed in another bamboo basket like the former, and this basket is placed on the top of the first, and so on piling one basket upon another until all is finished ;—there may be about two pounds of leaves in each basket. The red hot pan is used the same as in *Sychee*, only now the men cast in one division of the leaves into the basket, and this is tumbled and tossed about in the red hot pan like a plaything for about thirty seconds, and then swept out ; another division is cast in, and so on, until all the prepared baskets have been emptied. The contents of each basket are still kept separate, by placing the leaves when they come out of the pan in separate baskets. The whole is a brisk and a lively scene, and quite methodical, every one knowing his station, and the part he has to perform. The baskets are then arranged on shelves to air; the contents are afterwards tatched the same as our Black Teas, and fired in the drying baskets, but with this difference, that each division is placed on paper and dried. When it is half dry (the same as our Teas) it is put away for the night, and the next morning it is picked, and put into the drying baskets over gentle deadened fires, and gradually dried there ; it is then packed hot. This Tea is a difficult sort to make.

Shung Paho Black Tea.—Pluck the young (*Paho*) leaf that has not yet blown or expanded, and has the down on it ; and the next one that has blown with a part of the stalk ; put it into the sun for half an hour, then into the shade ; tatch over a gentle fire, and in tatching roll the leaves occasionally in the pan, and spread them all round the sides of the same ; again roll them until they begin to have a withered and soft appearance; then spread them on large sieves, and put them in the shade to air for the night ; next morning pick, and then fire them well. Some Tea-makers do not keep them all

night, but manufacture and pack the Tea the same day. This Tea is valued in China, as it is very scarce; but the Chinamen acknowledge that it is not a good sort. They prefer the Teas the leaves of which have come to maturity.

The China Black Tea plants which were brought into *Muttack* in 1837, amounted in all to 1609—healthy and sickly. A few of the latter died, but the remainder are healthy, and flourish as well, as if they had been reared in China. The leaves of these plants were plucked in the beginning of March, and weighed sixteen seers, or thirty-two pounds. Many of the plants were then in flower, and had small seeds. They are about three feet high, and were loaded with fruit last year, but the greater part of it decayed when it had come to maturity, as was the case with the Assam Tea seeds, and almost every seed of these wilds, in the past year. The seeds should, I think, be plucked from the plant when thought ripe, and not be permitted to drop or fall to the ground. I collected about twenty-four pounds of the China seeds, and sowed some on the little hill of *Tipum* in my Tea garden, and some in the Nursery ground at *Jaipore*, above three thousand of which have come up, are looking beautiful, and doing very well. I have since found out that all the China seedlings on *Tipum* hill have been destroyed by some insect.

The Assam and China seedlings are near each other; the latter have a much darker appearance. I have made but few nurseries, or raised plants from seed, as abundance of young plants can be procured, of any age or size, from our Tea tracts. There may be about 6000 young seedlings at *Chubwa;* at *Deenjoy* about 2000; at *Tingri* a few; and some at *Paundooah*. In June and July 1837, 17,000 young plants were brought from *Muttack*, and planted at a place called *Toongroong Patar*, amongst the thick tree jungles of *Sadiya*.

In March of the same year six or eight thousand were brought from *Muttack*, and planted in different thick jungles at *Sadiya;* many of these died in consequence of the buffaloes constantly breaking in amongst them; the rest are doing well, but I am afraid will be killed from the above cause; and now that I have removed to *Jaipore*, they are too far off for my personal superintendence.

In 1838, 52,000 young Tea plants were brought from the *Nemsong Naga* hill tracts, about ten miles from *Jaipore;* a great portion of these have been lately sent to Calcutta, to be forwarded to Madras; should they thrive there, it is my opinion that they will never attain

any height, at least not like ours, but be dwarfish like the China plants. *Deenjoy, Chubwa, Tingri,* and *Geela-Jhan* tracts have been filled up or enlarged with plants from the jungle tracts. In transplanting from one sunny tract to another, when done in the rains, very few, if any, die; if the plants be removed from a deep shade to a sunny tract, the risk is greater, but still, if there is plenty of rain, few only will die. If from a deep shade to a piece of ground not a Tea tract, and exposed to the sun—for instance from the *Naga* hills to *Jaipore*—if there be plenty of rain, and the soil congenial, as it is at this place, few will die; if shaded by a few trees, less will perish; if taken from shade, and planted in shade and the soil uncongenial, but there is plenty of rain, the greater portion will live; —witness *Toongroong Patar* at *Sadiya*. If the plants are brought from deep shade, and planted in the sun in uncongenial soil, let them have ever so much rain, not one in fifty will be alive the third year;—witness 30,000 brought to *Sadiya*. I believe the Tea plant to be so hardy that it would almost live in any soil, provided it were planted in deep shade when taken to it. There should be plenty of water near the roots, but the plants should always be above inundation. As soon as it has taken root, which it will soon do, the shade may be removed, and there will be no fear of the plant dying.

The advantage of getting plants from the jungle tracts is, that you can get them of any age or size; nothing more is necessary than to send a few coolies early in March, just as the rains commence, and have the plants of the size required removed to your own garden; and if they are of a moderate size, you may gather a small crop of Tea from them the next year. As these plants are very slender, it would be best to plant four or five close together to form a fine bush. If the plants are raised from seed, you may expect a small crop of Tea the third year, but they do not come to maturity under six years. It is said they live to the age of forty or fifty years. The Chinese way of digging a hole, and putting in a handful or two of seed, does not succeed so well in this country, as putting two or three seeds on small ridges of earth and covering them over, which I have found to answer better.

In clearing a new Tea tract, if the jungle trees are very large and numerous, it would be as well to make a clean sweep of the whole, by cutting them and the Tea plants all down together; for it would be impossible to get rid of so much wood without the help of fire. The Tea plants, if allowed to remain, would be of little use

after they had been crushed and broken by the fall of the large trees, and dried up by the fire; but admitting that they could escape all this, the leaves of trees from twelve to twenty feet high could not be reached, and if they could, they would be almost useless for Tea manufacture, as it is the young leaves, from young trees, that produce the best Teas. But if all were cut down and set fire to, we should have a fine clear tract at once, at the least expense, and might expect to have a pretty good crop of Tea one year after the cutting, or at furthest, the second year; for it is astonishing with what vigour the plant shoots up after the fire has been applied. And we gain by this process; for, from every old stock or stump cut down, ten to twelve more vigorous shoots spring up, so that in the place of a single plant you have now a fine Tea bush. I think from what I have seen of these plants, that if cut down every third year, they would yield far superior Teas; neither am I singular in this opinion, the Green Tea Chinamen having told me that they cut down their plants every ninth year, which may be reckoned equivalent to our third year, taking into consideration the size of our trees and the richness of our soil. Our trees, or plants, are certainly more than four or five times the size of theirs, and must consequently yield so many times more produce; theirs is the dwarf, ours the giant Tea. The size of the leaf matters nothing, in my opinion, provided it is young and tender; even their diminutive leaf, if one day too old, is good for nothing.

As the Green Tea Chinamen have just commenced operations, I will try to give some account of this most interesting process. All leaves up to the size of the *Souchong* are taken for the Green Tea. About three pounds of the fresh leaves, immediately they are brought in, are cast into a hot pan (sometimes they are kept overnight when abundance have been brought in, and we have not been able to work all up); they are then rolled and tossed about in the pan until they become too hot for the hand. Two slips of bamboo, each about a foot long, split at one end so as to form six prongs, are now used to tumble and toss the leaves about, by running the sticks down the sides of the pan, and turning the leaves up first with the right hand, then with the left, and this as fast as possible; which keeps the leaves rolling about in the pan without being burnt: this lasts about three minutes; the leaves will then admit of being rolled and pressed without breaking. They are now taken from the pan and rolled in dollahs, much the same as the Black Tea, for about

three minutes, in which process a great quantity of the juice is extracted, if they be fresh leaves; but if they have been kept over night, very little juice can be expressed from them in the morning, on account of its having evaporated. The Chinamen say, this does not matter, as it makes no difference in the Tea. The leaves are then pressed hard between both hands, and turned round and pressed again and again, until they have taken the shape of a small pyramid. They are now placed in bamboo baskets or dollahs with a narrow edge, and the dollahs on bamboo framework (see fig. 2 of my former account of Black Tea) where they are exposed to the sun for two or three minutes, after which these pyramids of Tea are gently opened and thinly spread on the dollahs to dry. When the Tea has become a little dry, (which will be the case in from five to ten minutes if the sun be hot) it is again rolled, and then placed in the sun as before; this is done three successive times. But should the weather be rainy, and there is no hope of its clearing, all this drying is done over the fire in a small drying basket, the same as with Black Tea. The Green Tea makers have as great an aversion to drying their Tea over the fire, as the Black Tea makers. The third time it has been rolled and dried, there is very little moisture left in the Tea; it is now put into a hot pan, and gently turned over and over, and opened out occasionally, until all has become well heated; it is then tossed out into a basket, and while hot put into a very strong bag, previously prepared for it, about four feet long, and four spans in circumference. Into this bag the Tea is pressed with great force with the hands and feet; from fourteen to twenty pounds being put in at one time, and forced into as small a compass as possible. With his left hand the man firmly closes the mouth of the bag immediately above the leaves, while with the right hand he pommels and beats the bag, every now and then giving it a turn; thus he beats and turns and works at it, tightening it by every turn with one hand, and holding on with the other, until he has squeezed the leaves into as small a compass as possible at the end of the bag. He now makes it fast by turns of the cloth where he held on, so that it may not open; and then draws the cloth of the bag over the ball of leaves, thus doubling the bag, the mouth of which is twisted and made fast. The man then stands up, holding on by a post or some such thing, and works this ball of leaves under his feet, at the same time alternately pressing with all his weight, first with one foot and then the other, turning the ball over and over, and occasionally opening the bag to

tighten it more firmly. When he has made it almost as hard as a stone, he secures the mouth well and puts the bag away for that day. Next morning it is opened out and the leaves gently separated and placed on dollahs, then fired and dried until they are crisp, the same as the Black Tea, after which they are packed in boxes or baskets. In China the baskets are made of double bamboo, with leaves between. The Tea may then remain on the spot for two or three months, or be sent to any other place to receive the final process. This first part of the Green Tea process is so simple, that the natives of this country readily pick it up in a month or two. The second process now commences by opening the boxes or baskets, and exposing the Tea on large shallow bamboo baskets or dollahs (see former account, fig. 1) until it has become soft enough to roll; it is then put into cast-iron pans, set in brick fire-places, the same as described in making the *Sychee* Black Tea. The pan is made very hot by a wood-fire, and seven pounds of the leaves are thrown into it and rubbed against the pan, with the right hand until tired, and then with the left, so as not to make the process fatiguing. The pan being placed on an inclined plane the leaves always come tumbling back towards and near the operator, as he pushes them up from him, moving his hand backwards and forwards and pressing on the leaves with some force with the palms, keeping the ends of the fingers up to prevent their coming in contact with the hot pan. After one hour's good rubbing the leaves are taken out and thrown into a large coarse bamboo-sieve, from this into a finer one, and again a still finer one, until three sorts of Tea have been separated. The first, or largest sort, is put into the funnel of the winnowing machine, which has three divisions of small traps below, to let the Tea out. A man turns the wheel with his right hand, and with the left regulates the quantity of Tea that shall fall through the wooden funnel above, by a wooden slide at the bottom of it. The Tea being thrown from the sieves into the funnel, the man turns the crank of the wheel, and moves the slide of the funnel gradually, so as to let the Tea fall through gently, and in small quantities. The blast from the fan blows the smaller particles of Tea to the end of the machine, where it is intercepted by a circular moveable board placed there. The dust and smaller particles are blown against this board and fall out at an opening at the bottom into a basket placed there to receive it. The next highest Tea is blown nearly to the end of the machine, and falls down through a trough

on the side into a basket; this Tea is called *Young Hyson*. The next being a little heavier, is not blown quite so far; it falls through the same trough, which has a division in the middle; this of course is nearer the centre of the machine. A basket is placed beneath to receive the Tea, which is called *Hyson*. The next, which is still heavier, falls very near to the end of the fan, this is called *Gunpowder Tea; it is in small balls. The heaviest Tea falls still closer to* the fan, and is called *Big Gunpowder;* it is twice or three times the size of *Gunpowder* Tea, and composed of several young leaves that adhere firmly together. This sort is afterwards put into a box and cut with a sharp iron instrument, then sifted and put among the *Gunpowder*, which it now resembles. The different sorts of Tea are now put into shallow bamboo ba kets, and men, women, and children are employed to pick out the sticks and bad leaves; this is a most tedious process, as the greatest care is taken not to leave the slightest particle of any thing but good Tea. But to assist and quicken this tiresome process beautiful bamboo sieves, very little inferior to our wire ones, and of various sizes, are employed. The different Teas are thrown into sieves of different sizes, from large Gunpowder to dust Tea; they are shaken and tossed, and thrown from one person to another in quick succession, making the scene very animating; in this way a great portion of the stalks are got rid of. After the Tea has been well sifted and picked, it is again put into the hot pans and rubbed and rolled as before, for about one hour; it is then put into shallow bamboo baskets, and once more examined, to separate the different Teas that may still remain intermixed, and again put into the hot pan. Now a mixture of sulphate of lime and indigo, very finely pulverized and sifted through fine muslin, in the proportion of three of the former to one of the latter, is added; to a pan of Tea containing about seven pounds, about half a tea-spoonful of this mixture is put and rubbed and rolled along with the Tea in the pan for about one hour, as before described. The Tea is then taken hot from the pan and packed firmly in boxes, both hands and feet being used to press it down. The above mixture is not put to the Tea to improve its flavour, but merely to give it a uniform color and appearance, as without it some of the Tea would be light and some dark. The indigo gives it the colour, and the sulphate of lime fixes it. The Chinese call the former *Youngtin*, the latter *Acco*. Large Gunpowder Tea they call *Tychen;* little Gunpowder, *Cheochcu;* Hyson, *Chingcha;* Young Hyson, *Uchin;* Skin

Tea, or old leaves in small bits, *Poocha;* the fine Dust, or Powder Tea, *Chamoot.*

The leaves of the Green Tea are not plucked the same as the Black, although the tree or plant is one and the same, which has been proved beyond a shadow of doubt; for I am now plucking leaves for both Green and Black from the same tract and from the same plants; the difference lies in the manufacture, and nothing else. The Green Tea gatherers are accommodated with a small basket, each having a strap passed round the neck so as to let the basket hang on the breast. With one hand the man holds the branch, and with the other plucks the leaf, one at a time, taking as high as the *Souchong* leaf; a little bit of the lower end of the leaf is left for the young leaf to shoot up close to it; not a bit of stalk must be gathered. This is a very slow and tedious way of gathering. The Black Tea maker plucks the leaves with great rapidity with both hands, using only the forefinger and thumb, and collects them in the hollow of the hand; when his hand is full he throws the leaves into a basket under the shade of the tree; and so quickly does he ply his hands that the eye of a learner cannot follow them, nor see the proper kind of leaf to be plucked; all that he sees, is the Chinaman's hands going right and left, his hands fast filling, and the leaves disappearing. Our coolies, like the Green Tea Chinamen, hold the branch with one hand, and deliberately pluck off the leaf required, then the next, and so on, by which process much time is lost, and a greater number of hands are wanted. Not having a regular set of pluckers is a very great drawback to us; for the men whom we teach this year we see nothing of the next; thus every year we have to instruct fresh men. This difficulty will be removed when we get regular people attached to the Tea plantations; or when the natives of these parts become more fixed and settled in their habitations, and do not move off by whole villages from one place to another, as they have of late years been doing; and when the aversion they have throughout Assam to taking service for payment, has been overcome. They seem to hold this as mean and servile; preferring to cultivate a small patch of ground which barely yields a subsistence. I can perceive, however, that there is a gradual change taking place in the minds of the labouring class of people, or coolies; for occasionally some good able-bodied men come forward for employment. The generality of those that have hitherto offered themselves, has been from the very poorest and the most

worthless in the country. In the cold season, when the men have nothing to sow or reap, two or three hundred can be collected; but as soon as the rains set in, all but those that have not bonds, or are not involved in debt, go off to their cultivations, at the very time when our Tea operations commence. As long as things continue in this state, the price of Tea will be high; but if this drawback were removed there is nothing to prevent our underselling the Chinese, except the experience of a few more years.

But let us return to our Teas, and take a comparative view of the qualities of the Black and Green Teas, which may nearly be as follows: *Paho* Black Tea leaf would make Green Tea, some Gunpowder, and some Young Hyson. *Pouchong*, although classed as a second Black Tea, on account of the price it fetches in the market, is a third-rate leaf, for it is rather larger than the *Souchong*. Some of it would make Young Hyson, and some Skin Tea. *Souchong* would make Hyson and Young Hyson. *Toychong* would make Skin Tea.—I will here mention the different kinds of Black Teas, to make the matter more clear to those who take an interest in the subject. *Thowung-Paho* (the *Sung fa* is the same leaf as this) is the downy little leaf not expanded, and the one next to it that has just unfolded a little. This Tea when made appears full of small white leaves, which are the little downy leaves just mentioned. *Twazee-Paho* is from the second crop, and nearly the same kind of Tea, only a little older; the leaf next the small downy one (being a little more expanded) and the small leaf below this, are taken, making three in all; this has also numerous white leaves, but not so many as the former. *Souchong* is the next largest leaf; this is well grown, but embraces all the leaves above it. When the upper leaves have grown out of season for *Thowung-Paho* and *Twazee-Paho*, they are all plucked for the *Souchong* from the third and fourth of the upper leaves. From *Souchong* leaves the *Minchong* and *Sychee* Teas are made in the first crop, and no other. *Pouchong* is the next largest leaf; it is a little older and larger than the *Souchong*. From this leaf the *Sychee* and *Minchong* Teas can be made in the first crop only. The *Pouchong* is never made in the second crop, on account of its not having a good flavour: many of the *Souchong* leaves are mixed up in this Tea. The *Toychong* leaves are those that are rejected from the *Souchong* and *Pouchong*, as being too large and not taking the roll. When the Teas are picked, these leaves are put on one side. The Chinese often put them into a bag, and give them a twist, something in the

Green Tea way, and then mix them up with the *Souchong* to add to the weight. This leaf *(Toychong)* becomes worse in the second and third crops ;—it is a cheap Tea and sold to the poor. All the Black Teas that are damaged have the flower of what the Chinese call *Qui fa*, another called *Son fa*, mixed up with them. One pound of the flowers is put to each box of damaged Tea. After the Teas have been well tatched and mixed up with other sorts, these leaves give them a pleasant fragrance. The *Son fa* plant is about two feet high and kept in flower pots ; it is propagated from the roots. The *Qui fa* plant is from three to four feet high ; one pound of the flowers is put to a box of Tea. The plant was seen in the Botanical Gardens at Calcutta by our Chinese interpreter. The flowers of this plant are considered finer than those of the *Son fa*. I annex a rough drawing of each of them, as given to me by the interpreter ; the dots in the drawings are intended for small flowers*.

The Black Tea makers appear to me to be very arbitrary in their mode of manufacture ; sometimes they will take the leaves of the *Thowung-Paho*, or perhaps *Twazee-Paho ;* but if it has been raining, or there is any want of coolies to pluck the leaves quickly, or from any other cause, they will let the leaves grow a few days longer, and turn all into *Souchong ;* which it must be remembered, takes all the small leaves above it. If it is the first crop, the *Souchong* and *Pouchong* leaves may all be turned into *Souchong* Tea ; but even if it is the second crop, when the *Pouchony* leaves ought not to be gathered, they are nevertheless plucked and mixed up with the *Souchong* leaves. Almost all our Black and all the Green Teas have just been made from one garden. When the Green Tea makers complained that the leaves were beginning to get too large for them—that is, they were fast growing out of *Souchong* and running into *Pouchong*—the Black Tea makers took up the manufacture, plucked all the leaves, and made excellent *Pouchong ;* so that between the two, there is not a

* These two sketches are not deemed sufficiently instructive to be added here. One of them is entitled *Qui fa*, which is the name of the Olea fragrans, or Sweet-scented Olive, the flowers of which are said to be used for perfuming Teas. But it is more like the Aglaia odorata, a very different plant, which is also supposed to be applied in China for a similar purpose. This last, however, is called *Tyiulang* by the Chinese, according to Rumph and *Sam yeip lan* according to Roxburgh. The other sketch, entitled *Lan fa*, seems to be intended for a liliaceous, or at any rate an endogenous plant. I am unable to offer any conjecture about it.—N. W.

leaf lost. When the Black Tea makers have a garden to themselves they are cruel pluckers, for they almost strip the tree of leaves for the *Souchong*, and are not at all nice in the plucking; the third and even the fourth leaf on a tender twig is nipped off in the twinkling of an eye; they then look about for more young leaves, and away go the *Pouchong*, and *Toychong* too, which is the largest leaf of all. But the Green Tea men pluck quietly, one by one, down to *Souchong*. The Black Tea men separate all their Teas into first, second, third, and fourth crop; but the Green Tea manufacturers make no distinction; they prepare all the Tea they can, throughout the season, box or basket it up, and when the season is over, they set off for Canton with their produce; at least all those who do not wish to sell their Tea on the spot. The different merchants go in quest of it there. It now indiscriminately undergoes the second process; that is, the different crops are all mixed up together. No old leaves can be mixed in the Green, as in the Black Teas; for the long rolling in the pan crushes them, and the fan blows them away, so that only the young leaves are left.

We shall now take a comparative view of the number of men required by the Black and the Green Tea makers for one pair of pans.

For the Black Tea makers there will be required,

to tatch, ...	2	men
— roll, ...	4	,,
— attend to the fire, ...	1	,,
— dry, ...	1	,,
— beat and put in the sun, ...	2	,,
Total number of men, ...	10	

To keep these men fully at work, from twenty-five to thirty coolies will be required to pluck leaves, and they will turn out about two boxes of Tea per day, (weighing one maund, or 80 pounds) if the weather be fine and sunny; but scarcely half that quantity if it be rainy, on account of the coolies not plucking so much on a rainy, as they would on a fair sunny day. As the people of the country become acquainted with the gathering and manufacturing, three boxes, of forty pounds each, may be expected in fine weather, adding perhaps a few men to the number of coolies.

A pair of pans for the Green Tea makers would require during the first process.

to tatch, ...	2	men
— receive the Tea from the pans, ...	1	„
— roll, ...	8	„
— attend to the fire, ...	1	„
— put the leaves in the sun and turn them, ..	4	„
Total number of men, ...	16	

Thirty coolies would be required to keep these men in full play, and they would turn out two boxes of twenty-three seers, or forty-six pounds each, per day; in all ninety-two pounds of Tea. If the weather be rainy, of course the produce is much less; as the gatherers then do only half work. Thus the difference between the Black and Green is, that the former requires six manufacturers less; and that when the Black Tea is finished, boxed, and ready for exportation, the Green has only undergone the first process, and is but half finished; although it is ready for exportation to any appointed place to receive the final and troublesome, as well as most expensive part of the process. Nevertheless the first part of the Green Tea preparation is easily learnt by the natives of this place in about two or three months. In speaking of the trouble and expense attending the second process of the Green Tea making, I beg to observe that it appears to me, from what little I have seen of it, that machinery might easily be brought to bear; and as Assam is about to become a great Tea country, it behoves us to look to this. The Tea half made, as above described, I am informed by the Green Tea Chinamen now with me, is put either into boxes or baskets, with bamboo leaves between; it has to make in this state a long journey by land and water, and then to go one or more months in a boat by sea, before it reaches Canton, where it is laid aside for one or two months more, before it undergoes the second process: making in all about five months from the time it was first prepared. All that is required is to keep it dry. Now if all this be true, which I have no doubt it is, I see no reason why we could not send it to England, and have it made up there. I rather see every thing in favor of such a plan, and nothing against it. After a year's instruction under Chinamen, it might be left to the ingenuity of Englishmen to roll, sift, and clean the Tea by machinery, and, in fact, reduce the price of the Green Tea nearly one-half, and thus enable the poor to drink good unadulterated Green Tea, by throwing the indigo and sulphate of lime overboard. At all events the experiment is worthy

of a fair trial, and the first step towards it would be to manufacture the Tea at Calcutta; or perhaps it would be better to let the China Green Tea makers go direct to England along with it, and have it manufactured there at once.

Now for a word about the Lead-canister maker, who is a very important man in our establishment; for without him, we could not pack our Teas.—On two tiles about an inch thick and sixteen inches square, is pasted, on one side, a sheet of very fine thick paper, said to have been made in Cochin-China; over this another sheet is pasted only at the edges. The paper must be very smooth, and without any kind of hole, knob, or blemish. To make it answer the purpose better, fine chalk is rubbed over it. The tiles thus prepared are laid one over the other and moved backwards and forwards, to ascertain if they work smoothly. The lower tile rests on two pieces of wood, about four inches in thickness, and the exact length of the tile. The room where the sheets of lead are made must be very smooth and level, as the tiles are apt to break when there is any unequal pressure on them. In the corner of the room there is a sunken brick fire-place, the upper part of which rises just a little above the floor; into this fire-place is inserted one of the cast iron pans used for making Tea, and in one corner of the masonry is a vent hole on which in general a tea kettle stands. The pan is heated by a wood fire; an iron ladle with a handle, about six or eight inches long, answers the purpose of taking the lead out of the pan when required. The pan may hold about twenty pounds. There is also another ladle with a long handle, and holes at the bottom, to take the dross off. When lead for the sides of the boxes is required, the proportion of one maund of lead to five seers of tin is put into the pan. When well melted and freed from dross, the two tiles above mentioned are placed on the two pieces of wood, one piece being nearly under the centre, and the other at the edge of the lower tile; the upper tile is placed on the lower tile even and square, projecting perhaps a little backwards towards the operator. The tiles being thus placed near the melted lead, the Chinaman squats down on them, placing his heels near the edge, with his toes towards the centre; while with his left hand he lays hold of the corner tile, and with the right holds the short ladle, which he dips into the boiler, and takes out about half a ladleful of the molten metal, tipping up the upper tile with the left hand about three inches, at the same time assisting this operation by pressing on his heels and gently lifting his toes.

The upper tile being thus raised he dashes in the contents of the ladle between both, lets go with the left hand, and presses on with his toes, which brings the upper tile with some force to its former position over the lower one, and occasions the superfluous lead to gush out right and left and in front. The upper tile is then raised like the lid of a box, while the lower one rests on the piece of projecting wood underneath, and a fine thin sheet of lead, nearly the size of the tiles, is taken out, and thrown on one side; the upper tile is then gently lowered down, another ladle of hot lead dashed in, and so on in quick succession, about four sheets of lead being made in one minute. The lower tile projecting a little beyond the upper one assists the man to lay the ladle on, and pour in the metal firmly and quickly. To vary the operation, the man sometimes stands up and places one foot on the upper tile, working with his heel and toes, the same as if both feet were on, and just as quickly. Many interruptions take place, such as examining the papers on the tiles, rubbing them with chalk, turning them round, and reversing them. Sometimes half a split bamboo is placed in front and under the tiles, with a piece of paper on it, to receive the lead that falls down, so that it may not come in contact with the ground. This lead is every now and then taken up and put back into the boiler. A maund of lead may make about twelve or thirteen boxes, which will hold forty pounds. There are also two other tiles, about a cubit square; these are used for making the tops of the canisters, which are generally of tin only, but can also be made from the above mixture. It is necessary in making this sheet-lead, to hold the sheets up and examine them; for if not properly prepared, there are sometimes a number of very fine holes in them, which are not perceptible when lying on the ground or table. On this account the first twenty sheets of lead are thrown aside and rejected, even without any examination. When the tiles have become nice and warm, it is then the fine and even sheets, without holes, are obtained. Before a sheet-lead canister can be made, it is necessary to have a model box made to fit into the wooden box, that is to hold the sheet-lead canister; on this box or shell the sheet-lead canister is made. It has a hole at the bottom to prevent any suction in putting it in, or drawing it out of the box or canister; and instead of a top it has a bar of wood across, by which it is drawn out. For soldering, tin, with the eighth or twelfth part of quicksilver, and some rosin are used. The wood part of some of the boxes is covered with paper pasted on and dried in the sun. To give the paper on the boxes a yellow colour, a mixture of

paste with pulverized and sifted saffron is laid on and dried. The paper on the corners of the boxes is ornamented by means of a wooden block with flowers carved on it; on this bit of wood very thin paper, cut to its size, is placed, and a mixture, consisting of pulverized saffron, indigo, and water, having a deep green color, is laid singly on each bit of paper with a brush made of cocoanut fibres. These slips of paper are put one above the other, twenty thick, or as long as the paper takes the impression of the carved wood below. When the corners of the boxes have been ornamented with this paper and dried, another mixture, about the proportion of four seers of oil to three seers of rosin, boiled together, is applied with a cocoanut brush over all the boxes as a finish; after these are dry they are ready for the Tea.

The following table will shew the size and produce of the Tea tracts now worked, and the probable amount of Tea for this and the next season.

Names of Tea tracts fully worked in 1838.	Length and breadth of Tea tracts.	Number of plants in each Tea tract.	Average produce of single Tea plants.	Produce in 1838.	Remarks.
No. 1 Tiingfl,	267 by 90	5,000	4 Sa. Weight,	260 Srs.	
No. 2 Tringvi,	155 by 70	2,340	3-12 Sa. Wt.,	160 ,,	
No. 1 Kahung,	450 by 210	1,36,000	4 Sa. Weight,	680 ,,	
No. 1 Chabwa,	200 by 160	8,200	4 Sa. Weight,	410 ,,	
Deenjoy,.....	223 by 171	8,400	2 Sa. Weight,	210 ,,	The plants are small in this tract including China plants.
				1,720	
From Shady Tracts, ...				390	
				2,110	
The probable increase of the above Tracts for 1839, ...				527	
Probable produce of 1839,.....				2,637 Srs.	5,274 lbs.

Names of the tracts to be worked in 1840.	Length and breadth of Tea tracts.	Number of plants in each Tea tract.	Probable produce of one Tea plant.	Probable produce in 1840.	Remarks.
No. 2 Kahung,	192 by 114	4,720	3 Sa. Weight,	177	
No. 3 Do.	215 by 70	3,440	3 Sa. Weight,	129	
No. 2 Chabwa,	160 by 70	2 420	3 Sa. Weight,	90	
Nowhoika.	476 by 160	16,480	3 Sa. Weight,	618	
[illegible]pun,	344 by 331	24,620	3 Sa. Weight,	922	The plants in these tracts now small will not yield a good crop for two years.
[illegible]ugundeo,	408 by 200	17,300	3 Sa. Weight,	648	
[illegible]ingrew,	300 by 189	12,460	3 Sa. Weight,	459	
The probable produce of the above 7 tracts, ...				2,943	
Add the probable produce of the other 5 tracts, ...				2,637	
Probable produce of all the tracts in 1840.....				5,580	11,160 lbs.

It should be borne in mind that this is a rough calculation, and I can only give the probable amount. Most of these plants are very young, or have been recently cut down; a few years hence the plants may yield twice the above quantity. The first table exhibits the absolute produce of 1838. Now let us suppose a new settler were to take land in these parts; what would be his expenses if he were only to cultivate Tea, and had to clear forest land (in the vicinity of the Tea), ten times the size of *Newbolta*, which is, say 400 by 200 yards, and which would cost him 200 Rupees to clear. Ten such tracts would cover 8,00,000 square yards. Now, to cover this surface of ground with Tea plants, and the plants six feet apart each way, 3,55,555 plants would be required; but if two plants were to be placed together, as I would recommend, then 7,11,110 plants would be required. The cost would probably be at the rate of five annas for 300 plants; thus:

The clearing of 10 tracts, each 400 by 200 yards, .	2,000	0	0
7,11,110 Tea plants, at 5 annas for 300, ...	740	11	8
Planting the above, ...	474	0	0
Weeding each tract 3 times each year, at 30 Rs. each tract, ...	900	0	0
5 Tea houses, at 50 Rs. each, ...	250	0	0
200 Hoes at 1 Rupee each, ...	200	0	0
100 Axes at 1 Rupee each, ...	100	0	0
100 Daws at 1 Rupee each, ...	100	0	0
Dollahs, Challonis, &c. bamboo apparatus, ...	200	0	0
8 Saws at 5 Rs. each, ...	40	0	0
Charcoal and firewood for baking the Tea	200	0	0
40 Cast-iron pans, at 4 Rs. each, ...	160	0	0
Paper for Tea boxes, ...	100	0	0
Chalk and Indigo, ...	50	0	0
3 Maunds of Nails of sizes, at 10 Rs. per maund, ..	30	0	0
2 Elephants at 150 Rs. each	300	0	0
2 Elephant mahoots at 6 Rs. each per month, ...	144	0	0
2 Elephant mates at 4 Rs. each per month, ...	96	0	0
Rice for 2 Elephants, ...	96	0	0
Lead for 888 boxes, at 3 seers per box containing 20 seers, at 8 Rs. per maund, ...	532	12	9
A Cooly sirdar at 10 Rs. per month, ...	120	0	0
Carried over, ..	6,833	8	5

				Brought over, .	6,833	8 5
10 Duffadars, or Overseers of coolies at 3 Rs. per month,					360	0 0
Coolies to collect leaves, 30 to each tract, 20 days to each crop; for 3 crops, or 60 days, at 3 Rs. for each man per month,					1,800	0 0
4 Native carpenters, at 12 Rs ditto,					576	0 0
8 Sawyers, at 4 Rs. ditto,					384	0 0
2 Native Lead-canister makers, at 12 Rs. ditto,					288	0 0
Coolies to bring in timber for Sawyers.					150	0 0
5 Chinamen at 30 Rs. each per month,					1,800	0 0
120 Native Tea-makers at 5 Rs. each, for 5 months, or one season,					3,000	0 0
Freight to Calcutta,					400	0 0
Ditto to England,					1,000	0 0
				Total outlay for 10 tracts, Co.'s Rs.	16,591	8 5
Deduct charges that are not annual, viz.—						
Clearing of tracts,	2,000	0	0			
Purchase of Tea plants,	740	0				
Planting ditto,	474	0	0			
Building Tea houses,	150	0	0			
Purchase of Hoes,	200	0	0			
Do. Axes,	100	0	0			
Do. Daws,	100	0	0			
Do. Saws,	40	0	0			
Do. Bamboo apparatus,	200	0	0			
Do. Elephants,	300	0	0		4,304	0 0
				Total annual outlay on 10 tracts,	12,287	8 5
Average produce of 3,55,555 tea plants at 4 Sa. Wt. each plant, is 444 Mds. or 17,777 Srs. or 35,554 lbs. at 2*s.*, or 1 rupee, per pound, would be,					35,554	0 0
				Annual profit on 10 tracts, Co.'s Rs.	23,266	7 7

Annual outlay.	Co's. Rs.	*Annual profits.*	Co's. Rs.
For 10 tracts,	12,287	On 10 tracts,	23,266
For 100 tracts,	1,22,870	On 100 tracts,	2,32,660
For 1000 tracts,	12,28,700	On 1000 tracts,	23,26,600

N. B.—The deduction of 4304 Rs. not being annual outlay is not included in this calculation above 10 Tracts.

	Tea tract.	*Duffadars.*	*Takelah.*	*Coolies.*
Required for	1	1	10	30
,, for	10	10	100	300
,, for	100	100	1000	3000

It must be remembered that this calculation has been made on 3,55,555 plants, not on double that number as I proposed, viz. to plant them in pairs, which would certainly, on the lowest calculation increase the profits thirty per cent. It should be borne in mind also, that 4 sicca weight is not the full produce of each plant; when full grown it will yield double that, or 8 sicca weight, and some even as high as 10 to 12 sicca weight. I have calculated at the rate of 4 sicca, which was absolutely produced in 1838. The plant will, I should think, produce 25 per cent. more this year, and go on increasing to what I have above mentioned. But then, on the other hand, the items which I have set down, are not all that will be required to carry on this trade on an extensive scale. The superintendence, numerous additional artizans that will be required, and a thousand little wants which cannot be set down now, but which must necessarily arise from the nature of the cultivation and manufacture, will go far to diminish the profits, and swell the outlay; but this of course will last but a few years, until the natives of the country have been taught to compete with Chinamen. It should also be remembered, that the calculation I have made on ten tracts is on a supposition that we have a sufficient number of native Tea-makers and Canister-makers, which will not be the case for two or three years to come. It is on this point alone that we are deficient, for the Tea plants and lands are before us. Yes, there is another very great drawback to the cultivation of Tea in this country, and which I believe I before noticed, namely, the want of population and labourers. They will have to be imported and settled on the soil, which will be a heavy tax on the first outlay; but this, too, will rectify itself in a few years; for, after the importation of some thousands, others will come of themselves, and the redundant population of Bengal, will pour into Assam, as soon as the people know that they will get a certain rate of pay, as well as lands, for the support of their families. If this should be the case, the Assamese language will in a few years be extinct.

I might here observe, that the British Government would confer a lasting blessing on the Assamese and the new settlers, if immediate and active measures were taken to put down the cultivation of

Opium in Assam, and afterwards to stop its importation by levying high duties on Opium land. If something of this kind is not done, and done quickly too, the thousands that are about to emigrate from the plains into Assam, will soon be infected with the Opium mania, —that dreadful *plague*, which has depopulated this beautiful country, turned it into a land of wild beasts, with which it is overrun, and has degenerated the Assamese, from a fine race of people, to the most abject, servile, crafty, and demoralized race in India. This vile drug has kept, and does now keep, down the population; the women have fewer children compared with those of other countries, and the children seldom live to become old men, but in general die at manhood; very few old men being seen in this unfortunate country, in comparison with others. Few but those who have resided long in this unhappy land know the dreadful and immoral effects, which the use of Opium produces on the native. He will steal, sell his property, his children, the mother of his children, and finally even commit murder for it. Would it not be the highest of blessings, if our humane and enlightened Government would stop these evils by a single dash of the pen, and save Assam, and all those who are about to emigrate into it as Tea cultivators, from the dreadful results attendant on the habitual use of Opium? We should in the end be richly rewarded, by having a fine, healthy race of men growing up for our plantations, to fell our forests, to clear the land from jungle and wild beasts, and to plant and cultivate the luxury of the world. This can never be effected by the enfeebled Opium-eaters of Assam, who are more effeminate than women. I have dwelt thus long on the subject, thinking it one of great importance, as it will affect our future prospects in regard to Tea; also from a wish to benefit this people, and save those who are coming here, from catching the plague, by our using timely measures of prevention.

Monthly outlay of the present standing Establishment.

Superintendent,	Co.'s Rs.	500	0	0
1st Assistant, to Do.		100	0	0
2nd Do. Do.		70	0	0
1 Chinese Black Tea maker,		55	11	6
1 Ditto Assistant to Ditto,		11	1	6
1 Ditto Tea-box maker,		45	0	0
1 Ditto Interpreter,		45	0	0
1 Ditto Tea-box maker,		15	8	6

2 Ditto Green Tea makers, at 15 : 8 : 6 each, ...	31	1	0
1 Ditto Tea-box maker, ...	33	4	6
1 Ditto Lead-canister maker, ...	22	3	0
24 Native Black Tea makers, at 5 each, ...	120	0	0
12 Native Green Tea makers at 5 each, ...	60	0	0
1 Native Carpenter, ...	4	0	0
1 Coolie Sirdar, ...	10	0	0
4 Mahouts, at 6 each, ...	24	0	0
4 Ditto Mates, at 4 each, ...	16	0	0
Rice for 4 Elephants per month, ...	18	0	0
4 Sawyers, at 4 each, ...	16	0	0
2 Dâk runners, at 3: 8: 0 each, ...	7	0	0
4 Duffadars, at 3 each, ...	12	0	0
Fixed monthly expenditure in Assam, ...	1,215	14	0
Cash paid to Chinese families in China, ...	131	2	6
Total monthly expenditure,	1,347	0	6

or 16,000 a year, not including coolies and other items. It should be remembered that this establishment has been confined to a few tracts as an experiment, and has never been fully worked. The Chinese Green Tea makers, Canister-makers, and Interpreter, have lately been added to the establishment; their services have not as yet been brought into account. We are just now availing ourselves of them by making Green Tea; and as the natives at present placed under them become available, large quantities of excellent Green Tea will be manufactured. I suppose two Chinamen might qualify twenty-four natives for the first process; the second, as I have already recommended, might be performed in England, which, in my humble opinion, would effect a great saving, by getting machinery to do the greater part of the work. At all events, it never could be manufactured in Assam without a great expense, and this for want of labourers. However, it is gratifying to see how fast the Chinese acquire the Assamese language; for, after they have been a year in the country, they begin to speak sufficiently well for all ordinary purposes, so that an interpreter can very well be dispensed with. Our Chinamen can speak the Assamese language much better than the interpreter can the English language. They are a violent, headstrong, and passionate people, more especially as they are aware we are so much in their power. If the many behave as do the few, a Thannah would be necessary to keep them cool.

With respect to what are called the *Singpho* Tea tracts, I am sorry to say we have not been able this year to get a leaf from them, on account of the disturbances that have lately occurred there; nor do I believe we shall get any next year, unless we establish a post at *Ningrew*, which I think is the only effectual way to keep the country quiet, and secure our Tea. The Tea from these tracts is said by the Chinamen to be very fine. Some of the tracts are very extensive, and many may run for miles into the jungles for what we know; the whole of the country is capable of being turned into a vast Tea garden, the soil being excellent, and well adapted for the growth of Tea. On both sides of the Buri-Dehing river, as will be seen by the map, the Tea grows indigenous; it may be traced from tract to tract to *Hookum*, thus forming a chain of Tea tracts from the Irrawaddy to the borders of China, east of Assam. Ever since my residence at Sudiya this has been confirmed year after year by many of my Kamptee, Singpho, and Dewaneah acquaintances, who have traversed this route. It is therefore important for us to look well to our Eastern frontier, on account of our capability to extend our Tea cultivation in that direction. England alone consumes 31,829,620 lbs. nearly four laks of maunds, annually. To supply so vast a quantity of Tea, it will be necessary to cultivate all the hills and vallies of Assam; and on this very account a post at *Ningrew* becomes doubly necessary. A few years hence, it may be found expedient to advance this frontier post to the top of the *Patkai* hill, the boundary line of our eastern frontier. Any rupture with Burmah would add to our Tea trade, by taking from them *Hookum* and *Munkoom*, and having the Irrawaddy as our boundary line. These countries are nominally under the Burmese, as they pay a small annual tribute; but this can never be collected without sending an armed force. They are said to be thinly inhabited; the population being kept down by the constant broils and wars, which one petty place makes upon another for the sake of plunder. All the inhabitants drink Tea, but it is not manufactured in our way; few, it is said, cultivate the plant. I have for years been trying to get some seeds or plants from them, but have never succeeded, on account of the disturbed state in which they live. The leaves of their Tea plants have always been represented to me as being much smaller than ours.

Muttuck is a country that abounds in Tea, and it might be made one extensive, beautiful Tea garden. We have many cultivated experimental tracts in it; we know of numerous extensive uncultivated

tracts, and it appears to me that we are only in the infancy of our discoveries as yet. Our Tea, however, is insecure here. It was but a month or two ago that so great an alarm was created, that my people had to retire from our Tea gardens and manufacture at Deenjoy and Chubwa, which will account for the deficiency of this year's crop. Things must continue in this state until the government of the country is finally settled; for we are at present obliged, in order to follow a peaceful occupation, to have the means of defending ourselves from a sudden attack, ever since the unfortunate affair at Sudiya. Before the transfer of the Tea tracts in this country can be made, it will be necessary, in justice to all parties, to know if *Muttuck* is, or is to become, ours or not. The natives at present are permitted to cultivated as much land as they please, on paying a poll-tax of two rupees per year; so that if the country is not ours, every man employed on the Tea will be subject to be called on for two rupees per annum, to be paid to the old Bura Senaputy's son, as governor of the country. This point is of vital importance to our Tea prospects up here. Many individuals might be induced to take Tea grounds, were they sure, that the soil was ours, and that they would be protected and permitted to cultivate it in security.

In looking forward to the unbounded benefit the discovery of this plant will produce to England, to India,—to Millions, I cannot but thank God for so great a blessing to our country. When I first discovered it, some 14 years ago, I little thought that I should have been spared long enough to see it become likely eventually to rival that of China, and that I should have to take a prominent part in bringing it to so successful an issue. Should what I have written on this new and interesting subject be of any benefit to the country, and the community at large, and help a little to impel the Tea forward to enrich our own dominions, and pull down the haughty pride of China, I shall feel myself richly repaid for all the perils and dangers and fatigues, that I have undergone in the cause of British India Tea.

Jaipore, 10th June, 1839.

PROCEEDINGS

OF THE

AGRICULTURAL AND HORTICULTURAL SOCIETY OF INDIA.

NOVEMBER,

1839.

CALCUTTA:

PRINTED AT THE BAPTIST MISSION PRESS,

CIRCULAR ROAD.

1839.

AGRICULTURAL SOCIETY OF INDIA.

PROCEEDINGS.

NOVEMBER 13, 1839.

Agricultural Society of India.

A General Meeting was held at the Society's Room, Town Hall. C. K. Robison, Esq., Vice President, in the Chair.

(Twenty Members present.)

The Proceedings of the last Meeting were confirmed.

MEMBERS ELECTED.

The Gentlemen proposed at the last Meeting were elected Members, viz.

Messrs. John Storm, M. D. Cohen, A. T. Smith, G. Shearwood, L. Quantin, John Curnin, James Hume, Lewis Durup de Dombal, Michel Durup de Dombal and Lieut. Kittoe.

FOR ELECTION.

The names of the following Gentlemen were read as candidates for election :

Dr. John Campbell, (Cawnpore)—proposed by Dr. Spry, seconded by Mr. A. Porteous.

John Thos. Pearson, Esq. Medical Service, (Darjeeling)—proposed by Dr. Spry, seconded by Mr. Trebeck.

Longueville Clarke, Esq. (Barrister)—proposed by Dr. Spry, seconded by Dr. Strong.

F. A. J. Elson, Esq. (Chittagong)—proposed by Mr. T. H. Gardiner, seconded by Dr. Spry.

H. Andrew, Esq. (Kishnagur)—proposed by Mr. Wm. Storm, seconded by Mr. D. Andrew.

J. S. Boldero, Esq. Civil Service, (Agra)—proposed by Mr. Charles Lyall, seconded by Dr. Spry.

Alfred Parker, Esq. (Firm of Mackenzie, Lyall and Co.)—proposed by Mr. C. K. Robison, seconded by the Secretary.

Robert Bluntish, Esq. (H. M. 9th Regt.)—proposed by Captain Mylius, seconded by the Secretary.

His Highness Prince Gholam Mahmood—proposed by Dr. Strong, seconded by Mr. Trebeck.

James R. Logan, Esq. (Penang)—proposed by Dr. Spry, seconded by Mr. Wm. Storm.

Presentations to the Society.

LIBRARY.

1. Twenty-five copies of Official Papers, connected with the cultivation of Cotton—*presented by Government.*

MUSEUM.

1. Four bottles of Wood Oil, procured from the Forests of the Tenasserim Provinces—*presented by Dr. Helfer.*

2. A basket of ripe Oranges, received on the 10th of October—*presented by G. F. McClintock, Esq.* in whose garden they were grown.

3. A second specimen of Caoutchouc Cloth—*presented by Mr. Linton.*

4. Three bottles, one containing red solid Celery, one Cove Coss Lettuce, and one double-curled Parsley, procured in May last, from the garden at Ragley, the seat of the Marquis of Hertford, and regarded as the finest variety of their respective kinds procurable in England—*presented by the Rev. W. H. Pearce.*

5. A pint bottle containing the seed of a Plant that grows abundantly in Major McFarquhar's grounds at Tavoy, the leaf of which is somewhat like clover, grows either upright to the height of three or four feet, or creeps along the ground; appears to grow in any soil, and thrives in the hottest weather. Horses, cows, sheep, goats and rabbits are fond of it. It is cut the same as lucerne, and it springs up again. Major McFarquhar does not recollect having seen it any where before, and he considers it may be useful to those who keep cattle—*presented by Major McFarquhar.*

6. Two bags containing about 160 lbs. of Cotton Seed, from Tinnevelly in Southern India—*presented by Messrs. Adam Scott and Co.*

7. Sample of the first specimen of Silk, made by Messrs. Watkins and Mendes, China Silk Reelers, from the Moonga Cocoons—*presented by Captain Jenkins. Referred to the Silk Committee.*

8. A bottle of Rum, distilled by Mr. J. Balestier, at Singapore, from skimming and molasses. Mr. Balestier is desirous of having an opinion of its quality, and it was referred to a competent authority for that pursose—*Presented by Dr. Huffnagle, on the part of Mr. Balestier.*

9. A small sample of Cotton, from Malta seed, grown in the garden of Major Ouseley, from seeds furnished by Captain Steel, who obtained them from the Agricultural Society—*presented by Dr. Wallich, on the part of Major Ouseley.*

10. Three small samples of Cotton, taken during the rains from plants in his garden at Dacca—*presented by Mr. Cooke.*

11. A few Dahliah seeds from plants affording every colour but dark blue—though there are blue and white amongst them. In the Valley of Dehra the flowers are as large as dwarf sun-flowers—*presented by Captain Barnett.*

12. A case containing 30 Penang Sugar Canes, sent for the purpose of ascertaining the opinion of the Agricultural Society as to their quality compared to the Otaheite Cane—*presented by Mr. Logan of Penang.*

13. A minute specimen of Caoutchouc* prepared from a climber abounding in the Hills of Darjeling, together with the stem, branches, and one or two leaves of the plant itself. Also the branch of a tree yielding an edible fruit of a red colour, and in flavor something like a currant. The capsule of the seed contains an oil, the fragrancy and pungency of which is like the oil of lemons, but the latter quality is more acrid—*presented on the part of Dr. Pearson, by Dr. Wallich, who in transmitting them to the Society states, that probably the climber is an apocyneous plant which Dr. Pearson will enable him to determine hereafter, and that the tree yielding the edible fruit is a Xanthoxylon or an Evodia not much unlike the Budrung (Fagara Budrunga—Roxb.)*

* This specimen of Caoutchouc is decidedly harder and stronger than any Caoutchouc in the Museum of the Society prepared from the juice of the Ficus Elastica of Assam.—H. H. S.

The promotion and extension of the Cotton cultivation throughout India under the auspices of the Supreme Government, and application of American skill to the instruction of the Natives of India in different parts of the empire in the most improved methods of cultivating, picking, and cleaning of cotton.

The subject which first engaged the attention of the Society, was one of the deepest importance to the advancement of the wealth of India, and related to the determination, by the Supreme Government, of undertaking at the expense of the State, to instruct the people of the country in the art of cultivating the perennial Cotton plants of the western world by the agency of duly qualified American planters. The subject, as it came before the Society, is to be found in the following communication from the Secretary to the Government of Bengal in the Revenue Department.

To the Secretary to the Agricultural and Horticultural Society.

SIR,

I am directed by the Honorable the Deputy Governor of Bengal to forward twenty-five printed copies of the documents noted in the margin, and to request that you will take an early opportunity of bringing the subject of these communications under the consideration of the Agricultural and Horticultural Society.

REVENUE. Despatch of the Hon'ble the Court of Directors, No. 4, of 1839, dated the 15th March, *with enclosures*. Min. of the Governor General, dated the 14th August, 1839.

2. The subject under discussion, viz. the improved cultivation of Cotton, is one, confessedly, of the utmost importance. The Society will observe that the subject has attracted the attention of the Honorable the Court of Directors, who, it will be seen from the Honorable Court's dispatch, have adopted measures with the view of obtaining from America the services of properly qualified individuals, who are to be sent out to this country, for the purpose of instructing and superintending the natives in the cultivation of the Cotton, and of teaching them the proper mode of cleaning it by machinery.

3. The Honorable Court, it will also be seen, are willing to hold out premiums, in order to promote, on the part of private individuals, the successful prosecution of the experiment which they have in view, for producing Cotton of good growth—to be cleaned by machinery.

4. The attention of the Society is particularly invited to the Minute of the Governor General. His Lordship is anxious to obtain, in furtherance of the views of the Home Authorities, the co-operation of the Society,—under whose superintendence the Governor General thinks it would be desirable to place the workmen expected to arrive here in the month of December next. This is a point of primary importance, and the Society, if willing to undertake the duty, will be so good as to favor Government with a full exposition of the plan upon which they would wish to proceed; furnishing, as far as they can, a statement or estimate of monthly expenditure, together with information on all points connected with the subject in question.

5. The Society will not fail also to take into consideration whether any and what measures should be adopted for inducing private or individual exertions towards the attainment of the object in view.

6. The Society are requested to make the best distribution they can of the Pamphlets,—of which additional copies will be supplied, if required.

I am, &c.

(Signed) F J. HALLIDAY,

Secy. to the Govt. of Bengal.

Fort William, the 22nd Oct. 1839.

Revenue Department.

(No. 4, of 1839.)

Our Governor General of India in Council.

Para. 1. From the correspondence which has passed with your Government, as well as with the Governments of Madras and Bombay, you are fully sensible of the interest we have taken in the cultivation of Cotton, Sugar, and other articles of Commerce suited to the European markets.

2. The full and interesting information which we have from time to time received from our respective Governments has satisfied us that they are as deeply impressed with the importance of these objects as ourselves, and it has been very gratifying to us to find that the efforts which have been made in the formation of roads, the construction of canals, of irrigation and the alteration in the mode of assessment, have been felt and acknowledged by the agricultural

community, and have, to a considerable extent, especially in the article of sugar, been attended with encouraging success.

3. With regard to Cotton, although the exertions have not been less unremitting, we are aware that the success which has attended the cultivation of this article has not been so great as could be wished.

4. With a view to extend, improve and encourage the cultivation of Cotton, experimental farms, and farms subsidiary, were established; pecuniary advances made to individuals, and rewards granted to such natives as evinced zeal and ingenuity in the prosecution of the object; seed in considerable quantities, was procured from Egypt, Bourbon, the Brazils and from North America; sawgins used with so much success in the latter country and in the West Indies were sent to India, and a gentleman* who resided for some years in Georgia and New Orleans, was deputed to superintend the working of them.

5. From the best information we have obtained from your records and from other sources, there appears no reason to doubt, although this great desideratum has not yet been obtained, that under proper management and superintendance, India is capable of producing Cotton, in quantity, to compete with the Cotton from North America, which the best Bombay Cotton (Surat) cleaned by the Churka often rivals; but to accomplish this, the following essential points have still to be gained, viz. more full information as to the most approved mode of culture, with reference especially to the selection of soil and climate best suited to several varieties of the plant and most genial to it.

More complete information and instruction with regard to the time and manner of gathering the Cotton from the pod, and cleaning it by means of machinery sufficiently rapid to produce the articles in large quantities without injury to the staple.

6. Referring to your proceedings and to the instructions which have, from time to time, emanated from us, and with reference especially to our despatch, dated 28th March, 1838, we are not aware that any further instructions for your guidance are necessary.

7. The great importance, however, which we attach to the acquirement of the knowledge, above referred to, by the Natives of India, and the right application of it by them to the attainment of the objects contemplated, have induced us to take into con-

* Mr. Metcalfe.

sideration the propriety of deputing persons to North America, with instructions to obtain full information on the subject, and, if possible, to engage parties willing to proceed to India, and duly qualified for the purpose of instructing and superintending the natives in the cultivation of the Cotton, and the proper mode of cleaning it by means of machinery; and we rely on your exertions for adopting effectual measures, and affording facilities for promoting and extending throughout India, any plans which may seem best suited to the attainment of the important objects contemplated in this despatch, so soon as you may receive the necessary information.

8. Should you be of opinion that the important objects we have in view will be further promoted by the offer of a reward at each of the Presidencies for the exhibition of a certain quantity of Cotton properly cleaned, we authorize you to offer rewards of such an amount as you may consider sufficient to stimulate parties engaged in the production to exhibit Cotton of good growth and cleaned by machinery. We are of opinion, however, that the quantity of Cotton so exhibited should not be less than 300 bales.

9. We transmit for your information copies of Memorials we have recently received from the Chambers of Commerce at Glasgow and Manchester, and from the East India Associations of Liverpool and Glasgow, on the subject of cultivating Cotton in India.

10. You will perceive that many of the statements in these Memorials have been made in the absence of correct information regarding the measures which have already been adopted, with a view to encourage the growth in India of various staple articles of commerce, including that of cotton. We have informed the respective parties that the subject would continue to receive our attentive consideration.

11. In the Memorial from the East India Association at Glasgow, our attention has been drawn to an improved Machine for cleaning cotton on the principle of the Churka, three of which are about to be forwarded by the Society to Bombay. We have requested the Association to procure for us four additional machines, two of which we propose forwarding to Bengal, and two to Madras.

12. This machine, it will be observed, is stated "to clean most satisfactorily the Kupas sent from Bombay." The experiment, however, being as yet confined to this country, we shall not be justified in giving the reward alluded to by the Society until the powers

of the machine have been fully proved, by being successfully applied near of growth, and soon after the gathering of the cotton.

We are your affectionate friends,

[*Signed by two Chairs and eleven of the Members of the Court of Directors.*]

London, 15th March, 1839.

Minute by the Right Honorable the Governor General.

Revenue Department Despatch of the Hon'ble Court of March 15th, 1839 on the improved cultivation of cotton in India

I have retained this despatch for some time in order that I might examine with attention the information which has been published from different quarters on the result of past proceedings in regard to the highly important subject to which it relates All the value of success in introducing in India a better produce of cotton, suited for the immense manufactures of England, is fully appreciated by me, and it is fitting that renewed and special exertions being again directed to the prosecution of this national object, our measures in furtherance of them should be well considered, and be as complete and effectual as circumstances will admit We are simultaneously laboring, with fair hopes, to secure the establishment of a profitable tea culture in India, and it will be one fortunate consequence of the state of our Chinese relations if, in respect to the production for the European market of two such valuable articles as tea and cotton, it should give, as seems probable, an active stimulus to the agriculture and commerce of this country. In no other channel can the capital and enterprize which have at Bombay been heretofore employed on the trade in opium, be now turned with better prospect of advantage than to the amelioration of the cotton produce of that Presidency, which already commands some partial sale among the English manufacturers, and affords a very promising encouragement to further persevering experiment.

2. The authorities which I have consulted on the subject are named in the margin*, and they appear to supply full and accurate

* *For India generally.*

"Reports on the culture and manufacture of Cotton, Wool, Raw Silk and Indigo in India"—printed by the East India Company, December 21st, 1836. *Page* 1 *to* 431.

For the Bombay Presidency specially

"The Government of India," by Sir J. Malcolm. *Pages* 108 *to* 133.

information on the condition of the cotton cultivation, and of the success or failure of the attempts made for its improvement, at the several Presidencies.

3. Before, however, I proceed to notice the conclusions which may be deduced from those authorities, it may be convenient that I should first briefly allude to the general principles by which I think that a Government should be carefully guided in its efforts to fix in its territories the growth of any better articles of produce, of whatever interest or importance, with reference particularly to some of the propositions which have been, and are likely to be, urged upon us, by parties laudably eager for the accomplishment of the great ends in view.

4. The following are the chief propositions of this nature which I find in the papers and publications before me.

1st. That there be an alteration in the rate and mode of taxing cotton lands, the rate being erroneously supposed to be a maximum one, and the amount often take in kind; thereby "inducing* the grower to produce quantity or weight without regard to quality or cleanness."

2nd. That encouragement†, or reasonable inducement, be afforded to the influx of capital and to its application to this particular cultivation, a special mode of encouragement is indicated in "the offer‡ of a fitting bounty, either by reducing the assessment on lands on which foreign cotton seed is grown, or by stimulating industry by large grants as prizes."

3rd. That experimental farms be instituted, and rewards given for improved produce, or for improved machines for cleaning the cotton; this last being the great desideratum, especially as regards the cotton of Bombay—seeds to be also procured of the best foreign cottons, and freely distributed.

4th. That the transport of produce be facilitated by the formation of roads, and its preservation and shipment by the erection of suitable warehouses or sheds, and of quays at the ports of dispatch.

5. Of the first of these recommendations I need say little, as

For the Bengal Presidency specially.

Summary by the Secretary to the Agricultural and Horticultural Society of India, dated June 10th, 1839, in "Proceedings for June, 1839." *Pages 33 to 59.*

* Manchester Memorial.

† Glasgow Memorial.

‡ Summary by the Secretary to the Agricultural Society, page 59.

it is now the general rule and practice throughout India that the assessment on land cultivated with superior products shall be no higher than the average rate of land of similar quality, whatever the crop reared on it, and the custom of taking revenue in kind is no where retained. It is to be observed, however, that it is stated by Sir John Malcolm, in his work* before noted, that when the system of taking the revenue of cotton in kind did exist in the Gujerat districts under the Bombay Government, its effect was not to deteriorate, but from the steady attention given to the subject (the Government share of the crop being taken at a valuation in proportion to the care with which it was gathered) greatly to improve the quality of the cotton, there having been a decided falling off in cleanness since the abolition of the system. The same remark has been conveyed to me in a private communication with which I have been very recently favored by a correspondent of high authority at Bombay. "I believe (he says), that it is the general opinion that cotton is very rarely obtained now in a state of cleanness and of fibre equal to that which long ago was received by the Honorable Company as revenue in the Baroach districts." The purchases of the merchants of Bombay are, it is added, chiefly made at that place; and the agency which is in contact with the cultivators in the interior is almost wholly that of Natives, uninstructed, and thinking only of what may seem best for their immediate interests. A laudable instance, is however mentioned in the same letter, of exertions made within the last year or two for the introduction of a better system in this respect by a Parsee merchant of enterprise (named Meerwanjee Hormajee), some bales of Baroach and Surat cotton sent home by whom last year were valued at 1*d.* a lb. above the usual quality of good Baroach cotton, and 1½*d.* above the best which had been known to have been before imported from India.

6. In respect to the second of the recommendations also, I need not after the minutes recorded† by me on other occasions, dwell at any length on the conclusive objections which I feel to all artificial fosterings of the devotion of capital to particular employments by the remission of ordinary rates of assessment, or by any other systems of bounties. Such plans lead to improvident and unsafe speculations;

* See pages 113 to 116, for details on this point.

† In 1836 and 1837, on the remissions of assessment on ground planted with Mauritius sugar-cane, &c. in Bombay.

they make the Government in a manner responsible for the fortunes of individuals, and they are unjust to enterprize in every other department of exertion. It will suffice to say, that my objections to schemes of this description are as strong as they have always been.

7. The third mode suggested for assisting the object, by experimental farms or other expedients of a like strictly experimental character, by a few well-arranged honorary or pecuniary rewards, and by the importation and distribution of seeds, appears to me to comprise some of the most legitimate means of a special kind which the Government can use in aid of the proceedings of private parties or associations. I have no good opinion, especially with such limited and transient agency as we possess in India, of experimental farms, where the cultivation is to be conducted entirely by Government superintendents and servants. But an experimental superintendence and encouragement, on a carefully regulated and measured plan, of the efforts of private cultivators, may doubtless, under different circumstances, be productive of important benefit. To suitable measures of the character here referred to, I would do all in my power to secure a consistent and effective support; I shall hereafter propose to consider whether any such measures are now necessary on the part of the Government in India, in addition to those previously adopted, and in advertence to those specifically referred to in the present despatch of the Honorable Court.

8. As to the formation of roads I fear, that, however valuable a really permanent and good road unquestionably is for all purposes of national improvement, the hope of maintaining such roads, on an extensive scale, in the vast and poor territory, and unfavourable climate of India, is not, for yet many years, to be entertained, on a sober estimate of our difficulties and means; unmetalled roads in this country, though they may be a convenience at other times, are yet during the season of the rains nearly useless, while the expense of forming and keeping up metalled roads throughout our territories must be so enormous, and can so little be relieved by any possibility of re-payment, as to be apparently beyond the limits of all prudent outlay on the part of the State. The main practicable facilities for communication in India, excepting as regards a few great and permanent lines of intercourse between capital cities, to which the application of a large outlay has already been sanctioned, or is contemplated, must, I fear, for a long period be principally found in general protection against violence, in the building of bridges, in

the regular establishment and management of ferries, or other measures for assisting the passage of streams, in the clearing of hill or jungle passes, and in other like works of local convenience; happily however any impediments which can arise from the want of good roads will, for the present, apply only* partially to the detriment of our Cotton produce For the best Indian Cotton, that of Surat and Baroach, is grown in districts close to the sea; while, in the Upper Provinces of Bengal, the Cotton of the Dooab and Bundlekund can readily be transported by our great rivers. In respect to warehouses or sheds, and quays, at the ports of despatch, they are doubtless very desirable, if not necessary, for it is remarked by Sir John Malcolm† that in the Gujerat districts there is a very short period between the date of plucking, and that of shipping the Cotton for Bombay, "it is believed the erection of buildings calculated to preserve the Cotton not exported during the monsoon would give great encouragement and increase production" But the building of warehouses seems rather the province of the private merchant than of the Government It may, however, be very proper to inquire from the Bombay Government whether there are any local reasons which in Gujerat would render the interference of the State useful and expedient for such a purpose, as well as whether there is a want of suitable quays at any of the ports.

* The circumstances to which I have referred, in this paragraph, affecting the formation of roads in India and particularly roads to the Cotton districts appear to have been in some measure overlooked in the following remarks from the useful work entitled "Progress of the Nation," by Mr. Porter, introduced after a passage pointing out the importance of roads for the advancement of Indian commerce.

"Good roads (he says) would be *practical at all periods of the year*, and in every part of the country This improvement is especially needed in the Cotton-yielding districts, where the present expensive mode of conveyance upon the backs of oxen acts most injuriously."

It will at the same time be very proper that the several Governments should be called on to state, in furnishing the reports which I shall hereafter indicate, whether there be any road to their Cotton districts, the construction or improvement of which deserves particular consideration.

I would add on the subject of roads, that in the revenue settlement of the north west provinces of the Bengal Presidency, a systematic arrangement is made for the repair and extension of the communications in the interior of districts, by a cess of 1 per cent. on the amount of the Government jumma or tax, levied and appropriated exclusively for that purpose. The disbursement of this cess is managed by a Local Committee, and it has been gratifying to me to learn that in some districts, the application of these funds is giving to natives of influence a warm feeling of interest, and a habit of co-operation for the general improvement of the country in which they reside.

† Work as above, page 29.

9. In the remarks in the preceding paragraph, I would by no means be understood to discourage a serious attention to the subject of the improvement of our roads generally, but rather only to lament the obstacles which are opposed to success in such undertakings. I would here, however, refer with gratification to the great facility which has been extended to all intercourse by the abolition of transit duties throughout the Presidencies of Bengal and Bombay :—a boon, I trust, to be soon also conferred on the territories of Madras. From this measure we may look for the best effects in the quickening of every enterprize, which may seem to rest upon really solid foundations.

10. I may now go on to remark the results of past endeavours to improve the quality of Indian Cotton in the several Presidencies.

11. The Cotton of commerce consists of two great varieties,—one the black seed, or long staple, of which description are the American, Sea Island, the West India, and South American, the Bourbon, and the Egyptian* Cottons, bearing a higher price in the market than other Cottons, but in comparatively restricted demand,—the other the green seed, or short staple, of which kind are the Upland Georgia and New Orleans, (these forming the main source of supply to our English manufactures,) and the great bulk of the indigenous Cottons of India. Of the general value and use of these different varieties in commerce, a paper in my possession gives the following information :—"The cotton in greatest demand for the larger portion of the manufacture in England is the bowed Georgia Cotton, which sells for 7*d.* to 9*d.* per lb. in the market. The India Cotton which most nearly approaches to it, is that which sells in its present unclean state at about 5½*d.* and if it could *be delivered as clean* as the bowed Upland Georgia Cotton *with a little improvement in the staple*, it would sell in England at about 7*d.* per lb. *to the extent of several millions sterling. Fine Cotton producing a higher price is only of limited demand.*" The modes of separating the two kinds of Cotton from the seed are dissimilar. The Upland Georgia and New Orleans Cotton are so cleaned by the machine called "Whitney's Saw Gin," which is considered to have been "hardly† of less importance, generally, than Arkwright's Machinery." This machine appears to occasion some injury even to the short staple of

* Understood to have been introduced from Pernambuco seed—see p. 280, Report on Cotton, Wool, &c.

† Report on Cotton, Wool, &c. see page 9.

these Cottons, but the loss on that account is more than counterbalanced by the gain in time in the process of cleaning. To the long staple Cottons, however, this instrument is destructive by the manner in which it cuts them, and other means are employed for the purpose; those Cottons separating from the seed with much greater facility than the green seed species. A machine called a Roller Gin* is employed for the American Sea Island Cotton, and the Egyptian Cotton is described to be "separated† from the seeds by means of a machine worked by manual labour, such as is made use of in South America for cleaning long staple Cotton." The Indian Cotton is generally cleaned by an instrument called a "Churka," which answers the purpose sufficiently well, but is comparatively slow and expensive‡. Whitney's Saw Gin, so successful in America, might naturally be thought to be adapted to this short staple Cotton; but it has been unfortunately found at Bombay, from some cause, "whether§ the method of working it, or the weakness of the fibre of the Cotton," to injure the staple seriously, and some modification of this, or an altogether new machine appears consequently to be absolutely required. The Hon'ble Court, in a despatch to Bombay of March 6th, 1832, have suggested that the Saw Gin, notwithstanding its unsuitableness to the indigenous Cottons, might be used for cleaning Cotton raised in India from *American* seeds. In Bengal, the Saw Gin, for Cotton of a generally similar character, has been favorably‖ reported of at Calcutta, and unfavorably at Culpee. It is with the view of overcoming the difficulty occasioned by the presumed inapplicability of the Saw Gin that the East India Association of Glasgow have recommended their improved machine for cleaning Cotton (referred to in the concluding paragraphs of the Court's present despatch), "on the principle of the Indian Churka," and stated to clean "most satisfactorily the kupas¶ sent from Bombay.

12. The total importation of Cotton into England, taking the three years**, 1831, 2, 3, varied from 288 to above 300 millions of

* Sir John Malcolm's work, page 122.

† See Sir John Malcolm's work, page 132.

‡ "The process of cleaning by the Saw Gin is 4 or 5 times more rapid than by the common Churka."—Sir John Malcolm's work, page 123.

§ Report on Cotton, Wool, &c. page 268, and see page 214.—Sir John Malcolm, page 123.

‖ Report on Cotton, Wool, &c. pp. 197 and 227 to 231.

¶ Cotton with seed.

** Report on Cotton, Wool, &c. p. 19.

pounds in each year; and of this quantity the Cotton of India furnished not more in any year than 38 millions* of pounds, a large proportion of which was re-exported to the Continent, where there is some sale for inferior Cotton. In the years 1818 and 1819 the importation of Indian Cotton into England have reached as high as 86 and 62 millions of pounds, but this may probably have proceeded from merely temporary causes.

13. The great export of Indian Cotton to England is from Bombay, to which port the Cotton from Oomrawuttee and the Dekkan, which was formerly brought to Calcutta viâ Mirzapore, is now carried. Of the Bombay Cottons, those from Baroach and Surat are used, though inferior in consequence of the foul state in which they are transported in the English manufactories†, and the rest are almost entirely sent abroad again to the continental markets. The following is a general account of the Indian Cottons as saleable for working‡ up in England, "The Bengal§ may be fairly considered to be *out of use* with the British manufacturer. Surat Cotton, such as a good portion of the imports of 1817 to 1826 consisted of, (that is, good, clean, bright-colored thomil‖ Cotton would always find a consumption to a certain extent, which of course would be increased, if the staple could be a little improved by the introduction of seed from America, particularly from New Orleans. The best quality of the Bombay Cottons have always been considered to be the Baroach and the Surat, which in good seasons are equal in staples to middling bowed Georgia."

14. The first efforts of the Home Authorities were particularly directed to the cultivation of the Bourbon Cotton—but this was checked by the circumstance that¶ "the consumption of Cotton having a long silky staple is very limited, and that the demand of the British or Foreign manufacture does not require a large supply of such Cotton." A gentleman, named Mr. Fischer, seems to have, at a recent period, found it profitable to cultivate Bourbon Cotton in the Salem

* In 1836 the total quantity imported was 406,959,039, of which from the East Indies and Mauritius 75,746,226.—Official Tables, published for Parliament, 1838, page 14.

† See notes to pp. 110 and 127 to Sir John Malcolm's Work.

‡ Paper by Mr. Hunt, Report on Cotton, Wool, &c. pp. 422, 423.

§ This includes the Cotton of Bundlekund and the Dooab.

‖ This signifies, I believe, Cotton of the first picking of the crop.

¶ Report on Cotton, Wool, &c. page 120.

District* of the Madras Territories; but this can only be regarded as the experience of a single speculator. Mr. Bernard Metcalfe, who was employed by the Court to conduct the experiments in the Madras Presidency in 1815, recorded some remarks which may be useful at this time: "The Georgia† *Sea Island, the Surinam*‡, *and Demerara*, are all grown on the border of the sea, and the prime qualities only as far inland as the influence of the sea air and tide waters extend. In the Delta of the Sunderbund, and particularly the provinces adjacent, might perhaps be produced Cottons of an equally fine texture with those above mentioned, and which in England always bear so high a price. The presumption is, the attempt would be successful, provided the black seed was procured from Demerara or Georgia."

15. In 1828§, the further prosecution of experiments was urgently pressed by Lord Ellenborough, the President of the Board of Control, and was warmly entered on by the Honorable Court, the particular object being to see by trial in many different parts of India, "whether it might not be possible to raise some of the superior sorts of Foreign Cotton," while at the same time the utmost possible care should be given to procuring the best specimens of the indigenous Cottons. To Bengal‖, the Court specially pointed out that some "Cotton produced in the Tenasserim Provinces was considered to be superior to any Cotton that has been imported from Bengal, and if in a perfect condition would rank in the London market with very good Surat Cotton, and with middling North American Upland."

16. With the above objects in view, experimental farms were instituted in the Bombay and Bengal Presidencies, rewards were authorized, and Foreign seeds of different descriptions were largely imported, and distributed in different quarters.

17. The result of these trials has certainly been attended with much encouragement. "Most¶ of the specimens which were the produce of indigenous seed, and had been carefully cleaned in the Native manner, proved of qualities which are desirable for manufacture in England: some fine samples were also raised from the Foreign seeds." The favorable impression produced by the trials on the Honorable Court is stated in their despatch now before us.

* As above, page 246, Report of Principal Collector, Salem, May 8th, 1833.

† Report on Cotton, Wool, &c. pages 417, 418.

‡ These, it will be noticed, are long stapled Cottons.

§ See Reports as above, pages 133 to 136.—Letter of Oct. 7th, 1828.

‖ Report, &c. page 147.

¶ Report on Cotton, Wool, &c. pages 11 and 12.

18. In Bombay an experimental farm, with some smaller ones subsidiary to it, was* established in Gujerat. But the Superintendent soon reported that "no improvement was to be expected from any alteration *in the mode of cultivating* Cotton in the Province; and the plan adopted was to let out, in the manner which I have before said that I am most disposed to approve, parts of the Government Farm to Native farmers, to be cultivated under his general direction, he reserving only a small portion of the land for the purpose of being cultivated entirely by himself with *foreign seeds* exclusively. The chief point of importance was soon seen to be a *greater care in the first gathering of the Cotton.* To this object almost alone the attention of the Government was directed in the experiments made in the Southern Mahratta country. The Superintendent in that quarter reported†, "The presence of the leaf which grows under the Cotton pod is the main cause of the inferiority of our Indian Cottons in the English market: this with other impurities gets into the mass of Cotton in the act of picking in the field, and under ordinary circumstances cannot afterwards be got rid of. The radical remedy for this is to pick the Cotton in the field with greater care, as is done in America, by carefully pulling the Cotton out of the pod, and not snatching at the pod itself, and separating the Cotton picked into two portions, one of the first quality free from leaf and dirt, and the other such as may be entangled with the leaf and other impurities." The strongest evidence to the same effect is given by all authorities‡. Mr. Hunt an English dealer says§—"It appears to me that the cause of the depreciation (of the Surat Cotton) is principally owing to the very slovenly way in which the crop is gathered from the plant, and without a thorough reform in that particular, it will be of little use introducing new seed, or increasing the expense of cultivation in other respects." This point being so material, it is especially to be regretted that the Superintendent in the Southern Mahratta Territory experienced great difficulty‖ in persuading the ryots to follow a better system respecting it. And it is remarkable, that though it must have been well known at Bombay that it was by attention in¶ gathering the Cotton that the Go-

* See Report on Cotton, Wool, &c. pages 252 to 269.

† Report, page 203.

‡ See for Gujerat Report, pp. 253 and 256, and Sir John Malcolm, p. 112.

§ Report, p. 423.

‖ Report, p. 262.

¶ Sir John Malcolm, pp. 113 to 116.

vernment, while it received a revenue in kind in this article in Gujerat, had so considerably improved its quality, the object appears, as has been before said, scarcely ever to have been thought worth the care of private capitalists. Mr. Lush, the Superintendent above referred to, was ultimately authorized by the Bombay Government to establish an Agency near Darwar, with a view to the purchasing, as an inducement to the ryots, their well-gathered clean Cotton, with what effect I have not the means of ascertaining.

19. Details of the valuation prices both of the indigenous and foreign seed Cotton, raised and sent home upon these experiments, are given in pages 272 and 280 of the Report on Cotton, Wool, &c. and although the injury before alluded to from the Saw Gin was very considerable, it will be observed that the prices are rated generally above the 7*d.* per lb., which in a preceding extract is mentioned as a sale value at which several millions sterling might be expected to be disposed of. Some Cotton from Egyptian seed is noted as worthy of particular attention, (it being added respecting this quality that it should be well cleaned in *the native* manner;) and the same as regards encouragement to production is said of the Cotton from New Orleans seed, and of some white seeded perennial Cotton grown in a small experimental farm under Mr. Lush in Darwar.

20. A fresh supply of Egyptian seeds, and of the machines used in that country for the cleaning the Cotton, was sent to Bombay in the course of 1836*, but the result is not reported in the papers in my possession.

21. It may be regarded, I think, as probable from the foregoing summary that by inventions such as may be reasonably expected from European mechanical skill, the means of quickly and safely cleaning the indigenous Cottons of Bombay, in so far as regards the separation from the seed after gathering, may be attained, and that for the improvement which may be desired in *the staple* of the Cotton of Bombay, we may look with fair hope to the growth of the article from the best foreign seeds.

22. In Bengal the result of the experiments made has also been encouraging†, though it is to be remembered, regarding such results in all the Presidencies, that the growth of mere specimens is far from being a test of success in attempts to rear a produce of extensive cultivation. The Cotton of the Akra experimental Farm, the main-

* See Report, &c. pp 283 to 292.

† Summary by the Secretary to the Agricultural Society.

tenance of which did not extend beyond three years, was in England partly by actual sale, and partly by valuation, above the specified rate of 7*d.* per lb. and good specimens from various kinds of seed have been also produced in different other parts of the Presidency. The conclusion arrived at in the paper of the Secretary of the Agricultural Society is, that the "Upland Georgia and Egyptian is the seed best calculated for introduction into the interior and upland parts of India, while the Pernambuco, Peruvian, Seychelles, Bourbon, and Sea Islands, may suit best along the line of Coast."

23. The seed sent to Madras appears generally not to have succeeded*, chiefly from a very unfavorable season. Yet the valuation at home of some small† samples of American seed Cotton, raised in the Madras Districts is satisfactory.

24. The Honorable Court have now determined to procure from America, and send to India, persons duly "qualified for the purpose of instructing and superintending the natives in the cultivation of the Cotton, and the proper mode of cleaning it by means of machinery;" and they rely "on our exertions for adopting effectual measures, and affording facilities, for promoting and extending throughout India, any plans which may seem best suited to the attainment of the important objects contemplated, as soon as we may receive the necessary information." They empower us also to "offer rewards at each of the Presidencies, of such an amount as we may consider sufficient to stimulate parties engaged in the production to exhibit Cotton of good growth and cleaned by machinery—the quantity so exhibited not being less than 300 bales."

25. It behoves us to prepare for the arrival of the individuals to be brought from America, who will be conveyed to India, if possible, by December next; and in this view, and that we may be ready to acquit ourselves of the further responsibility imposed on us by the preceding instructions, I have endeavoured briefly to abstract what has seemed to me most material in the reports of past proceedings. I shall be glad, if I shall have succeeded (though I cannot hope to have done so, otherwise than very imperfectly), in assisting the collection of materials which may enable the Governments in India to decide upon a proper course in regard to this important question. I would now suggest that a copy of the Court's despatch, and of this minute, with such further observa-

* Report on Cotton, Wool, pp. 237 to 251.

† Report on Cotton, Wool, &c. pp. 271 and 272.

tions as may occur to his Honor the President in Council, be furnished to each of the Presidencies; and that the several Governments be requested to report their opinions, on a review of the facts above detailed, and after consulting the individuals or bodies most likely to afford useful advice, as to the best means of carrying on future experiments with the aid* of the American workmen to be now employed, and how the knowledge in which those persons must be deficient, of the languages, seasons, and agricultural habits of India may best be supplied. The particular districts the most suited for their employment should also be named, and the description of foreign seed cultivation most likely to succeed in each district. The length of time for which an experiment should be persevered in, should likewise be well considered; for such partial results as, for instance, were derived from the Akra Farm near Calcutta, may not lead to any satisfactory conclusions. The several Governments should further report what amount and manner of reward they would propose to confer for Cotton, well gathered and well cleaned by machinery, under the discretion which has been confided to the Government of India. The local Governments may at the same time inform us how far the arrangements actually in force, whether by public or by private means, for disseminating the best foreign seeds throughout the country, are effective. In Bengal, I believe this object to be well provided for by the excellent measures and admirable zeal of the Agricultural Society of India. To that Society I consider the Government and the community to be under the highest obligations, and I would here say that I would, with perfect confidence and satisfaction, entrust the employment of the expected workmen, with the application of any expenditure which may be sanctioned by the Government, and the guidance of the further experiments to be now entered on, to their general superintendence. I would only on this point repeat my opinion, that experiments in the improvement of cultivation should be chiefly by instruction and assistance to a select number of native cultivators, instead of by any attempt to cultivate by Government agents, although a limited extent of Government cultivation may, perhaps, be found unavoidable with a view to the rearing of produce from foreign seeds, to which the ryots may be unaccustomed, and the risks of which they may be unwilling to incur.

* These men will be directed to bring with them large quantities of the best descriptions of American seeds.

26. Upon the details of future operations, I would only here state that I would be inclined to appropriate, if Mr. Blundell, on a reference which should at once be made to him, should recommend the measure, a portion of the American workmen or instructors to the Tenasserim Provinces; and that I would extend the experiments beyond Bengal, (where the peculiar Cottons which, as has been seen, flourish best near the Sea Coast might continue to be tried,) to our more distant Cotton Provinces, as Bundlekund and the Dooab, where but little effort has yet been made by the Government to ameliorate the produce.

27. It is in my recollection that Mr. Blundell has, in some private communication, referred to the heavy and long continued rains of the Tenasserim Coast as very prejudicial to the growth of Cotton; and I would wish that the opinion of competent persons should be taken at all the Presidencies, as to the effect of a regular alternation of dry and rainy seasons on the plant and its produce.

28. Reports should of course be furnished, as soon as practicable from each Presidency, of the success or failure of the machine for cleaning Cotton, which has been invented by the East India Association of Glasgow, and has been before referred to in this minute; three of these machines are said to be coming to Bombay, two to Bengal, and two to Madras.

29. Of the Honorable the Governor in Council of Bombay, I would specially request that he should submit a succinct report of the progress and result of the experiments established for the improvement of the Cotton of that Presidency since the beginning of 1836, to which my summary has traced the subject, and that he should particularly notice the following points:

1st. The success of the measures adopted under Mr. Lush or by any successor to him, in the Southern Mahratta country, for inducing the ryots to sell to him cleanly gathered Cotton, and for the cultivation of the perennial or other kinds of Cotton in his experimental Farm at Seegee Hulee in Darwar.

2nd. The reasons which may have led to scarcely any measures being apparently taken by private capitalists for the desired improvement in the mode of gathering the Cotton in the Gujerat Districts, in which, on due attention being paid to this point, a good merchantable produce for the English market might with so much certainty be expected.

3rd. The result to the latest period of the introduction of the

foreign seeds into the Guzerat Cotton Districts, whether the seeds obtained from plants raised in the first place from such foreign seeds, yield an equally good description of produce as the original seeds, and whether the application of the Saw Gin to produce of such growth has any different effect from its application to the indigenous Cotton.

4th. The result from the Egyptian seed introduced in 1836, and the value of the cleaning machine sent from Egypt, for the purpose of separating the seed of Cottons of a long staple.

5th. The state of the ports in Gujerat as respects ware-houses and quays, and the occasion which may exist for any aid in regard to such buildings on the part of the Government.

30. I conclude that information on the prospects of an improved Cotton cultivation is generally diffused among the commercial communities of all the Presidencies. If there should be doubt on this point, it will deserve consideration* in what manner the Government can aid in spreading correct knowledge on the subject

31. I will only add that, in order to save time, it will be convenient that I should transmit direct to Bombay, a copy of the Court's Despatch and of these remarks, and I propose accordingly to adopt that course.

(Signed) AUCKLAND.

Simla, August 14th, 1839.

(A true Copy,)
(Signed) T. H. MADDOCK,
Offg. Secy. to the Govt. of India, with the Governor General.

(True Copies,)
J. P. GRANT,
Offg. Secy. to the Govt. of India.

At the conclusion of the perusal of these important documents, the momentous subject to which they referred was duly adverted to,

* I have been happy to observe from a Report of the sixteenth anniversary meeting of the Royal Asiatic Society in London, that this subject has attracted the special notice of the Committee of Commerce and Agriculture of that body. "The first article (it is stated) to which attention had been directed was Cotton," and after alluding to the details which had been collected and arranged on the subject, it is added—"The Committee looked forward to a time, when they should be able to place within the reach of the practical Agriculturist such information as would enable him to grow Cotton in India equal to that of any part of the world."

and the importance of the measures to be adopted for securing the success of so great a national undertaking were fully remarked on.

For giving effect to the wishes of Government relative to the preparation of the estimates and other details connected with the monthly expenditure of the contemplated new establishments, and at the same time that the fullest and safest practical local experience concerning the system of agriculture, the condition of the soils, the places best suited for the location of the American instructors, and the preparation of the wool for commercial purposes, may be insured, it was moved by Colonel McLeod, seconded by Dr. Spry, and carried unanimously,—"That the Society undertakes the duty specified in the 4th Para. of Mr. Secretary Halliday's letter under date the 22nd October last, and that the following gentlemen be appointed a Committee to report to the Society on the subject—with power to add to their numbers—

Francis Curwen Smith, Robert Watson, Wm. Storm, Prossonocomar Tagore, Esqs., Major Carter, Joseph Willis, Owen Potter, Charles Huffnagle, Willis Earle, G. U. Adam, D. B. Syers, Wm. C. Hurry, Esqs. and Dr. Spry.

Intelligence relative to the Fruits of Caubul; deficiency of Vegetables in Afghanistan, and the Facilities which the Country naturally affords for Sheep farming.

The Secretary informed the Meeting that the communication which he had next to submit was one from Lieutenant Nicolson at Caubul, in which that officer, considering that it might be interesting to some of the members of the Society to learn something of the far-famed fruits of Afghanistan and its other natural productions, offers his first impressions on the subject, and proposes to forward further observations as opportunities occur for doing so.

The fruits at present in season (August) are grapes of various kinds.

1. The "Bedana," as the name implies, is without seeds, and is a small-sized yellow grape.

2. The "Kandharee," a very large blue grape, of a fine mellow flavor, and destitute of the excessive lusciousness of most rich-bodied grapes.

3. The "Kaboolee," a common watery white grape, pleasant in taste, but deficient in richness.

4. A small blue grape, more acid than any other variety; beside these, there are several other varieties which have not yet ripened.

Peaches are very plentiful—flavor exquisite, and larger than English ones.

Melons are all good. The perfume and flavor of one kind is exquisite.

Pears are of two kinds, the one superior to the other, but both good; opinion is divided whether this fruit or the peach is the best of the country.

Apples, Cherries, Plums, Greengages, and Mulberries are most abundant, and Lieutenant Nicolson considers that most of these fruits would do well in Hindoostan*.

Vegetables are very scarce. Cabbages, Cauliflowers, Carrots and Banguns are to be had however. The Horse-bean is very plentiful. Lieutenant Nicolson states, that the seeds of all the English vegetables would be a great acquisition for their gardens.

The horses of the country are small hardy animals, more remarkable for strength than activity, and are all capital beasts of burden. For the purposes of agriculture bulls alone are used. From the richness of the pastures the cows yield from three to four seers of milk daily. In the valleys and on the banks of rivers, where the towns and villages are always situated, the meadows produce the richest grass and clover. Lucerne too is very commonly grown as food for horses and cattle. The sheep of the country is the "Doombah" breed or large-tailed sort. This stock supplies the Afghan people with mutton, milk, curds, cheese, and "Kooroot," which constitutes their winter food, while with the skins they make their posteens or upper garments.

By degrees Lieutenant Nicolson thinks an improvement in the nature of the wool may be effected, by crossing the Doombahs with the Merino breeds, and that the gradual increase of civilization and wealth will be certain to follow the residence of the English in Afghanistan, and cause the natives of the country to discover and appreciate the superiority of the woollens of Great Britain, which the navigation of the Indus will bring to them. Once a demand for broadcloths is created they will be open to the conviction, that it will be to their advantage to exchange the Doombahs for fleeced sheep, and hair of very trifling value for wool, at two shillings and sixpence a pound. The country, Lieutenant Nicolson mentions, is a capital one

* The same opinion is entertained by Colonel Smyth. See last month's Report.

for sheep farming. Its extensive downs and seemingly barren hills abound in the slight short mosses and grass on which Merinos thrive best.

The dryness of the soil affords just grounds for anticipating freedom from rot; and water, though not plentiful, is sufficiently so for watering and washing sheep. The capabilities of the country in this line are wonderful, and Lieutenant Nicolson states that land carriage to the banks of the Indus is far from expensive. The nomadic habits of the Afghans, who may be styled a race of sheep-farmers, the resources of their country and their beautiful climate, with the absence of all jungle and beasts of prey, all point out that wool will some day prove a source of inestimable wealth to Caubul. Lieutenant Nicolson concludes his highly instructive communication by stating that all that is requisite is good Government, a powerful police, and a little patience.

In connection with the interesting contents of Lieutenant Nicolson's letter, Dr. Spry mentioned he had to bring to the notice of the Meeting what he might perhaps be justified in pronouncing a discovery, as he had found in the library of the Asiatic Society the manuscript Memoir of Lieutenant Irvine, who accompanied Mr. Elphinstone in his Embassy to Caubul, and to which in the preface of his work Mr. Elphinstone makes special allusion in the highest terms of commendation.

The Memoir comprises upwards of 260 pages, of closely written matter in folio, and treats most fully of the climate, husbandry, and productions of the whole kingdom of Afghanistan, all of which Mr. Elphinstone expressly states that he left nearly untouched.

At first it was thought whether those portions bearing more immediately on the agriculture of the country could not be made available for the Transactions of the Society, but Dr. O'Shaughnessy, who was present, having offered to undertake the publication of the entire volume, in parts, in the Journal of the Asiatic Society, the book was made over to him, with the understanding that a few copies should be furnished to the Agricultural Society.

Establishment of a large Garden at Purulia in Chota Nagpore, to be cultivated by prisoners in order to supply them with food.

Captain Hannyngton, Political Officer in charge of the district of Purulia, communicates the intelligence of the establishment of a gar-

den at his station, and writes that this rather interesting experiment has been undertaken that the prisoners may supply themselves with vegetables. The plan has met with the sanction of the Governor General's Agent, and will probably be tried at Hazareebagh and other divisions of the Agency.

The great objection to the ration system of dieting prisoners, was that it did not afford sufficient change of food; and this defect Capt. Hannyngton considers will now be obviated by the garden as regards vegetables and fruits. These being obtained free of charge, the money thus saved will serve to purchase whatever extra indulgences may be thought needful. Under this system Captain Hannyngton thinks the ration sytem will be perfect*.

Transmission to the Society of Letters and Packages free of postage.

The Secretary brought to the notice of the Meeting that the package of seeds and letters transmitted by Colonel Smyth from Caubul came bearing a postage of twenty odd rupees: he made application in consequence to Government for a remission of the charge, and he had the gratification of stating, this had been conceded, and the following piece of intelligence imparted as to the course to be adopted by parties who desire in future to communicate with the Society.

"General Department. *Para.* 2. The correspondents of the Society should however be instructed to send all their letters on the business of the Society, under cover to the Secretary to Government in this department, agreeably to Section LXI. List No. 1 of the Post Office Rules of the 3rd August, 1837."

(Signed) H. V. BAYLEY,
Offg. Depy. Secy. to Govt. of India.

Introduction of Mango Plants from the Northern parts of India into the Algerine Territories.

The next communication made to the Meeting was one from Mr. Robison, from his brother Sir John Robison, who says that he has been urging some of his friends in the Horticultural Societies of Paris and Bordeaux to organise the means of introducing Mango

* The success which has attended an experiment of this kind at Agra, will be found detailed in the Report of the Proceedings of the Society for August last.—H. H. S.

Plants from the more elevated parts of India into the Algerine Territory, or into the South of France,—and asks to know if there would be any serious difficulty in getting down a succession of plants from the vallies near Simla, where they grow beside brambles and barberries. Sir John Robison thinks such plants would thrive at Algiers, if not in Provence; and that it would be the noblest present that the French Government could make to European Horticulture: and adds, that as M. Johnston, the Maire of Bordeaux, has engaged to make some efforts to begin the experiment, something further will perhaps be heard on the subject.

Mr. Robison stated in reference to his brother's letter, that he had sent a copy to Sir Edward Ryan at Simla, and hoped to obtain from him all the information and aid that could be procured.

Contemplated Establishment of a Museum of Natural History at Darjeling, and the Introduction of the Hive Bee there.

Dr. Pearson writes from Darjeling, that should the funds of the Plantation Society admit of it and Dr. Pearson remain at the station, he shall propose to engraft a Museum of Natural History for the exchange of specimens with other Natural History Societies; and he hopes in time that something may be done in the way of cattle, sheep, and so on.

Dr. Pearson wishes to introduce the Hive Bee at Darjeling. There are myriads of flowers and shrubs of sweet smelling savour, and he is sure that the bee would thrive. Dr. Pearson is anxious to learn if the bee of the Western Hills be the same as that of Europe, that some, either from this source or from England, may be obtained.

Establishment of a Branch Agricultural Society and Garden at Chittagong.

The pleasing intelligence has been received of the establishment of a Branch Society at Chittagong; Mr. Sconce, Collector of the District, has undertaken to officiate as Secretary, and in his communication to the Secretary he mentions that the garden ground amounts to about twelve acres of land.

Foreign Cotton seed supplied by the Parent Society have been sown.

The Seychelles and Malta seed have sprouted, and also a few Brazilian seeds. Mr. Sconce considers that the proper season for *sowing* foreign Cotton seed is the season for *saving* indigenous* Cotton, and suggests that the despatch of seeds by the Society should be timed so as to arrive accordingly. Coffee plants are also thriving in the garden, and Mr. Sconce hopes to see all these products successfully cultivated.

Dr. Spry mentioned, that he forwarded an abundant supply of Mauritius Canes to Mr. Sconce.

Acclimation of the Mangoosteen Tree in Bengal.

The Secretary next submitted a communication which he had received from Mr. Chew of Calcutta, stating that he had presented about two years ago some Mangoosteen plants to the Society, and asking to know whether they were still alive, as he had succeeded in acclimating six out of twenty which reached him from the Straits of Malacca†. They are now growing vigorously, and Mr. Chew states he shall soon be enabled to obtain a large quantity of trees of this most exquisite fruit.

Great value of British possessions on the Tenasserim Coast for producing Wood Oil.

The Secretary submitted a very valuable paper which had been forwarded to him by Dr. Helfer, who desires to draw the attention of the Society to one of the manifold productions of the Tenasserim Provinces as deserving the consideration of the European commercial community.

Dr. Helfer says, the article that he alludes to, is the article commonly called Wood-oil, but which in fact is a balsam. According to Roxburgh, all the species of the genus Dipterocarpus yield this substance.

Some parts of the Tenasserim Provinces are covered with Wood-oil trees, which attain an immense size, and form one of the principal

* The same opinion is entertained also by Mr. Dearman, Deputy Collector at Lacca and for the Province of Bengal; this course probably will be found hereafter to be correct.—H. H. S.

† There are seven Mangoosteen plants at present in the Society's Nursery, upon the whole in good condition.—H. H. S.

ornaments of its majestic forests. They are more abundant towards the South. The Lenny river banks to the south of Mergui, and the banks of the Pack-char river forming the boundary between the Siamo-Malay estates of the Peninsula and the British possessions, are lined with forests of these trees, which have never been yet touched for the purpose of extracting the balsam.

To obtain it a notch is cut into the tree not far from the ground, a receptacle like a basin then formed, where a fire is kept up until the circulation of the sap is directed by this artificial irritation towards that part; after which the liquid begins to ooze out, and continues so for several weeks, if the charred part is scraped away and a new wound inflicted.

The almost incredible quantity, which is obtained from one tree in the course of one season (from a full grown tree sometimes thirty even forty gallons, without materially injuring the tree it is said) is alone sufficient to draw the attention upon this production, considering that many thousands of the trees are available and hitherto totally unused.

The value of this substance Dr. Helfer considers has never been properly appreciated. The natives of the provinces use it on account of its high inflammability, mixed with dry putrid wood wrapped into palm leaves as torches, and it is the common substitute for oil or candles used as light by all classes of Burmans.

Besides this main purpose, it is used as medicine in rheumatic diseases, or as a preservative against white ants, for which purpose the posts of houses are smeared over with it.

The trees grow without branches, to a height of 60 to 70 feet, with a circumference of from 6 to 12 feet. The wood is very light and considered inferior; the charcoal made from this wood, however, is the best adapted for the manufacture of gunpowder.

In Calcutta the wood-oil is known and used, but there it is employed only for the purpose of painting ships, which, considering its value for other purposes, is truly a waste.

In extenuation of this it must, however, be considered that it is generally imported into Calcutta in a state of great impurity, a third of it being extraneous matter, mud, charcoal, chips of wood and bark, which of course deteriorate greatly its value.

Having chemically the greatest affinity to turpentine, it can be used for the same purposes for which the fine lac varnish by oil of turpentine is employed, which throughout Europe conserves such a

price that the transport of wood-oil from India to Europe as a substitute would be amply repaid.

It has the property, that when purified it resembles the fine varnishes; laid upon paintings, it covers them with a transparent fine coating, not liable to turn yellow, and dries quickly. How far it may improve when mixed with copal, sandarach, mastic or similar substances, Dr. Helfer has had no opportunity of deciding.

Dr. H. adds, that he cannot omit mentioning another application of this substance, in forming oil cloth, tarpaulings, &c. and it has been declared by naval men who have made the experiment, that the cloth respecting durability, is preferable to the patent anti-mildewed canvas made in and exported from England.

Dr. Helfer suggests, that it would be perhaps not amiss to send some of it through the medium of the Agricultural and Horticultural Society of Calcutta to the Committee of Agriculture and Commerce of the Royal Asiatic Society of Great Britain and Ireland, which has for its particular aim the development of the resources of the British Indian Empire for practical purposes*.

For all the foregoing presents and communications the thanks of the Society were accorded.

HENRY H. SPRY, M. D.
Secretary.

* Dr. Helfer's suggestion has been anticipated. H. H. S.

PROCEEDINGS

OF THE

AGRICULTURAL AND HORTICULTURAL SOCIETY OF INDIA.

DECEMBER,

1839.

CALCUTTA:

PRINTED AT THE BAPTIST MISSION PRESS,

CIRCULAR ROAD.

1839.

AGRICULTURAL SOCIETY OF INDIA.

PROCEEDINGS.

DECEMBER 11, 1839.

Agricultural Society of India.

A General Meeting was held at the Society's Room, Town Hall.

The Honorable Sir E. Ryan, President, in the Chair.

(Sixteen Members present.)

The Proceedings of the last Meeting were submitted and confirmed.

MEMBERS ELECTED.

The gentlemen proposed at the last Meeting were elected Members, viz.

His Highness Prince Gholam Mahommed, Dr. John Campbell, Dr. John Thos. Pearson, Messrs. Longueville Clarke, F. A. J. Elson, H. Andrew, J. S. Boldero, Alfred Parker, Robert Bluntish, and James R. Logan.

FOR ELECTION.

The names of the following Gentlemen were read as candidates for election:

Henry Armstrong, Esq. (Civil Service, Futteghur)—proposed by Major Carter, seconded by Colonel McLeod.

Major Thos. Robinson, (Offg. Supt. of the Bhutty States)—proposed by Dr. Spry, seconded by Dr. Strong.

Dr. J. M. Brander, (Medical Service)—proposed by Dr. Spry, seconded by Dr. Wise.

J. S. Mendes, Esq. of Calcutta—proposed by Dr. Spry, seconded by Mr. Wm. Storm.

Henry Hill, Esq. of Tirhoot—proposed by Mr. C. J. Richards, seconded by Dr. Spry.

James Macansh, Esq. (Medical Service, Burdwan)—proposed by Mr. James Colquhoun, seconded by Dr. Spry.

Archd. Drummond, Esq. of Kishnaghur—proposed by Mr. Charles Deverinne, seconded by Dr. Spry.

James Savi, Esq. of Kishnaghur,—proposed by Mr. Charles Deverinne, seconded by Dr. Spry.

PRESENTATIONS TO THE SOCIETY.

LIBRARY.

1. Six copies of the Proceedings of the Committee of Agriculture and Commerce of the Royal Asiatic Society of Great Britain and Ireland, from December 1838 to June 1839—*presented by the Royal Asiatic Society.*

2. Twenty copies of a Pamphlet on the Culture of Flax in India. —*presented by Messrs. Hamilton and Co.*

3. The Cultivator; published by the New York State Agricultural Society—(four volumes folio, bound in one.)

4. The American Gardener's Magazine of Horticulture, &c. for 1835-36-37 and 38, conducted by C. M. Hovey—four volumes, octavo.

5. The American Flower Garden Directory, by Robert Buish.

6. The Young Gardener's Assistant, by T. Bridgeman.

7. The Complete Farmer and Rural Economist, by Thos. Fessenden.

8. Chymistry applied to Agriculture, by J. A. Chaptal.

9. Book of Fruits.

10. A Manual on the Culture of Silk, &c. by J. H. Cobb.

The above American Works, (Nos. 3 to 10) have been purchased by the Society, through Mr. J. J. Dixwell, of Boston.

11. Three hundred copies of the second volume of the Society's own Transactions, in Bengallee, have also been received from the Serampore Press.

MUSEUM.

1. A specimen of a peculiarly fine description of Wheat, grown in the Bhutty States—*presented by Major Robinson, Superintendent of the Bhutty States, and referred to the Agricultural Committee.*

2. Two specimens of Coffee, grown at Jumalpore in the Sylhet District. No. 1 of last year's growth, and No. 2 of the present year's gathering. Major Garstin, who presents these specimens to

the Society, states he was struck by the luxuriant growth of the Coffee trees at Jumalpore, at present (No. 2) covered with berries nearly ripe, and from what he can learn of them, he believes the trees were planted four or five years ago; but for the last two years no particular attention has been paid to them or the preparation of the berries. Major Garstin considers, that there is no doubt of the plant thriving well and affording an article of export to a large extent if properly encouraged. He has observed trees totally unprotected producing abundant crops.

3. Samples of Upland Georgia Cotton, grown on his Estates at Hansi—*presented by Colonel Skinner*. A very fine specimen.

4. Samples of Cotton, both indigenous and foreign, from the public garden and district of Dacca. Also specimen of soil in which the best sorts of Dacca Cotton grow, and canes the produce of the Dacca garden—*presented by Mr. Dearman, Deputy Collector, through Mr. J. P. Wise*. Referred to the Cotton Committee.

5. Samples of Vegetable fibre from two very common weeds found growing at Tavoy. No. 1, the best, the people make no use of; and No. 2, the Tavoyers use only in making fishing lines of—*presented by Major McFarquhar*. Referred to the Hemp and Flax Committee.

6. Two Cotton cleaning Machines with spare wheels, &c.—*presented by Government*.

7. Half a maund of Dundee Flax seed—*presented by Wm. Braddon, Junr. Esq. for distribution*.

8. Six casks of American Maize and grass seeds, an American plough, a cultivator, and a common planter—*purchased by the Society*. These seeds, which are in excellent order, are ready for distribution, and the implements may be inspected as models.

9. Specimens of Cotton the produce of acclimated foreign seed grown in the Purulea District, Chota Nagpore—*presented by Capt. Hannyngton*. Referred to the Cotton Committee.

10. A small sample of Coffee from young seedlings planted in his garden at Allipore in 1836, and unprotected with shade of any kind. From 100 trees 25 seers are expected to be obtained—*presented by Mr. D. W. Speed*.

11. A specimen of *Paut*, with a branch of the Hibiscus shrub from which it is obtained—*presented by Mr. Thomas Wilson through Mr. Joseph Willis*. Referred to the Hemp and Flax Committee.

Report of the Silk Committee on a specimen of Raw Silk prepared from the Moonga Cocoon of Assam, by Messrs. Watkins and Mendes, and presented to the Agricultural and Horticultural Society by Captain Jenkins.

The Honorable the President read the following Report by the Silk Committee.

Your Committee have carefully examined the specimen of Raw Silk submitted to them for inspection, and beg to offer the following report for the information of the Society.

The specimen in question may be considered as the best of several of a similar nature that have been brought to the notice of the Society; the fibre is strong and lustrous, though the thread would have been better had it been somewhat coarser; the sample may however be deemed as very promising, more especially when it is considered that it is the first specimen of this description of Silk that has been made by Messrs. Watkins and Mendes from Cocoons of very indifferent quality.

Your Committee would beg to recommend that the Manufacturers be requested to forward to the Society, specimens of this Silk prepared of various degrees of fineness, from fine to coarse and very coarse, got up in style and character as much as possible resembling the best Bengal Raw Silk, the skeins being similar in size and length of reel to those of the usual Raw Silk; and that these be accompanied with a full and particular account of the natural growth, collection, manufacture, cost, &c. of the staple.

Your Committee further recommend that the samples so prepared should be not less than 20 seers in the aggregate, and that the manufacturers be requested to forward the same with the least practicable delay; the Society adequately remunerating them for the expence and trouble which this request may occasion.

Your Committee being of opinion, from the sample now brought to their notice, that this article is calculated to become of extensive and valuable use to our home manufactories, would, in conclusion, beg to suggest, that on receipt of the samples above alluded to, the greater portion be transmitted to the Committee of Agriculture and Commerce of the Royal Asiatic Society of Great Britain and Ireland with a request, that that body would be pleased to furnish the Society with reports from the most eminent silk manufacturers and

dyers, in order that the fullest information may be obtained on this interesting subject.

WM. STORM.
JOSEPH WILLIS.
C. K. ROBISON.
R. WATSON.
HENRY H. SPRY, M. D.
W. B. O'SHAUGHNESSY.
D. W. H. SPEED.

Calcutta, 7th December, 1839.

Award of the Gold Medal of the Society to Mr. Rose, for the best sample of Silk.

Mr. Rose, having forwarded the details connected with the method adopted by him in preparing his raw Silk, the Report of the Committee was read and confirmed, awarding to Mr. Rose the Society's Gold Medal.

Report of progress made by the Society in the matter of the extension of the Cotton Cultivation.

The Honorable the President of the Society brought to the notice of the Meeting the circumstances connected with the progress made in forwarding the views of Government relative to the spread of the cotton cultivation throughout India. He mentioned that the members must be aware, from what occurred at the last Meeting, that the Home Government had resolved on embarking on another experiment for the purpose of establishing the cotton cultivation throughout the empire on an improved footing; and that the Governor General, for the purpose of carrying out the intentions of the Court of Directors, had called upon the Society to suggest the mode in which the plans of the Government should be carried into effect. His absence from Calcutta, had prevented him, as he had desired, from being present at the last Meeting, and from taking a part in the settlement of the preliminary steps that were necessary for considering this question; but he found that the course adopted was the one which he should have recommended, namely, an addition to the present standing Cotton Committee of the names of a few Members whose practical experience in the agricultural habits of the people of

the different provinces would enable a plan to be arrived at that should be calculated to ensure the designs of Government the most perfect success; and that besides this an application should be made to such residents in the interior whose practical knowledge would be useful. This, he said, had already been done, and he had now only to mention that as the undertaking was one of the utmost importance to the welfare of India it was desirable that the plan should not be too hastily adopted :—That the papers were now before the Committee for the collection of the sentiments of the Members, and that as the cotton cultivation was one in which he had always taken a great interest, and as active a part as his limited knowledge of the subject would admit, it was his intention to attend at the Meeting of the Special Committee, and consider with the Members of it the facts and observations which they were collecting from all parts of India, and from which he hoped a good practical scheme for the management of the great undertaking would be secured. It was for these reasons that the Committee were not prepared with their report for submission at the present Meeting.

Annual Horticultural Exhibition and Anniversary Dinner of the Society.

A resolution was passed that from the forward state of the vegetables of the season the Annual Horticultural Exhibition of the Society should be held on Thursday the 9th proximo, and that the Anniversary Dinner shall be on the evening of that day.

Members who have forfeited their rights from not paying their subscriptions.

The Honorable the President brought to the notice of the Meeting, that there were certain Members of the Society, who had neglected to pay up their subscriptions and who thereby had, agreeably to the seventh rule of the Society, forfeited their rights as Members; although some of them had taken the fullest advantage of the privileges allowed to Members, in obtaining the various benefits which, from time to time, are offered by the Society. Repeated application, he said, had been made to these gentlemen, but without effect. A resolution was therefore passed that each defaulter should be addressed once more, and that the names of those who had not paid up their arrears at the time of the Anniversary Meeting next month should be publicly announced and erased from the list.

Information in reply to the address transmitted by the Society to the Home Authorities relative to the excess of duty exacted on East India Rum and Tobacco.

The communication which was first submitted to the attention of the Meeting was an official answer to the address made by the Society in May last, on the subject of inequality of the rum and tobacco duties.

No. 114.

To H. H. SPRY, Esq., M. D.

Secretary to the Agricultural and Horticultural Society.

Gen. Dept. Customs.

Sir,—With reference to the representation of the Agricultural and Horticultural Society to the Hon'ble the Court of Directors on the subject of the inequality of the duties levied in this country upon Tobacco and Rum, the produce of the British possessions in the East Indies, and similar articles the produce of the British Possessions in America and the West Indies, I am directed to transmit to you for information the accompanying Copy of an Extract from the Proceedings of the Honorable the President of the Council of India in Council in the Financial Department, No. 1030, dated the 27th ultimo, and to request your attention to the 2nd Para. of the same.

I am, Sir, your obedient Servant,

H. T. PRINSEP,

Secy. to the Govt of India.

Council Chamber, the 4th December, 1839.

No. 1030.

Extract from the Proceedings of the Hon'ble the President of the Council of India in Council, in the Financial Department, under date the 27th November, 1839.

Financial Department,

No. 22 of 1839.

Our Governor General of India in Council.

1. We have received from the Agricultural and Horticultural Society of India a representation on the subject of the inequality of the duties levied in this country upon Tobacco and Rum the produce of the British Possessions in the East Indies, and similar articles

the produce of the British Possessions in America and the West Indies.

2. We desire that in reply you will inform the Society that the question has for some time past occupied our attention, but that an application to Parliament on the subject in the ensuing Session is contemplated.

Signed by two Chairs and eleven Members.

London, the 11th *September*, 1839.

Ordered that a Copy of the foregoing Letter from the Hon'ble Court of Directors be sent to the General Department, whence the Agricultural and Horticultural Society will be informed that, their representation to the Honorable Court on the subject of the inequality of the duties levied in England upon Tobacco and Rum, had been under their consideration for some time past, but an application to Parliament on the subject, was contemplated in the ensuing Session.

(A true Extract,)
(Sd.) H. T. PRINSEP,
Secy. to the Govt. of India.

Spread of Sugar cultivation at Penang, and the Agricultural capabilities generally of the Island for the production of Staples of Commerce there.

Mr. James R. Logan, who is engaged largely in conducting a Sugar plantation at Glasgow, Penang, communicates two interesting documents connected with the capabilities of the island for producing Sugar-cane, and furnishes details of the result of an experiment on a scale of several hundred acres made with different varieties of cane, and also notices many of the productions of the island calculated to be useful in commerce. The paper was transferred to the Committee of papers for eventual publication in the Transactions.

On the Resources and Agricultural capabilities of the Kingdom of Travancore.

A full and valuable account of the Agricultural capabilities of the kingdom of Travancore, by Mr. Stevenson, an Officer in the employ of the Rajah, was submitted. In this document much interesting information relative to the rich and fertile lands of Travancore is communicated, and the injurious tendency of the system of state

monopoly on all the chief agricultural products, such as pepper, cardamums, ginger, rice, and so on, lucidly pointed out. This paper was also transferred to the Committee of Papers.

Hints relative to the interchange of Plants between this country and England.

Mr. Cope, of Meerut, observing that the Special Committee of the Society had issued circulars, inviting information relative to the subject of an interchange of plants between India and England, has forwarded to the Secretary, the copy of a communication, the original of which was transmitted two or three years ago to Dr. Lindley the Secretary of the Horticultural Society of London. This paper, which contains many valuable suggestions, was referred to the Committee specially appointed by the Society to conduct this branch of inquiry.

Discriminating Duty exacted by the United States Government on Indian Hemp and other Vegetable Fibres the produce of the East.

The next communication submitted by the Secretary was a note received by him from Mr. G. B. Dixwell, an American gentleman, seeking information on the subject of the Indian Hemp called Sunn, and desiring to know the scientific name by which it is characterised, the motive for which inquiry Mr. Dixwell states to be as follows :—In the United States a very heavy duty is exacted on Hemp ; but *Jute* and Manilla Hemp are allowed to be landed duty free. But Indian Hemp (Sunn) is not more applicable to purposes for which Russia Hemp is used (not being susceptible of impregnation with tar) than are Jute or Manilla Hemp, yet the duty is demanded on Sunn as if it were one and the same with Russia Hemp. It is for the purpose of calling attention to this anomaly that Mr. Dixwell alludes to the circumstance, and thinks that if the United States Government were to put the fibre called Sunn on a footing with Jute and Manilla Hemp it would be the means of opening a new and lucrative market for this peculiar product.

Dr. Spry informed the meeting, that in his reply to Mr. Dixwell he had stated to that gentleman, that although we had the genuine hemp plant, Cannabis sativa, in Bengal, one of the native names of which was Gunja, yet the article which was ordinarily known as

Bengal hemp Sunn—was the production of a plant totally distinct from the hemp plant of the North of Europe or Asia, the scientific name of which was Crotalaria juncea. The jute again was obtained from various species of Corchorus, and the Manilla hemp from the plantain tribe—the Musa textilis.

Agricultural Intelligence from Swan River.

The Secretary submitted a letter which he had received from Mr. Yule, Secretary of the Agricultural and Horticultural Society of Swan River, in which he communicates the thanks of that Society for the supply of seeds furnished to it by the Agricultural and Horticultural Society of India, and begs to bring to the notice of the Society the great probability that the "Dhoob grass" of India would be admirably adapted for the soil of Western Australia. Mr. Yule desires to communicate, that the Local Government of Western Australia has come to the determination "that for the present or until private lands shall rise in price in the market, all crown lands in this Colony shall remain and be put up to auction at the minimum price of five shillings per acre."

For all the foregoing presents and communications the thanks of the Meeting were accorded.

Distribution of Sugar-cane from the Society's Nursery Garden.

The Secretary announced to the Meeting that such had been the demand for Sugar-cane, since the commencement of delivery in the early part of October, that Thirty-two thousand, five hundred Canes had already been distributed to applicants, which had entirely exhausted the present stock, but that a further supply would be available in February next to those who had not yet received their proportion.

The name of Baboo Ramcomul Sen was added to the *Special* Cotton Committee.

HENRY H. SPRY, M. D.
Secretary.

PROCEEDINGS

OF THE

AGRICULTURAL AND HORTICULTURAL SOCIETY OF INDIA.

JANUARY,

1840.

CALCUTTA:

PRINTED AT THE BAPTIST MISSION PRESS,

CIRCULAR ROAD.

1840.

AGRICULTURAL SOCIETY OF INDIA.

PROCEEDINGS.

JANUARY 8, 1840.

Agricultural Society of India.

The Anniversary Meeting was held at the Society's Room, Town Hall.

The Honorable Sir Edward Ryan, President, in the Chair.

(Twenty-two Members and a Visitor present.)

The Proceedings of the last Meeting were submitted and confirmed.

MEMBERS ELECTED.

The gentlemen proposed at the December Meeting were duly elected Members of the Society, viz.

Major Thos. Robinson, Dr. J. M. Brander, Messrs. Henry Armstrong, J. S. Mendes, Henry Hill, James Macansh, Arch. Drummond, and James Savi.

FOR ELECTION.

The names of the following gentlemen were read as candidates for election :

B. R. Muirhead, Esq. (of Sesonee Factory viâ Monghyr), proposed by Mr. W. F. Gibbon, seconded by the Secretary.

Captain De Bude (Offg. Secy. Military Board), proposed by Dr. Spry, seconded by Mr. F. C. Smith.

C. T. Sealy, Esq. (Civil Service), proposed by Mr. T. P. Biscoe, seconded by Mr. F. C. Smith.

Wm. Stuart Alexander, Esq. (Civil Service), proposed by Mr. Nathl. Alexander, seconded by Dr. Spry.

Captain Mathew Smith, (Prinl. Asst. A. G. G. Saugor and Nerbudda Territories,) proposed by Dr. Spry, seconded by Dr. Strong.

H. R. Leyburn, Esq. (of Nunnoa Factory, Shahabad), proposed by Dr. Spry, seconded by Mr. C. Trebeck.

J. O. Beckett, Esq. (Shahjehanpore), proposed by Mr. Chas. Lyall, seconded by Dr. Spry.

J. A. Deverell, Esq. (of Cootooreah Factory viâ Merai), proposed by Mr. W. G. Rose, seconded by Mr. J. A. Gregg.

T. C. Morton, Esq. (Barrister), proposed by Sir Edward Ryan, seconded by Mr. W. G. Johnson.

George Lindsay, Esq. (Civil Service, Benares), proposed by Major Carter, seconded by the Secretary.

George Vint, Esq. (Calcutta), proposed by Mr. David Hare, seconded by Mr. A. C. Dunlop.

Robert Macnair, Esq. (of Joradah Factory, Jessore), proposed by Mr. David Hare, seconded by Mr. A. C. Dunlop.

E. G. Dubus, Esq. (of Nohutta Factory, Jessore), proposed by Mr. David Hare, seconded by Mr. A. C. Dunlop.

E. Dubus, Esq. Junior, (of Nohutta Factory, Jessore,) proposed by Mr. David Hare, seconded by Mr. A. C. Dunlop.

P. Burnett, Esq. (of Nohutta Factory, Jessore), proposed by Mr. David Hare, seconded by Mr. A. C. Dunlop.

D. Lethangie, Esq. (of Gudgut Factory, Jessore), proposed by Mr. David Hare, seconded by Mr. A. C. Dunlop.

ELECTION OF OFFICE-BEARERS FOR THE ENSUING YEAR.

The Meeting on assembling proceeded to the nomination of Office-Bearers for the ensuing year: on the scrutiny being declared the following gentlemen were found duly elected.

President.

The Hon'ble Sir Edward Ryan.

Vice-Presidents.

N. Wallich, Esq. M. D.

C. K. Robison, Esq.

His Highness Nawaub Tahower Jung.
Raja Radhakant Deb.

Secretary.

Henry H. Spry, Esq. M. D.

Assistant Secretary and Collector.

Mr. A. H. Blechynden.

STANDING COMMITTEES.

The following is a list of Standing Committees for the year 1840.

SUGAR.

Messrs. N. Alexander, W. F. Fergusson, Dwarkanauth Tagore, D. Hare, A. Muller, G. U. Adam, J. Allan, and Dr. H. H. Spry*.

COTTON.

Messrs. Jos. Willis, Chas. Huffnagle, D. B. Syers, W. Earle, and G. U. Adam.

SILK, HEMP, AND FLAX.

Dr. O'Shaughnessy, Messrs. R. Watson, C. K. Robison, Ramcomul Sen, J. Willis, D. W. H. Speed, and G. T. F. Speed.

COFFEE AND TOBACCO.

Drs. Strong and Wallich, Messrs. Thos. Leach, D. W. H. Speed, and D. Hare.

IMPLEMENTS OF HUSBANDRY AND MACHINERY.

Col. D. McLeod, Capt. W. N. Forbes, Messrs. Ramcomul Sen, C. K. Robison, Rajah Radhakant Deb, Chas. Huffnagle, and D. Hare.

CAOUTCHOUC AND OIL SEEDS.

Drs. Wallich and O'Shaughnessy, Messrs. Ramcomul Sen, Rajah Radhakant Deb, and Dr. Corbyn.

IMPROVEMENT OF CATTLE.

Messrs. N. Alexander, C. K. Robison, Dr. Wallich, Messrs. Chas. Huffnagle, W. P. Grant, C. R. Prinsep, W. F. Gibbon, and A. Harris.

COMMITTEE OF PAPERS.

Dr. Wallich, Messrs. M. A. Bignell, and G. W. Johnson.

AGRICULTURAL AND NURSERY COMMITTEE.

Dr. Wallich, Messrs. Chas. Huffnagle, W. F. Gibbon, and Thos. Leach.

* Ex-officio member of each Standing Committee.

GENERAL COMMITTEE.

Dr. Strong, Messrs. Jos. Willis, D. Hare, and Radamadub Banoorjee.

FINANCE COMMITTEE.

Messrs. W. F. Gibbon, M. S. Staunton, D. W. H. Speed and Chas. Huffnagle.

MUSEUM AND NURSERY.

1. A supply of thirty-two seers of Mauritius Maize grown at Chittagong. This Maize is very fine, and is under distribution—*presented by Charles Bury, Esq.*

2. The Model of a Sugar-cane Mill in common use in the Cuttack Province. Mr. Cumberland, Civil Surgeon at Pooree, who favors the Society with this Model, states that he has not met with any thing like it out of the Province, and that from its cheapness, simplicity of construction and perfect adaptation to the complete expression of the Cane juice, it appears to him to be worthy of general use in the country. The whole cost of the Machine is only three rupees. It is made entirely of wood without a particle of iron—*presented by Mr. Cumberland.*

In allusion to the above Mill the Hon'ble the President took occasion to draw the attention of the Meeting to a facsimile sketch of it which has been published by Dr. Spry in his work "Modern India," wherein particular notice is paid to this most efficacious Machine for the above very desirable qualities.

3. Five samples of Flax grown in the district of Shahabad, Province of Behar, illustrating the fact of the Indian soil being capable of producing flax of equally as good a staple as that from other countries.

Also a sample of Flemish, Archangel, Riga and Petersburgh Flax for the purpose of comparison. Likewise a Machine obtained from England from Mr. Loudon for the purpose of scutching the stalk—*presented by George Leyburn, Esq.*

4. A sample of Flax made on the Neilgherry and a sample of Hemp (Cannabis sativa) obtained from the same quarter—*presented by Dr. Wallich on the part of the Hon'ble J. Sullivan.*

These two specimens come very opportunely to be placed in comparison with the specimens of Behar Flax above noticed, and

the whole was ordered to be made over to the Flax Committee for inspection and report.

5. A small sample of a climbing plant, the provincial name of which is "Konga." The beauty and strength of the fibre of this plant is very apparent, and as the tree is very abundaut in Chota Nagpore, Captain Hannyngton, who presents it, thinks that there can hardly be a doubt that it might become useful. The bark is readily separated from the fibre by lightly beating it, and the fibre might be had of any desired length from feet to yards, clean and unbroken. The only use made of it by the people of the country is for the purpose of stringing beads. Also referred to the Flax Committee—*presented by Captain Hannyngton.*

6. A sample of Coffee and Arrow Root grown and prepared in his garden at Ballygunge—*presented by G. F. McClintock, Esq.*

7. A basket of very fine Oranges grown in his garden at Berhampore—*presented by Cowar Krishnat Roy Bahadoor.*

8. A portion of a consignment of sixty-four kinds of Flower seeds, weighing 144 lbs. grown in the valley of Deyrah, by Lieutenant Kirke. Also a portion of a large consignment of Vegetable seeds dispatched from the Deyrah Dhoon, by Lieutenant Kirke, on the 2nd August and the early part of September, to the care of Dr. Wallich.

In explanation of the reason why the above valuable consignment of seeds has been so long in reaching the Society, the Secretary mentioned that the boxes containing them had been sent to Dr. Wallich, Superintendant of the Botanic Garden, who had accidently omitted to transmit them to the Society. Lieutenant Kirke has a further large supply under dispatch.

9. A beautiful specimen of the gum of the Pulass (Butea Frondosa)—*presented by Mr. Rose.*

10. A glazed box of fruit trees, about twenty in number, indigenous to the Eastern Archipelago, brought to Calcutta by General Biggs, from Singapore, and presented to the Society by that gentleman on the part of the Rev. Mr. White.

The above most valuable consignment is in excellent order, and was ordered to be transferred to the Nursery.

11. A fruit of the Strychnos Spinosa, native of Madagascar, from Port Natal. This fruit, which is a great curiosity, as belonging to a family of poisons, has been brought to India by Major

Cox, who obtained it from Baron Ludwig, who informed Major Cox, that it is edible when the fruit is ripe, and that he (the Baron) has himself tasted it—*presented by Dr. Wallich on the part of Major Cox.*

Major Cox, in his note transmitting the above fruit, mentions having succeeded in bringing alive with him Sparmannia Africana, Spiræa Crataegifolia, and Microloma Lincare, which he believes have not yet been introduced into Bengal.

12. A valuable supply of seeds of various kinds, procured from the vicinity of the Hill Station of Darjeling—*presented by Lt. Col. Lloyd.*

13. The model of a Flax Mill of his own invention, (a description of which appeared in the *Bengal Hurkaru* of the 5th November, 1839.)—*Exhibited by Mr. Preston.*

Report of the Cotton Committee.

The paper which first occupied the attention of the Meeting was the report which had engaged the consideration of the Special Cotton Committee, relative to the mode of carrying into effect the intentions of the Supreme Government of India, with respect to the extension of the Cotton cultivation of the country on improved principles. The Hon'ble the President adverting to the great importance of the subject intimated, that as the report was a long one, and moreover could but be hastily judged of if then read, that he thought the most desirable plan to be adopted, would be to have the document printed in order that it might obtain as extensive a circulation as possible, and an opportunity thus be afforded to the public to peruse it and offer any remarks through the Press that might be thought useful. This measure was resolved on, and the final adoption of the report by the Society was deferred to the next General Meeting, or a special call for the purpose as may be best deemed desirable. The report is already before the public in the public papers.

Agricultural Statistics of the Empire.

The Hon'ble the President announced to the Meeting that he held in his hand a large number of returns from the Medical Officers of the Service, throughout the Provinces, in reply to the circular

which had been addressed to them in the early part of the year on behalf of the Government of India, soliciting their aid in procuring for the Court of Directors, and the Royal Asiatic Society of Great-Britain and Ireland, statistical information on the chief products of each Province at the chief mart and obscure village conjointly. The mass of information which these reports embodied were of a most interesting and valuable nature, and in order to arrange them geographically with respect to the course of trade they were made over to the Committee specially appointed for the preparation of these Statistics.

Communication from the Government of Bengal on the subject of a New Species of Mulberry for the support of silk-worms.

The subject which next engaged the attention of the Meeting was a letter from the Government of Bengal, giving cover to one from Colonel Sykes addressed to the Hon'ble the Court of Directors of the India Company, on the propagation of silk-worms on a new species of Mulberry, (Morus Multicaulis.)

No. 1744.

To Dr. H. H. Spry,

Secretary to the Agricultural and Horticultural Society.

Revenue. Sir,—I am directed by His Honor the Deputy Governor of Bengal to request that you will lay the accompanying copy of a letter from Lieut. Colonel Sykes before the Society, with an intimation that when the work alluded to therein is received from England, His Honor will have much pleasure in placing a copy at its disposal.

I am, Sir,

Your most obedient Servant,

Fred. Jas, Halliday,

Secy. to the Govt. of Bengal.

Fort William, the 12th December, 1839.

(Copy,)

47, *Albion Street, Hyde Park, 15th July*, 1839.

James Cosmo Melville, Esquire, *Secretary*.

Sir,—On Friday last a book was put into my hands by a friend, printed at Philadelphia, with the date 20th April 1839, and bearing the following title:

"The Silk Culturist's Manual, or a popular treatise on the planting and cultivation of mulberry trees, the rearing and propagation of silk-worms, and the preparation of the raw material for exportation, addressed to the farmers and planters of the *United States*.

"By John D'Homergue, published and for sale by Hogan and Thompson, at 30, North Fourth Street, Philadelphia."

I take the liberty to bring this book to the notice of the Chairs, and the Court of Directors, not only on account of the author's stating that almost a mania prevails at present in America with respect to silk, in the expectation of producing a better and cheaper kind, than either *India* or China affords, (and in which statement the author is borne out by an American gentleman with whom I conversed previously to seeing his book,) but because he brings to notice the very important fact of the recent introduction and rapid extension of the cultivation in Europe and America of a *new species* of mulberry, the consumption of the leaves of which by the silk-worms, materially improves the quality of the silk they spin, and the shrub is otherwise highly valuable for its hardiness and the facility with which it is propagated.

This species of mulberry brought from China and the Philippine Islands is unknown in India, according to the enumeration of Doctors Wallich and Lush, in their official reports, those gentlemen only mentioning the Morus Atropurpurea of Roxburgh in private gardens in Bengal as coming from China and Cochin-China. As the interests of the silk producers in India are likely to be affected by the new competition from America (setting aside the political question of *enhancing* the *already* serious dependency of the manufacturing industry of England upon America for raw material), it may be thought advisable by the Hon'ble Court to take measures for the immediate introduction into India of the mulberry of which the following accounts are given in Mr. D'Homergue's book.

"The mulberry of the Philippine Islands (Morus multicaulis) thus called by Monsieur Perottet, and often confounded by amateurs in general with the ordinary mulberry of China (Morus Alba Sinensis), which, though resembling it a little in exterior appearance, differs materially from it in essential qualities.

"This is a *new* and most valuable species of mulberry, which has been of late the object of very great observation and experiment

among cultivators in Europe, as well as in the United States. It is represented as possessing such decided superiority over all others as to be speedily substituted for them in every part of the globe.

" The tree was brought from Manilla, the capital of the Phillippine Islands, to France in 1820, by Mr. Samuel Perottet, a celebrated naturalist employed by the French Government. The Chinese inhabitants assured him that to this tree the disciples of Confucius are indebted for the prosperity and solidity of their empire, and that it is the only species used by them in the production of the finest silk, such as they weave into stuffs exclusively for their own use.

" The Morus Multicaulis is already propagating in many parts of Europe and the United States, and probably will be substituted for, and preferred to, all other varieties. It is generally known in Europe by a name derived from its origin, that is, the mulberry of the Philippine Islands. In botanical language M. Perottet has called it Morus Multicaulis, on account of its roots having the property of *putting forth many branches*. Another eminent agriculturist (Mathew Bonafons) has thought it a better designation to call it Morus Cucullata, because the leaves have a concave form, in as much as the botanic description marks it by the following characteristics. Morus foliis cordatis, basi inequalibus; vix. lobatis, dentatis, amplissimis, cucullatis, (mulberry with leaves heart-shaped, unequal at the base, scarcely divided into lobes, indented, very large, and concave) Among the other qualities of this tree it is affirmed that a less quantity of its foliage is required for the precious insect, than of other species.

The lower branches of the Morus Multicaulis are ordinarily straight and small, so that they bend easily under the weight of the leaves, in the manner of a weeping-willow, but those which grow from the crown of the roots attain often a height of six feet perpendicular. The fruit, which was unknown in Europe until 1830, consists of a small number of black pulpy grains, of which only a few arrive at maturity. It is said that those grains, used as seed, seldom give a tree resembling the one upon which they grow. To obtain one precisely similar it is usual to resort either to inoculation or to cuttings; this last method is the best for the rapid propagation of this tree, because the cuttings take root in a very short time and grow quickly. This species having its origin in the most northern part of the Phillippine Islands, where the climate is much cooler than

further south, it would seem easy to naturalize it in all those countries where the *White Mulberry* is cultivated. In fact the experiment has already justified the hope. In the dreadful winter of 1829-30, in the coldest districts of Italy where this Mulberry had been introduced, only the smaller extremities of the limbs perished. It also withstood the hard winter of 1828, in the field of M. A. Eyries, at Havre. We are also informed that it has resisted the rigor of several winters, uninjured and unprotected, on the plantation of Madame Parmantier of Brooklyn, L. J. Prussia, Bavaria and Sweden, are in possession of this very useful tree, and we are informed that it grows in those countries perfectly well. The experiments made in France by Messrs. Audibert of Tarason, Barthere of Toulouse and Deslong Champs of Paris, and those made by Messrs. Bonafons and others in Italy, on this interesting question, *have confirmed* all that has been previously asserted respecting the quality of silk produced by the plant. They have further proved that the Cocoons made by the worms, fed with this quality of leaves, are *heavier* and produce silks *comparatively finer, more elastic and in greater quantity* than those fed with the leaf of the common tree; it has been ascertained—

1st.—" That the Morus Multicaulis does not require any particular soil as exclusively suited to its growth, but prospers even in a wet soil which it seems to prefer.

2nd.—" That it yields very little fruit, so that the leaves are more easily cleaned, and less matter of a fermenting nature is introduced into the body of the silk-worm.

3rd.—" That it does not rise too high and yields a greater quantity of leaves, which can be easily gathered by women and children.

4th.—" That it puts forth its thin, tender and soft leaves earlier than other Mulberries, which permits the period of hatching of the silk worms to be anticipated some days.

5th.—" That the roots possess *the remarkable property* of throwing up numerous small flexible stalks, without forming properly a principal trunk.

6th.—" That these stalks assume in a very short time a great length.

7th.—" That the leaves speedily acquire a remarkable development, and are promptly renewed.

8th.—" That these stalks or branches strike root, as cuttings

with *extraordinary facility* without particular care, even before they have acquired a ligneous or woody consistence."—Pages 12 to 16.

Various other persons bear similar testimony, particularly that it is "*destined to replace the common white Mulberry every where for feeding silk-worms.*" India therefore it is to be desired, should not be the last industrial country into which it is introduced.

I regret that I have not a copy of Monsieur D'Homergue's small volume to offer to the Court, but sufficient may possibly have been said to lead the Hon'ble Board to deem it desirable to obtain a few copies from America through the medium of its Booksellers, which copies might be useful to the Court's Collectors in the silk districts in India.

I have the honor, to be, &c.
(Signed) W. H. SYKES.

Revenue Department, the 12th December, 1839.

(True Copy)
FRED. JAS. HALLIDAY,
Secy. to the Govt. of Bengal.

Successful Cultivation of Flax in India.

A highly interesting communication was next brought forward relative to the successful cultivation of Flax, which had been received from Mr. George Leyburn, of Nunnoa Factory, Shahabad. This gentleman states, that since his residence in the interior he has given his attention to the natural resources of the soil, and that the production of Flax from the Linseed plant has come particularly under his notice; it being a plant which is most extensively cultivated all over India on account of its seed, but the valuable fibre of which is left unheeded, owing to the want of knowledge on the part of the native farmers of the mode of preparing it.

Three years ago Mr. Leyburn prepared his first sample of flax in the common way, from plants which had borne seed, and forwarded the same to London where it was submitted to the inspection of the respectable Firm of Truman and Cook, who reported that any quantity of a similar article would find a ready sale at £35 a ton. On the following year Mr. Leyburn entered on the cultivation rather extensively. He found a defect in the mode of culture, as well as a difficulty of preparing the flax, unaided as he was with machinery.

Notwithstanding these perplexities Mr. Leyburn succeeded in producing an article of lengthened staple and of a quality vieing with the flax of Russia and elsewhere. A portion of the cultivation was carried on the sandy bed of the Soane river, and part on the uplands of the district. Some of the flax has been prepared before the seeds were ripe. The following is the result which Mr. Leyburn has arrived at, in his calculation of the profit to be expected in the prosecution of this valuable culture.

*Per Bigah**.	*Rs.*	*As.*	*P.*
Rent of land, ...	1	8	0
Ploughing, ...	0	8	0
Seed.....	1	8	0
Pulling, beating seed off, watering, ...	5	9	3
Paring, cartage, preparation (nearly all hand labour), ...	16	0	0
	25	1	3

Produce.	*Rs.*	*As.*	*P.*
Linseed, 5½ maunds, ...	5	8	0
Flax, 4 maunds at say £35 per ton, ...	46	10	8
	52	2	8
Deduct expense of cultivation as per contra, ...	25	1	3
Profit on one bigah of land,.....	27	1	5

In most parts of India where the Linseed plant can be grown for flax, the land rent of which will be less than the estimate here given, and with the aid of machinery, the cost of manufacture, Mr. Leyburn considers, would be materially lessened.

Should the plant be pulled before the seed is allowed to ripen, Mr. Leyburn states that the quality of the flax will be much raised, and the enhancement in commercial value consequent thereon will much more than exceed the price of the seed sacrificed; when a factory is brought into full play and effective machinery set up, Mr. Leyburn considers that the manufacturing price of the article for the market would not be more than from 3 to 4 rupees a maund, which is equal to about £9 or £12 sterling a ton. Mr. Leyburn has imported from England some machines†, which he thinks if circulated throughout the country will soon tend to bring the article of flax into notice, and induce many who now neglect the culture to embark in it.

After giving the subject a fair trial Mr. Leyburn feels assured that to give effect to the production of this important staple the

* The bigah of land in Shahabad is something more than the Bengal bigah which is 1600 square yards, the third of an English acre, and less than the Tirhoot or *Dunkyhuee* bigah which is 3,200 square yards.

† One of these Mr. Leyburn has kindly placed at the disposal of the Society, and is ready for the inspection of the public at the Museum.

aid of European enterprize is necessary, for even with the remunerating profit which the above statement shows, Mr. Leyburn states that he failed in overcoming the deep-rooted prejudices of the native cultivators, and could not induce them to enter on a cultivation which held out to them a prospect of more than ordinary profit for their labour. To Indigo Planters Mr. Leyburn considers the subject is one deserving of particular attention, as there is scarcely a spot of ground in which the one plant will not grow equally well with the other. In a political point of view, Mr. Leyburn considers there is no product which merits the fostering care of the Indian Government more than this article, as the home market is mainly dependent on the foreign supply for its consumption, and to countries not the most friendly to the interest of England.

In conclusion Mr. Leyburn mentions, that he shall be glad if his remarks shall be instrumental in bringing this important staple into notice.

The accompanying is an extract of sales in London on July 17th 1838, of Flax now alluded to. "The flax per Windsor is landed sound—No. 1 sold for £28 per ton, and No. 2 at £14 per ton, 9 months' credit. My broker has examined the two bales per Windsor, and reports it could be used to a considerable extent;—its great fault is harshness and the absence of that softness and quality common, as you will have observed, to the Russian Flax. Prices of the latter article being lower than usual, P. T. R. selling here at this time at £40 per ton.

New Application of Wood-Oil to economical purposes.

The Secretary next submitted a letter from Mr. Laidley, of Surdah, communicating some valuable information relative to the application of the wood-oil, obtained from the Dipterocarpus trees of the Tenasserim Province in acting as a solvent to Caoutchouc. Mr. Laidley mentions that he discovered this property some months ago, and he prepared some cloth with the solution for the purpose of submitting it to the inspection of the Society. The process adopted was simply to cut the Caoutchouc into small pieces, and then drop a sufficiency into a bottle of the oil. In the course of a few hours the Caoutchouc swells, and must then be frequently stirred to facilitate the process.

If heat be applied complete solution is speedily effected, but several days are required at the ordinary temperature of the atmosphere.

The solution thus prepared may be spread on cloth which is rendered water-proof.

Lac Insect on Peepul trees.

Mr. Rose, of Ramnaghur Factory, Moorshedabad District, forwarded an interesting communication to the Society, relative to the existence of the lac insect in great quantities on several peepul trees* in a village in his neighbourhood. Mr. Rose considers from inquiries lately made that the lac insect will thrive on many trees peculiar to the plains, and is at this present moment to be found on such trees. The subject is one which may be regarded as of great importance, and Mr. Rose is anxious therefore to give the result of his knowledge on the subject.

Arrival of Saxon Rams in Calcutta.

A note was read from Mr. Storm wishing to make known to the Meeting of the Society, that he has imported from Van Dieman's Land, a certain number of Saxon Rams for the purpose of making an experiment to improve the wool of this country, and that having more Rams than he requires for that purpose he should be glad to dispose of a few of them at 250 rupees each, the price they cost him.

For all the foregoing presents and communications the best thanks of the Society were accorded.

HENRY H. SPRY, M. D.
Secretary.

* Ficus Religiosa.

PROCEEDINGS

OF THE

Agricultural & Horticultural Society

OF

INDIA.

FEBRUARY,

1840.

CALCUTTA:

PRINTED AT THE BAPTIST MISSION PRESS,
CIRCULAR ROAD.

1840.

AGRICULTURAL SOCIETY OF INDIA.

PROCEEDINGS.

FEBRUARY 12, 1840.

Agricultural Society of India.

A General Meeting was held at the Society's Room, Town Hall.

The Hon'ble Sir Edward Ryan, President, in the Chair.

(Eighteen Members present.)

The Proceedings of the last Meeting were submitted and confirmed.

MEMBERS ELECTED.

The Gentlemen proposed at the January Meeting, were duly elected Members of the Society, viz.

Capt. De Bude, Messrs. B. R. Muirhead, C. T. Sealy, and W. S. Alexander, Capt. Mathew Smith, Messrs. H. R. Leyburn, J. O. Beckett, J. A. Deverell, T. C. Morton, George Lindsay, George Vint, Robert Macnair, E. G. Dubus, E. Dubus, Junior, P. Burnett, and D. Lethangie.

FOR ELECTION.

The names of the following Gentlemen were read as candidates for election :

William Quintin, Esq., of the Civil Service,—proposed by Mr. F. C. Smith, seconded by Mr. W. M. Dirom.

Captain E. P. Nisbet, of the ship *Windsor*,—proposed by Dr. Spry, seconded by Dr. Strong.

Geo. Henderson, Esq., Attorney,—proposed by Mr. Chas. Huffnagle, seconded by Dr. Spry.

James Davidson, Esq., of the Civil Service,—proposed by Mr. R. H. Clarke, seconded by the Secretary.

F. Williams, Esq., of the Civil Service,—proposed by Mr. R. H. Clarke, seconded by the Secretary.

H. Astell, Esq., of the Civil Service,—proposed by Mr. R. H. Clarke, seconded by the Secretary.

R. H. Rattray, Esq., of the Civil Service,—proposed by Dr. Spry, seconded by Dr. Strong.

Major J. R. Ouseley, Political Agent at Hazareebaugh,—proposed by Mr. F. C. Smith, seconded by the Secretary.

A. De H. Larpent, Esq., (Firm of Cockerell and Co.)—proposed by Mr. W. F. Fergusson, seconded by the Secretary.

Baboo Huronauth Roy, (Noral, Jessore,)—proposed by Mr. Wm. Bennett, seconded by the Secretary.

Thomas Charles Cadogan, Esq. (Firm of Bagshaw and Co.)—proposed by Mr. R. J. Bagshaw, seconded by Mr. C. J. Richards.

Edward Whyte, Esq., (Firm of Mackenzie, Lyall and Co.)—proposed by Mr. Charles Huffnagle, seconded by Dr. Spry.

Mathew Herring, Esq. of Bishenauth, Assam,—proposed by Captain Francis Jenkins, seconded by Dr. Wallich.

Baboo Ramgopaul Ghose,—proposed by Mr. David Hare, seconded by Mr. A. C. Dunlop.

C. C. Fussell, Esq. (Indigo Planter, Tirhoot),—proposed by Mr. W. P. Downing, seconded by Dr. Spry.

PRESENTATIONS TO THE SOCIETY.

LIBRARY.

1. Proceedings of the Agricultural and Horticultural Society of Madras for the months of July, August and September 1839,—*presented by the Madras Agricultural and Horticultural Society.*

2. Madras Journal of Literature and Science, No. 24—*presented by the Madras Literary Society.*

3. Lecture on Agriculture, its Mechanics, &c.—*presented by the author Mr. G. F. Speed.*

4. Proceedings of a Special General Meeting of the Agricultural and Horticultural Society of Madras—*presented by the Madras Society.*

5. Report of the Sittings of the Committee of Agriculture established at Bourbon, as printed in La Feuille Hebdomadaire de L'Ile Bourbon—*forwarded by M. Bedier.*

6. Phipps's Statistics of Ship-building in India, &c.—*purchased by the Society.*

7. Two copies of a Catalogue of the Plants growing in Bombay and its vicinity. spontaneous, cultivated or introduced, as far as they have been ascertained. By John Graham, Esq.

This most useful work has been published under the auspices and for the use of the Agricultural and Horticultural Society of Western India. Not a single plant has been put down which has not been seen and examined either by the author or his able colleague Mr. Nimmo. Presented by the Agricultural and Horticultural Society of Western India.

MUSEUM.

1. A minute sample of Cotton from the Tipperah Hills.

Mr. Wise, the Superintendent of the affairs of the Rajah of Tipperah, who forwards this, states nearly 100,000 maunds, (3572 tons,) of such Cotton is annually brought down by the Hill tribes subject to the Rajah of Tipperah. The Cotton seed lately supplied to Mr. Wise by the Society he proposes distributing in the Tipperah Hills.

2. Two boxes of different sorts of English Vegetable Seeds—*presented by Captain Nisbet of the ship Windsor.*

3. A sample of a peculiar kind of grain grown on the Coast of the Hon'ble E. I. Company's newly acquired Province of Amherst, and called by the Natives "Kyeik Isae." The plants whence this seed is obtained, is stated by Mr. Riley who presents it to the Society to be of a very hardy nature, and thrives upon almost any kind of soil, yielding a good amount of produce, and in taste resembling wheat. Dr. Wallich stated to the Meeting that the seed now submitted was from the Coix lachryma.

4. A Salacot or Planter's hat such as is universally worn at Manilla, both by European and Natives.

Presented by Mr. Piddington, who states that after an experience of twenty years. he has found, for those whose business obliges them to exposure in the sun, it to be a very far superior hat or cap to any other, not only for the shade it affords to the face, but (and in this consists its peculiar advantage), in the freedom with which, by means of the basket-work crown within, it allows the perspiration of the head to be freely carried off.

5. A paper of Caubul Drum-head Cabbage Seed, Caubul, Candahar, and Bokhara Melon Seeds, Candahar Cherry-stones and Caubul Red Clover Seed—*presented by Col. C. C. Smyth.*

6. A sample of Cotton, second year's growth, from Sea Island Seed, grown on the sand upon Kanker soil on the banks of the Ganges at Cawnpore, without attention to irrigation or pruning—*presented by Dr. Campbell.*

This Cotton was pronounced to be of a very superior kind.

7. Two Knole Kole plants from Hidgellee—*presented by J. H. Barlow, Esq.*

These plants attracted much attention, from the circumstance which induced Mr. Barlow to forward them to the Society—namely, their being raised from *sprouts* and not from *seed*. The present is the second year of trial of this Horticultural experiment with Mr. Barlow, and altogether he has succeeded in raising clever plants. The facility with which early cabbages are raised from sprouts induced Mr. Barlow to undertake the experiment with Knole Kole. The method pursued is not to cut the Kole, but allow the plant to grow on in the soil till it ripens and breaks into three or four portions. From each of these portions sprouts are thrown out. The divisions are separated from the old root, and the sprouts cut off from them with a sufficient portion of the division to serve for the protection of the roots of the young sprouts. These are put in some cool place and watered, being protected by mats from heavy rain.

8. A sample of Cotton grown in the Bhutty States—*presented by Lieut. Robinson, Superintendent of the Bhutty States.*

This Cotton is of a very inferior quality.

9. A specimen of a plant growing in abundance in the vicinity of Tipperah, and sent to the Society for its beauty—*presented by Henry Roe, Esq.*

The Meeting was informed by Dr. Wallich, that this very pretty specimen of the Moss Club tribe was the Lycopodium cernuum.

NOTICE OF MOTION.

Application of the Sum of 10,000 *Rupees for the purpose of contributing towards a New Building.*

The Hon'ble the President intimated to the Meeting, that the business which he had first to direct the attention of the Members to were matters connected with the New Building, for the consideration of which a Special General Meeting had been held some months since and a Committee subsequently appointed. Since then a plan and estimates had been prepared, and an application made to the Government for the appropriation of the South-east angle of Tank Square, as being a spot well calculated to meet the convenience of the great majority of those for whom the Building was designed. He therefore desired to give notice of the following motion for the next General Meeting: "That the sum of Co.'s Rupees 10,000 be allotted out of the fixed Assets of the Society for the purpose of contributing, in conjunction with the Metcalfe Public Library Building Fund, the Metcalfe Testimonial Fund, and the Calcutta Public Library Fund, towards the erection of a House, at the S. E. corner of Tank Square, for the joint accommodation of these several institutions."

COTTON REPORT.

The attention of the Meeting being called to the report which had been framed by the Special Committee on Cotton, it was moved by Mr. Dearie and resolved, that as the time of the Members was much wanted to complete their correspondence for the Overland Mail the subject be postponed to Wednesday the 19th instant, when a Special General Meeting shall be held for the consideration of this important business.

AWARD OF PRIZES FOR CATTLE.

The Award made by the Judges, at the Exhibition of Cattle, held on the 1st instant, was next brought forward and passed.

Agreeable to resolutions previously made, the exhibition of Cattle for the year 1840 took place on the morning of the 1st instant, and the Judges beg to report the following award of prizes:—

IMPORTED NEAT CATTLE.

Nos. 1 and 2. For the best and second best imported bulls of the year 1839, there were no competitors.

PRODUCE.

No. 3. (Private mark D: 4.) For the best produce of imported Cattle, a premium of 250 rupees and the gold medal, was awarded to Mr. C. Huffnagle.

No. 4. (Private mark E.) For the second best produce of imported cattle, a premium of 200 rupees and the silver medal, was awarded to Messrs. Cook and Co.

No. 5. (Private mark B.) For the best bull calf of any denomination calved in 1839, no prize awarded.

No. 6. (Private mark D: 5.) For the best cow calf of any denomination calved in 1839, the silver medal awarded to Mr. Huffnagle.

SHEEP.

No. 1. (Private mark F: 1.) For the best imported wooled Merino ram of the year 1839, not less than two years old, a premium of 200 rupees and the gold medal was awarded to Mr. W. F. Gibbon.

No. 2. (Private mark G: 2.) For the second best imported wooled merino ram of the year 1839, not less than two years old, a premium of 150 rupees and the silver medal was awarded to Mr. W. Storm.

No. 3. For the best pen of merino ewes to the number of six, there were no competitors.

No. 4. (Private mark F: 3.) For the best thorough-bred merino ram lamb, lambed in 1839, the gold medal was awarded to Mr. Gibbon.

No. 5. (Private mark F : 4.) For the best thorough-bred merino ewe lamb, lambed in 1839, the silver medal was awarded to Mr. Gibbon.

No. 6. (Private mark F : 5.) For the best lamb, either ram or ewe, cross of a merino ram and an indigenous ewe, lambed in 1839, the small silver medal was awarded to Mr. Gibbon.

The successful competitors of sheep are requested to send in the fleece of their prize sheep when shorn, and the Judges have gratification in noticing a marked improvement both in quantity and quality of stock shorn this year over that of the preceding one.

W. P. GRANT.
JNO. HUGHES.
HENRY H. SPRY, M. D.

Calcutta, Feb. 3, 1840. *Secretary.*

THE ANNUAL REPORT.

The annual report of work done by the Society during the past year, was then submitted by the Hon'ble the President, and on the motion of Dr. Wallich, seconded by Mr. Piddington, it was resolved that the same be printed.

Despatch from the Home Government relative to the Cultivation of Hemp, and the publication of useful Papers bearing on the Improvement of the Commercial Resources of the Country.

The first communication which was submitted to the Meeting, was the following letter with a despatch and its enclosure from the Government of India.

No. 69.

To H. H. SPRY, Esquire,

Secretary to the Agricultural and Horticultural Society.

Genl. Dept. Sir,—I am directed by His Excellency the President in Council to transmit to you for the

information of the Society the accompanying copy of a letter No. 14 of 1839, from the Hon'ble the Court of Directors, in the Public Department, dated the 24th July, and of its enclosure on the subject of the cultivation of Hemp in India.

I am, Sir,

Your obedient Servant,

H. T. PRINSEP,

Secy. to the Govt. of India.

Council Chamber, the 29th January, 1840.

PUBLIC DEPARTMENT,

No. 14 OF 1839.

Our Governor General of India in Council.

Para. 1. We forward a number in the packet copy of a paper prepared by Dr. Royle on the advantages and practicability of cultivating Hemp in India, with a view to the supply of that article to meet the large demand constantly existing for it in this country. It is our wish that the suggestions which it contains should receive immediate attention, and especially those which relate to the experimental culture of Hemp in our Botanic garden at Saharunpore.

2. In conformity with the recommendation of Dr. Royle we shall at the earliest opportunity send out specimens of the different qualities of Hemp found in the markets of this country, with advices of the prices which they bear; and we desire that specimens may be furnished to us of Himalayan Hemp in different states as prepared by the people of the Hills, and also with specimens of hempen rope and sack cloth.

3. We propose from time to time to print and publish such information as may come before us calculated either to extend the knowledge of the productions of India, to increase their amount, improve their quality, or give a stimulus to the demand for them, and we desire that you will cause similar

measures to be taken for effecting the same objects throughout India.

We are, &c.

(Signed,) R. Jenkins.
,, W. B. Bayley.
,, W. Stanley Clarke.
,, John G. Ravenshaw.
,, Henry Willock.
,, John Shepherd.
,, C. Mills.
,, Robert Campbell.
,, John Forbes.
,, H. Shank.
,, H. Alexander.
,, J. D. Alexander.
London, 24th July, 1839. ,, Russell Ellice.

The union of strength with flexibility being so essential for many mechanical purposes, various experiments have been made at different times and places, to find substances fit for manufacturing into cordage. Skins and leather were first employed for this purpose in many countries, but vegetable fibre having been found very superior for most purposes, leather ropes became superseded, and attention was turned to the vegetable kingdom for the best cordage materials; and the Hemp Plant combining the required properties in the greatest degree has come to be almost exclusively employed for making the ropes and sails of vessels. It is cultivated therefore by many nations for Home use, and by others for export. To these therefore its culture is of great importance, and its commerce very considerable. In the year 1836 of 586,032 cwt. imported into the United Kingdom 556,458 cwt. were shipped at St. Petersburgh and Riga. The subject therefore is of vital

importance to a nation which imports such large quantities of the raw material for the rigging of its vast Navy and Merchant shipping, as they might at any time by the occurrence of war be deprived of this supply.

This deprivation did in fact take place during the last war, and great inconvenience was sustained by British shipping, as the price of Hemp, which in 1792 was only £25 per ton, rose to £118 in 1808, and only 259,689 cwt. were imported in that year. The Colonies therefore and India were looked to for a supply of Hemp, and its cultivation encouraged in North America.

The cultivation of Hemp in India obtained very great attention from the Court of Directors, and instructions were sent to the Governments there to encourage the growth as well as that as of other Cordage plants. As the natives of India employ between 40 and 50 different kinds of plant for the fibre which they yield fitted for this purpose in different degrees, the subject of investigation was sufficiently extensive, and received great attention from Dr. Roxburgh. A few only, however, of the Cordage plants of India are extensively cultivated in that country or known in commerce, as *Coir*, *Sun*, *Sunnee*, or brown Indian Hemp and Jute:—the first yielded by the husk of the *Cocoanut* (Cocos Nucifera), and the others by the plants known to botanists by the names of *Crotolaria Juncea*, Hibiscus Cannabinus, Corchorus Olitorius and Corchorus Capsularis. These being in general so inferior in strength to the true Hemp do not realize above one-third or one-half of the price of that imported from Russia, but for this very reason they continue to be imported for the purpose of making the inferior kinds of rope. There are several other plants yielding more valuable products suited to the climate of India, and which might easily be cultivated there, and therefore worthy of attention. Some of these I propose subsequently bringing under notice, as it is

important to find plants yielding valuable products suited to the soil and climate of different parts of India, as they would occupy space often uncultivated as well as serve to fill up the time of the Agriculturalist labourers, at the same time that they afforded materials for both internal and external commerce.

On the present occasion I confine myself to the Hemp plant itself, (the Cannabis Sativa of Botanists) as being the most valuable of the whole, and because it is in general erroneously supposed that it can only be successfully cultivated in European regions, though there is every reason to believe that it is originally a native of Asia, and even that its Greek and Latin name *Cannabis* is derived from the Arabic *Kinnub*. It is well known to be common in Arabia and Persia, as well as in every part of China and of India, and likewise in Egypt and Turkey, but in all these countries it is valued chiefly if not only for yielding an intoxicating drug commonly called *bhang*. In European countries it is on the contrary cultivated only on account of its ligneous fibre so extensively employed in the manufacture of the strongest ropes, and of coarse but strong kinds of cloth. The wide distribution of this plant throughout Europe and Asia is remarkable, but easily explained when we consider that it is an annual, which requires only a few months of summer temperature to bring it to full perfection. The requisites for its successful cultivation, it is however necessary to notice when endeavouring to introduce elsewhere its culture.

Hemp is cultivated in almost every part of Europe for Home consumption, but only in large quantities for export in Russia and Poland, though the finest quality of Hemp comes from Italy. French Hemp is also much esteemed, as well as that grown in both England and Ireland; but for the present purpose it is necessary only to notice the culture of the chief kinds which enter into commerce.

Hemp is cultivated in almost every province of Russia, but in the largest quantities in the interior beyond Moscow as well as nearer St. Petersburgh, and in the Polish provinces which belong to Russia. The soil must not be over-rich nor too sterile, of moderate depth and friable. The time of sowing varies from the middle of May to the end of June; by some it is recommended not to be sown until the latter end of June, as frosts are very injurious to its growth. The season of reaping is from the end of August to the end of September, the male plants being pulled some weeks before the female. The Russian summer though short is regular while it lasts, and the temperature sufficiently high to bring it to full perfection.

That the northern latitudes of Russia are not essential for the successful ultivation of Hemp, is however evident from the large quant which are grown in the southern climate of Italy both at gna and Romagna, and along the banks of the Po as well as in the neighbourhood of Naples. The Italians have a saying, that "Hemp may be grown every where, but it cannot be produced fit for use either in heaven or earth without manure." The climate of Italy it is well known is remarkable for its clearness, regularity, dryness and warmth, and that irrigation is essentially necessary for much of its agriculture. The Italian Hemp is fine, soft, light-coloured, and strong as well as long in the staple, and it is important to remark that it brings the highest price in the English Market; as, for instance, it sells for 50 shillings a cwt. when the best Russia was at 47 shillings for the same quantity.

If we compare the summer temperature of the northern with the southern situations, we shall not find so great a difference as we might be led to expect by considering only their latitudes or their mean annual temperature.

Thus Petersburgh and Moscow in North latitude 59° 56′ and 55° 46′ have summer temperature of 62° 6′ and 67° 10′

of thermometer, while Milan and Rome in North latitude 45° 28′ and 41° 53′ have summer temperature of 73° 4′ and 75° 20′.

The climate of the southern parts of Italy has some resemblance to that of the north of India, in as much as here is a mild winter with little frost and no snow, early spring and a hot dry clear summer, (the Indian climate is however much modified, indeed ameliorated, by the coming on of the rainy season;) yet we find, that with the aid of irrigation they are able in Italy to cultivate many of the same grains which are cultivated in India in the rainy season, as for instance Rice, Indian corn, Millet (Panicum Italicum), and Jour (Sorghum vulgare.) Cotton is also cultivated, and Sugar-cane and the Banana in small quantities; Limes and Oranges and Citrons originally introduced from India are perfectly at home. The Date and Palmetto Palm are quite naturalized, together with the Oleander, Jujube and Pomegranate, with the Neem tree, American and common Aloes, and the Inudar, with some African and Asiatic Acacias.

Without entering into details it might be inferred as probable that as Italy grows rice and many other plants of India, so might the latter cultivate a plant like the Hemp, which succeeds so well even so far south as Naples, and which requires only a few months to bring it to perfection, and this even if India did not already possess it.

But so far from this being the case the reverse is the fact, and it is well known that no plant is so commonly cultivated in so many parts of India as the true Hemp plant which is there called *ganja*, but which differs in no respect from the European plant, though the natives employ it only for the purpose of yielding *bhang*. But cultivated for this purpose, instead of being sown thick as it ought to be, when intended for cordages, it is sown thin by the natives, who afterwards

transplant the young plants and place them at distances of 9 or 10 feet from each other. The effect of this is to expose them more freely to light, heat and air, by the agency of which the plant is enabled to perfect its secretions in a more complete manner, and the *bhang* will consequently be of a more intoxicating nature. The fibres and woody parts at the same time attain a greater degree of stiffness and solidity, as is found to be the case with timber trees similarly exposed. The Hemp plant thus grown will branch much. It may be small in dry situations and large in wet and moist ones, but in either case its fibres are found both in Europe and India to be rough, stiffer and more difficultly separated from the woody part than is desirable, but seed is produced in large quantity and of better quality. This mode of cultivation has, however, the disadvantage of being more expensive, from taking up more space than desirable when the plants are required to yield the best quality of fibre for cordage.

Plants when grown in moist situations, in shade or set thickly together, are well known to run into leaf, shoot up and to become more lax in texture, while their secretions are imperfectly formed, as is exemplified in the growing of lettuce, celery, &c. Hemp and Flax when cultivated for their fibres are sown thickly together, and they shoot up into long wand-like plants, which are much less branched than when freely exposed, air and light having less free admission, and heat having less influence in evaporating the sap: the effect is to produce a longer fibre, which is at the same time soft and pliable, as well as more easily separated, and in larger quantity on the same space, than when they are set widely apart.

The Natives of India also sow their *Sun* and Jute very thickly together, when for the sake of their fibres they form the exclusive crops. The effect is to produce a long and flexible fibre, though this is not sufficiently strong to form a good

substitute for the true Hemp: but if this were cultivated in suitable situations in India in a manner similar to that adopted in Europe or like that practised with its substitutes in India, the effect would undoubtedly be to produce a sufficiently long fibre, which would also be softer and more pliable at the same time that it retained a great portion of its original strength, and probably in as large a quantity as is yielded by the *Sun* plants, and thus an article might be produced which judging from the Indian samples might enter into competition with the Russian product, and at all events afford much more valuable cordage than the several inefficient substitutes now so extensively cultivated in India, and which imported into this country sell only for 15 to 20 shillings a cwt. at the same time the Russian, Polish and Italian Hemp are selling for 42 to 50 shillings a cwt.

The difference in price would appear a sufficient inducement to attempt the culture of the true Hemp in India, especially as there could be no doubt respecting its growth, as it is already so common in every part of that country, and requiring if any thing only a little modification of its properties which could be ensured most probably by a change in the mode of cultivation. Dr. Roxburgh as long since as the year 1800, thought Rohilcund and the neighbouring hills suited to the cultivation of Hemp. I have seen it in great abundance in a wild state in the Deyra Doon and also in the Khadir land of the Saharunpore District, especially along the upper part of the Doab Canal, and where it was chiefly valued for its leaves being made into *bhang* and *subjee*. The stems when dried being burnt for firewood.

There would be little difficulty in cultivating this plant in the low Khadir land where it is wild, nor in converting it into merchantable Hemp. For the natives of the neighbourhood already make use of it, partially for the manufacture of ropes,

and the inhabitants of Malabar are said by Dr. H. Scott to employ the Hemp for making their fishing nets.

The natives of the Himalayas likewise possess the plant from which though they prepare an intoxicating drug which they call *churus*, they likewise value for its ligneous fibre, from which they prepare a coarse kind of cloth, which they send into the plains for making very durable *grain sacks* as well as the strongest ropes (called *sel)*, for crossing their rivers.

This fact, though not generally known, is mentioned by Kirkpatrick in his account of Nepaul, and was ascertained by General Hardwick in his visit to Srenuggur, as well as by myself, when travelling in the Himalayas. (Illustrn. p. 333.) I also obtained specimens of the rope and cloth when travelling there, but which I regret I am unable now to find. The plant I have seen in a very luxuriant state at least 10 or 12 feet high, in the Himalayas, at elevations of 6 and 7000 feet, especially in the neighbourhood of Buffalo sheds. In such situations and near villages it could no doubt be easily cultivated to a great extent, and yield a valuable and profitable product.

The Hemp could likewise be cultivated in the plains at two seasons of the year ; that is, during the rainy season, as is now the case, and likewise the cold weather, by cultivation similar to that of the summer culture of European countries. But experiments require to be made and specimens procured in order to determine, which season is most proper for the culture of this plant in order to yield Hemp of the best quality.

Hill people might no doubt easily be obtained for preparing the Hemp according to their own method, and teaching the people in the plains, who are already practised in the art of preparing *Sun*. It would, however, be desirable to procure if practicable the assistance of some European, (and such might be found among the soldiers,) who had seen and practised the

preparation of Hemp in this country. The experiment might be made with little expense and probably great advantage (from the useful information which would be obtained for the use of cultivators) in the Botanic Garden at Saharunpore, if instructions were given to this effect to Dr. Falconer, Superintendent of that institution.

For due attention being paid to the details of this subject, it would be extremely desirable to send out to India specimens, with prices of the different qualities of Hemp found in the markets of this country, so that cultivators in India might know what they had to imitate and rival. It would also be extremely desirable, in order to ascertain the present quality of the Himalayan Hemp, if specimens in different states of preparation were sent home as prepared by the hill people, together with specimens of the Hempen rope and sackcloth of the Himalayas.

(True Copies,)

H. T. PRINSEP,

Secretary to the Government of India.

The great Natural Resources of the newly acquired province of Muttock in Upper Assam—the Progress of the Tea Cultivation.

A highly valuable and interesting communication from Captain Jenkins, the Agent of the Governor General in Assam, was next submitted. Captain Jenkins first refers to the report made by the Silk Committee of the Society on the specimen of Moonga Silk lately submitted by Messrs. Watkins and Mendes; and states that as soon as the document reached him he lost no time in writing off to Mr. Watkins, to beg of him to endeavour to comply with the request of the Committee as early as practicable, and send the required sample for the London market. The report, Captain Jenkins states, holds out most

pleasing prospects for Assam, as the extent to which the silk would be shipped from that province is almost unlimited, from the abundance of Tetranthera plants, on which the worm feeds, and from the facility with which they can be propagated.

Two companies of the 36th Regiment, Captain Jenkins adds, have been hutting themselves over against me in what they thought was natural forest, but which in reality is a deserted plantation of Soom* trees, one of the best of those plants; and all about Dibroo Mookh in Muttock, the place whence Captain Jenkins despatches his letter, the land is covered with old plantations of the same tree.

Captain Jenkins adverts to the application which the Secretary addressed to him on the subject of the Cotton Minute by the Governor General, and thinks with the Committee, that little satisfactory could be done with foreign Cotton seed except by ncez cultivation. He wishes he could get a pair of the Americans in Muttock, for he has there very superior lands for Cotton, and *he can give land for nothing to any extent*, and he knows no place where the Committee are more likely to find the ryots tractable. They are all Cotton cultivators, and owing, Captain Jenkins supposes, to the fitness of soil and climate, the Cotton of Muttock, which to all appearance is the same stock as that of other parts of Assam and of the Garrow country, is far superior to any other in the valley, and fetches from 1-8 to 2-8 rupees per maund more in the market on the Kupas. All the natives would try any other Cottons, for they have no prejudices as to seeds. With the assistance of the Missionaries, the Military, and the Superintendants and Assistants of the Assam Joint Stock Company, seeds might be distributed largely round the country, and much attention could be paid to their cultivation. Muttock has only just fallen into the hands of the Government of India; but Captain Jenkins

* Quere, Sooria.—H. H. S.

hopes that there is a very fair prospect of the British soon rendering it a most important District. Tea—Caoutchouc—Silk—Sugar and Cotton are abundant, and the lands are well adapted to any cereal crops. It was, Capt. Jenkins states, the garden of Assam, and may readily become so again. A station has been found close to Dibroo Mookh, where Captain Vetch is to reside, and a thriving town is expected to be made of it immediately. In conclusion Captain Jenkins mentions, that Mr. Bruce has made for Government this season one hundred and twenty boxes of Black Tea and seventy of Green; "but with the means of the Joint Stock Assam Company," adds Captain Jenkins, "this might be increased next season a hundred-fold, were the Government establishments transferred at once."

The contents of this highly interesting communication, excited much attention from the Meeting. The concluding paragraph of the letter was particularly dwelt on, and the importance of encouraging the investment of private capital in the interesting experiment of producing Tea in our own provinces referred to. As a legitimate object of the Society's consideration the extension of the cultivation of Tea throughout British India was thought to merit an application to Government for the presentation to the Society of a box of each kind of Assam Tea, in order to give as extensive a notoriety to the article as possible; and it was therefore moved by Major Carter, and seconded by Mr. Preston, and resolved, "That an application be at once addressed to the Right Hon'ble the Governor of Bengal through the Tea Committee, for a supply of one box of each kind of Tea manufactured at the Government grounds in Assam for the purposes of the Society."

Dr. Wallich, Secretary to the Tea Committee, in approving of this resolution, intimated that the *Isabella Robertson*, which had just arrived in the river from China, had brought

round, notwithstanding our present disputes with China, an entire family of Chinese Tea cultivators, who were to be forthwith sent to the Assam gardens.

Government Research into the Natural Productions of Ceylon.

The next important document brought forward, was a letter from the Right Hon'ble J. A. Stewart Mackenzie, Governor of Ceylon, relative to an application which had been made to him by the Secretary, touching the trees and vegetable productions of that island with refefence to its soil and climate.

His Excellency states that it will give him the greatest pleasure to be able to communicate information on the subject, as he considers it one the importance of which he is so fully sensible, and the development of which he is so well aware will be followed by great improvements in his colony, and undoubtedly in India also, if reciprocal information upon this subject be given and taken by those who can afford it, that he shall endeavour seriously to apply himself to inquiries which the letter of the Secretary would lead. The real difficulty, His Excellency states, is first the expense that must attend a general and a thorough inquiry, and, secondly, of the almost entire want there is of instruments to carry that inquiry into execution. The superintendency of the Royal Botanic Garden at Peradenia is, however, now undergoing a change; and as soon as Mr. Normansel, the new Superintendent, is placed in full possession of the Department, His Excellency states he shall not fail to lay down some plan for obtaining the information required in the form of classification as annexed in the Secretary's letter.

Establishment of a Branch Society at Akyab.

A letter from Lieutenant Latter was next read, announcing that Resolutions (copy of which are furnished) were passed

by Captains Bogle, MacGrath, Lieutenants Apthorp, Phayre, Edwards, Baker, Eliot and himself on the 3rd of December, establishing a Society at Akyab to be denominated "The Arracan Branch Agri- and Horticultural Society."

Lieutenant Latter in the course of his letter states that a good and convenient piece of ground has been enclosed, and begs a supply of seeds may be supplied to him. The soil of the garden is like that of the entire island of Akyab, light and sandy, and requires great trouble in manuring. The usual forest trees, such as Teak, Iron-wood, Gurjun (wood-oil tree), Toon, Jarul and different species of ebony, &c. can be procured from the interior in any quantity. Tobacco, Cotton and Rice are indigenous. Indigo grows wild, and Coffee thrives well when slightly shaded. There is however a great want of esculent vegetables. He has no doubt these may be acclimated, an object greatly to be desired, if only for the benefit of the crews of the numerous vessels continually on the coast.

Agricultural Report from the Tenasserim Coast.

Mr. Riley at Amherst favors the Society with the result of experiments made under his care, at the request of Mr. Blundell the Commissioner of the Province.

Jaunpore Maize has not proved so good as that already cultivated by the Burmese. Bourbon, Seychelles, Sea Island, and Malta cotton seeds have had one year's trial, but the seed for the most part proving rotten no satisfactory results have been obtained. The Guinea grass has thriven most luxuriously—so have the arrow-root plants, the black bean and sugar-canes.

Horticulture in Nepaul.

Mr. Hodgson, the British Resident at the Court of Nepaul, intimates that he can let the Society have a supply of good red

and white clover seed and good apple grafts of various excellent kinds of European Apples. Mr. Hodgson inquires further whether the Society requires occasional vegetable seeds or medical drugs, and wishes a supply of young plants of currants, gooseberries, and cherries in return.

Dr. Spry informed the Meeting that it was his intention of sending to Mr. Hodgson some of the seed, which had lately arrived from Afghanistan, and that he had despatched half of a box of the vegetable seeds, which Captain Nesbit had so kindly placed at his disposal.

Committee of Agriculture at Bourbon.

Two letters from M. Bedier at the island of Bourbon, were presented acknowledging the honor he felt at having the gold medal of the Society awarded him for his services in promoting the advancement of the Cochineal cultivation in India, and assuring the Society that his best exertions shall be given to this most desirable object.

In pursuance of this intention he purposes in the month of April next, forwarding another consignment of insects which he trusts will reach in good order. He further adverts to the formation at the island of Bourbon of a Committee of Agriculture for the purpose of promoting the resources of the colony, and desires to open a correspondence with the Agricultural and Horticultural Society of India, which request was immediately acceded to by the Meeting.

For all the before named presents and papers, the thanks of the Meeting were accorded.

HENRY H. SPRY, *M. D., Secretary.*

FEBRUARY 19, 1840.

Agricultural Society of India.

A *Special* Meeting was held at the Society's Room, Town Hall, on Wednesday, the 19th February, 1840.

The Hon'ble Sir Edward Ryan, President, in the Chair.

(Twenty Members Present.)

Read the following letters, bearing on the cultivation of Cotton in India,—

1st.—From Major W. H. Sleeman, dated Moradabad, February 6, 1840.

2nd.—From Captain Jenkins, Agent of the Governor General in Assam, dated January 4, 1840.

3rd.—From D. F. McLeod, Esq., Assistant to the Agent of the Governor General in the Saugor and Nerbudda Territories, dated January 6, 1840.

4th.—From Archibald Sconce, Esq., Collector at Chittagong, dated December 29, 1839.

Read a letter from F. G. Bruce, Esq., of Culpee, to the address of the Secretary, forwarding copy of a letter submitted to the Secretary to the Government of India with the Governor General.

Read a letter from the Secretary to Government of India, dated 15th February, transmitting for submission to the Society, a second letter from Mr. Bruce.

The Hon'ble the President informed the Members, that the meeting for which they were assembled was a special one, for the purpose of taking into consideration the Report made by the Cotton Committee on the best mode of carrying into effect

the wishes of Government relative to the improvement of the Cotton cultivation in India.

Paragraph by paragraph in the order in which each appears in the report was then read and discussed. The whole having undergone due consideration and different emendations having been made, it was moved by C. K. Robison, Esq., seconded by W. G. Johnson, Esq., and carried unanimously, that the report as now amended be adopted and transmitted to Government by the Secretary.

REPORT.

Preamble. Your Committee remark that it will be, no doubt, in the recollection of the Society, that their assistance and co-operation in furtherance of the views of the Home Authorities for the improvement of the Cotton cultivation within the presidency of Bengal, including the North Western Provinces, has been requested by Government; that the Society has been informed by Mr. Secretary Halliday in his letter, under date the 22nd October last, that several American workmen, expected to arrive in Calcutta in the month of December, 1839, would be placed under its direction and orders, should the Society undertake the charge; that in "reply" the Government were informed, that the Society accepted the proffered trust; and that the Cotton Committee, reinforced by several Members conversant with the subject under discussion, has been in consequence requested to prepare a report, and propose a plan for carrying into execution the contemplated project.

Your Committee having taken the subject matter referred to it into its most serious consideration, is of opinion, that it will be advisable to discuss the subject under the various heads which naturally suggest themselves.

1st. *Station and disposal of the American workmen.* The stations at which the workmen should be located, and the mode of disposing of them.

As only three American cultivators and four Machine workmen are intended by the Government to be assigned to the Bengal Presidency, it will be necessary to place at each selected station, one Cultivator and one Machine workman, leaving one Machine workman to be disposed of hereafter as circumstances may suggest. It would doubtless have been advisable for obvious reasons, had the number of workmen, which your Committee originally had been informed were to be assigned to this Presidency, been placed at the disposal of the Society, to have located the cultivators by pairs, to prevent the delays and inconveniences likely to ensue from sickness and other similar causes; but as the number is so much restricted, your Committee is of opinion they should be located at three sudder stations, in the neighbourhood of which the best Cotton is grown, and to abandon for the present any intention of trying experiments in those parts of the Presidency, where the least doubt as to success may be entertained.

Your Committee is of opinion, that the stations for the workmen should be in the North Western Provinces, and entirely on the right bank of the River Jumna, the Cotton cultivation in that part of the country being so far superior to the Dooab Cotton, that the latter is extensively imported into Bundlecund for the fraudulent purpose of being mixed up with the Banda and Jalown Cotton.

The stations selected by your Committee are 1, Agra; 2, Banda* in Bundlecund; 3, Jubbulpore in the Saugor and Nurbudda Territories.

Your Committee has not failed to take into consideration, in the selection of the Stations, the necessity of placing them

* Culpée and Jalown are also good situations within the province of Bundlecund.

in situations where facilities of transport abound. It is obvious that there can be no reasonable objection made to the extension of operations by the Society to these districts from which private speculators can with profit transport Cotton to Calcutta for sale, on the score of difficulty of access, or deficiency of transport, and other similar impediments; but the facilities of the selected stations, it is known to your Committee, much exceed any difficulties which may be expected to arise. For Agra and Bundlecund are situated close to the river Jumna; and from Jubbulpore to Mirzapore, on the banks of the Ganges, the great Cotton Mart of the North Western Provinces, a bridged and metalled road of 239 miles in length, equal to any in England, has been made by Government; and at all the stations, the means of transport, viz. the river, hackeries, camels, and bullocks; and on the river, boats of every description, abound.

2nd. Duties of the workmen and their assistants.

Your Committee is fully impressed with the conviction, that in order fully to carry out the wishes of the Government, and of the Home Authorities, an experiment for the improvement of Cotton should be undertaken on a grand scale. For which purpose, a quantity of land should be cultivated under the special superintendence of the Society and on the principle of Neez cultivation; and they should also take a considerable quantity of land to be cultivated according to the Ryottee system. The Neez cultivation should be situated close to the Sudder Stations of the workmen, and should not exceed the number of acres each workman can personally superintend, both in the ploughing, in the sowing, in the weeding, and in the gathering of the Cotton crop. The quantity should not be less than 200 acres for each workman, and the soil should be *the average Cotton soil of the District*, and not the choice Garden grounds. The Ryottee cultivation may with advantage extend to a con-

siderable distance from the stations, and the quantity of land should be the extent the workmen and their associates can with facility properly superintend. As the villagers refuse to let the whole of the land of their villages for any particular crop, and as some parts of the land are more favorably suited for Cotton Cultivation than others,—for instance the land close to Nullahs answers best in the Nerbudda Valley,—the Ryottee cultivation will extend to a considerable distance from the Sudder Station. It therefore appears to your Committee requisite to assign to each workman—1st, an Associate conversant with the language and agricultural processes of the country; and 2nd, Zilladars selected from the best Cotton Cultivators, who will be placed each in charge of small districts, under the superintendence of the American workmen.

The duty of the associates should be to act as interpreters to the workmen, and to aid and assist them in every way they may be required. The difficulty of obtaining persons qualified for such duties in the North Western Provinces, your Committee acknowledge; but it would suggest that the local authorities of the districts in which the workmen will be located should be consulted, both as to the selection, the rate of pay, and other subsidiary arrangements, before any final decision be arrived at.

3rd. Cultivation of Cotton. The Zilladars, who must be inhabitants of the Cotton Districts, should be selected by the workmen with the sanction of the Agent of the Society, and to them a salary of six Rupees or more per mensem should be assigned. A liberal salary has been suggested, in order that the best men may be procured, and to remunerate them for the sacrifices they will have to make in giving up prejudices, and in performing duties to which they are unaccustomed.

The Neez Cultivation should be kept up more as a pattern for the agriculturists, and as evidence of what may be done by

care, attention, and skill; and for the purpose of acclimating and bringing into general notice foreign seeds; but the workmen should likewise be left at liberty to cultivate on their khas lands the indigenous Cotton of the country, with a view to its eventual improvement, and to ascertain to what extent it can be brought to the perfection necessary to cause it to compete with American Cotton.

The object of the Ryottee cultivation should be principally for the culture of the best indigenous cotton. The seed should be furnished by the Society, and should consist of the Country, id est *Dasee*, seed of the best description procurable, and free from all admixture with other grain. The land should, when procurable on such terms, be rented from the Zemindar, or the person to whom it has been let; and the rentee should engage to plough, and sow the land and reap the crop, under the superintendence and according to the directions of the American workmen—they should, by their Cubooleuts, be bound, under a penalty, to prepare the land according to a prescribed system; not to sow, as they usually do, other grain with the Cotton; to weed the crops when required by the workmen; and to pick the Cotton, at such times, and in such a manner, as the workmen may direct.

Your Committee observe, that these measures and precautions will ensure the growth of the best native crops, and will enable the workmen to collect and transmit to the Society cotton cleaned by machinery well picked and free from dirt or leaves.

4th. Payment for the Culture. The payment to Ryotts or Zemindars should be a certain sum per maund over and above the bazar rate, deducting the land rent: but in cases where the Society may rent land from the Zemindars, and have it cultivated by Ryotts, then the land should be let out to the Ryotts if possible on the above conditions; and they should

in a similar manner be remunerated for their labour. It will be obvious, that by this intermixture of Neez and Ryottee cultivation,—the former cultivated exclusively by the American workmen, and the latter by the Ryotts, subject to the superintendence of the Americans, we shall obtain the best description of Cotton both from foreign and Native Seeds, with no more expense in the Ryottee cultivation than the cost of superintendence, and the premium over and above the market price of Cotton; we shall diffuse the superior knowledge and manner of proceeding of the American system; we shall educate a body of at least 80 or 100 intelligent Natives into the mysteries of the new and improved system of agriculture; and the Society will have at their service, in the course of a couple of years, a body of well-instructed agriculturists fit to form stations, to educate more pupils, and all to be obtained at a small price, comparatively speaking; for the superior nature of the Cotton produced under such advantageous circumstances will, we may calculate on with great certainty, nearly repay the expences incurred by the experiment. It should, the Committee observes, always be borne in mind that the chief object of our ambition should be, rather to improve the produce of the Country, and to stimulate the people to adopt our improvements, than to introduce seeds or new agricultural implements, which may or may not succeed; and that we can, comparatively speaking, do little good by Neez cultivation, except with the view abovementioned.

5th. Superintendence. The aid of the Commissioner of Revenue or of the Collectors of the Districts, or both, will be essentially necessary for the superintending, advising and guiding in a general way the workmen, who should be directed always to apply to them for advice and assistance when requisite; and your Committee is of

opinion that the Huzoor Tehsil Peshkars of each District should be the officers selected by the local officers to choose the fields, make the previous arrangements, and bargains, for the land, and to pay the rent, and make the requisite advances; but the purchase money of the Cotton which will be sent to Calcutta to the Society, the workmen should pay. Your Committee further desires to observe, that the Civil Servants of the Government in charge of Districts, although perfectly competent, and no doubt willing, to afford the Society all general aid and assistance, yet their proper avocations will in general prevent their undertaking any minute supervision, and it would therefore be advisable to appoint at each station a person of weight, influence, and general knowledge of the customs of the agricultural classes, as Agents to the Society. At Agra, it is understood Dr. Falconer's services will be available for this purpose: and at Jubbulpore, Mr. D. F. McLeod, Principal Assistant to the Commissioner, will willingly grant his valuable aid; but in Bundlecund, there is no information before it by which your Committee can be guided in its choice; but it entertains no doubt, but that a competent person willing to afford his assistance will be found either at Banda or Culpee. It has been suggested that the Omlah attached to the Opium Department of Bundlecund, who have lately been discharged, on the abandonment of the opium cultivation in that Province, may be available for the cotton experiment; and your Committee would recommend that this suggestion should be taken into consideration, and, if approved of and deemed expedient, be adopted.

The Cultivators and Associates should report progress periodically to the Society through the Agent, and should also furnish copies of their reports to the Commissioner of the Division, who should be requested to favor the Society with his own sentiments.

6th. Calculation of the expense of the experiments.

Your Committee observes, that in ignorance of the arrangements made by the Hon'ble Court of Directors with the American workmen, and from the nature of the proposed measures, it will not be possible to prepare an estimate of the expenditure which will be required to work out the scheme, except in regard to the Associates and the Zilladars, whose salaries will probably be as follows :

3	Associates, 300 Rupees each, ...	900
60	Zilladars at 6 Rupees each,.....	360
	Office expense, peons, &c. for each station 100,..	300
	Co.'s Rs. per mensem,.....	1560

Finally, on this point your Committee is of opinion, that the labours of the Secretary to the Society will be much increased by the correspondence which the Agents and local officers will hold with the Society on the subject of this interesting experiment ; and although they are not at present prepared to suggest any specific addition to his salary and to his office establishment, yet they consider it but just and proper to draw your attention to the subject, with a view to future consideration.

7th. Premium.

The Premia to be offered in accordance with the intentions of the Home Government will best be divided, the Committee thinks, into two scales of rewards, the first division or scale to be for the management of the cotton cultivation of the country, so as to raise it on an equality with the average price of the best Upland Georgian Cotton realizable in the Liverpool market for the time being ; and for this purpose the Committee proposes the following terms :

1st Scale.

For the best parcel of Cotton, the growth of the Provinces appertaining to the Governments of Bengal and Agra, not less

than 300 bales in quantity, each bale to weigh 300 lbs. avoirdupoise, and to be cleaned by machinery, which shall realize in the Liverpool market at the time of sale, the average price of the best lots of American Upland Georgian Cotton sold at the same time in the same market, the sum of 20,000 Company's Rupees, or £ 2000 Sterling.

Conditions.

The cotton brought forward for competition must be grown at the risk of one individual, the place or places at which it is grown must be named, and it must be the produce of the province of Bengal, Behar, Orissa, Assam, Benares, Oude, Rohilcund, Agra, Delhi, Bundlecund, Malwah, or Saugor and Nerbudda Territories, but of no two or more provinces conjointly.

2nd. The proprietor must furnish a certificate on honor, countersigned by the Commissioner of the province or other chief authority, that the cotton exhibited by him for competition for the reward is the property of himself solely, and has been obtained by him from a single province.

3rd. All cotton entered for competition shall be duly registered at the office of the Secretary, on or before the first day of October, 1843, at which time the Agricultural and Horticultural Society will enter on the examination of the bales, and the documents which have reference to them; and should the Society deem the sample bale selected for examination to contain cotton likely to realize the object for which the prize is offered, that then the proprietor shall make over the whole quantity to the custody of the Society, and be furnished in return with a duly attested acknowledgment to that effect.

4th. That the cotton so made over shall be shipped at the port of Calcutta and be sent to the Manchester Chamber of Commerce, to be brought forward at as early day as possible,

with a request that that body undertake to ascertain the true value of the cotton by appraisement and subsequent sale.

5th. On the receipt of the account of sales being received by the Society, from the consignees, the sum realized for the cotton so sold, shall be duly compared with the official Price Currents of the day, the appraisement by two sworn brokers, and the Report of the Manchester Chamber of Commerce, and if the amount realized by the sale of the aforesaid cotton, be one that can be fairly considered to average the current price of the best Upland Georgian Cotton of America, then the prize shall be considered to have been justly won, and a certificate, signed conjointly by the President and Secretary of the Society to that effect, shall be furnished to authorize the payment of the reward out of the Government Treasury to the individual who earns it.

6th. The Cotton under transport to England to be hypothecated for the benefit of the Proprietor, and on the receipt of the account of sales, a statement to be duly made of the outturn of the consignment, and a balance struck, which, whether the object in view be realized or not, shall be duly furnished to the competitor, and all monies appertaining to the transaction, be immediately made over to him, without any deduction whatever on the part of the Society of commission, or other money profits.

7th. The cotton shipped under these conditions, shall be insured in one of the Calcutta Offices, and the charge for the same be borne by the competitor.

8th. A Prize to the foregoing amount shall be offered annually for a period of three years, commencing from the 1st day of October, 1843.

9th. The Society reserves to itself the right of rejecting the claims of any competitor, without assigning a reason for so doing.

2ND SCALE, 1ST PRIZE.

For the best parcel of cotton the growth of the Provinces appertaining to the Governments of Bengal or Agra, not less than 300 bales in quantity, each bale to weigh 300 lbs. avoirdupoise, to be cleaned by Houldsworth's Churka, or any other more approved machinery, which shall realize a price in the Calcutta market, very much superior to that of the ordinary indigenous cotton of the country sold at the same time.

The sum of 10,000 Co.'s Rs. or £ 1000 Sterling.

SECOND PRIZE.

For the second best parcel of cotton the growth of the Provinces appertaining to the Governments of Bengal or Agra, not less than 300 bales in quantity, each bale to weigh 300 lbs. avoirdupoise, to be cleaned by Houldsworth's Churka or any other more approved machinery, which shall realize a price in the Calcutta market very much superior to that of the ordinary indigenous cotton of the country sold at the same time.

The sum of 5,000 Co.'s Rs. or £ 500 Sterling.

Conditions.

The cotton brought forward for competition must be grown at the risk of one individual, the place or places at which it is grown must be named, and it must be the produce of a single Province of either the Bengal or Agra Presidencies, Oude included.

2nd. The proprietor must furnish a certificate on honor, countersigned by the Commissioner or other Chief appointed Officer of the Province, that the cotton offered for competition is the growth of that Province.

3rd. The cotton entered for competition under this scale, shall be duly made over to the Agricultural and Horticultural Society for examination, and eventually, if it thinks proper, public sale.

4th. Before the cotton so offered to the Society is disposed of, an appraisement by at least three well known cotton dealers and by the Cotton Committee of the Society shall be obtained, which appraisement shall contain a statement, whether the party or parties so appraising is, or are prepared to take the lot at the price mentioned in the valuation paper.

5th. On the Society being convinced that the cotton presented for competition is very superior to the ordinary indigenous cotton of the country, and can therefore realize a superior price, the same shall be sold by Public Auction at Calcutta, after which the produce shall be made over to the competitor, and a certificate, signed by the President and Secretary of the Society, announcing the reward, shall be furnished to him, which certificate shall be authority for the payment of the prize at the Government Treasury.

6th. The Society reserves to itself the right of rejecting the claims of any competitor, without assigning a reason.

7th. Prizes to the foregoing amounts shall be offered annually, for a period of three years, commencing from the 1st day of October, 1843.

(Signed) F. C. SMITH, *Chairman.*
HENRY H. SPRY, M. D.
Secretary.

PROCEEDINGS

OF THE

Agricultural & Horticultural Society

OF

INDIA.

MARCH,

1840.

CALCUTTA :

PRINTED AT THE BAPTIST MISSION PRESS,
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1840.

AGRICULTURAL SOCIETY OF INDIA.

PROCEEDINGS.

MARCH 11, 1840.

Agricultural Society of India.

A General Meeting was held at the Society's Room, Town Hall.

The Hon'ble Sir Edward Ryan, President, in the Chair.

(Fifteen Members Present.)

The proceedings of the last General Meeting and of the Special Meeting held on the 19th February, were submitted and confirmed.

MEMBERS ELECTED.

The Gentlemen proposed at the February Meeting were elected Members of the Society, viz.:

Messrs. Wm. Quintin, Geo. Henderson, James Davidson, F. Williams, H. Astell, and R. H. Rattray, Capt. E. P. Nisbet, Major J. R. Ouseley, Baboos Hurronauth Roy and Ramgopaul Ghose, Messrs. T. C. Cadogan, A. De H. Larpent, Edward Whyte, Mathew Herring and C. C. Fussell.

FOR ELECTION.

The names of the following Gentlemen were read as candidates for election:—

Dr. Douzell of Chenchouah Factory, Pubna,—proposed by Mr. Chas. De Verinne, seconded by Dr. Spry.

Forbes Scott Brown, Esq. of Penang,—proposed by Dr. Wallich, seconded by Dr. Spry.

Alex. Stuart Brown, Esq. of Penang,—proposed by Dr. Wallich, seconded by Dr. Spry.

C. E. Newcomen, Esq. (Firm of Cockerell and Co.)—proposed by Mr. W. F. Fergusson, seconded by the Secretary.

F. R. Hampton, Esq. Secretary to the Assam Tea Company,—proposed by Dr. Spry, seconded by Dr. Wallich.

Adam Stewart Gladstone, Esq. (Firm of Gillanders, Arbuthnot and Co.)—proposed by Dr. Spry, seconded by Dr. Wallich.

Thos. Hugon, Esq.—proposed by Mr. Piddington, seconded by Dr. Spry.

APPROPRIATION OF THE SUM OF 10,000 RUPEES FOR THE PURPOSES OF A BUILDING.

The Hon'ble the President, adverting to the motion of which he gave notice at the last Meeting, begged to recal to the recollection of the Meeting the acquiescence which had been accorded by the Society at a former Meeting, to assign a portion of the fixed Assets to the purpose of a Building for the accommodation of the Society, and he now begged to propose that the sum of 10,000 rupees should be passed for this purpose.

The Right Hon'ble the Governor of Bengal had not as yet returned an answer to the letter which had been addressed by the Society with reference to the grant of a piece of ground, but he (the President) believed he might state that a suitable site would be granted, although the locality of Tank Square might not be the one assigned.

The motion was then put and carried unanimously.

PRESENTATIONS TO THE SOCIETY.

LIBRARY.

Two copies of a memoir on the proposed improvements in Indian Cotton, by *Henry Piddington—presented by the author.*

MUSEUM.

1. Plant, stem, flower, and bark of the paper plant of Nepaul, called in the language of the country Daiercoon or Daircoon (*coon* being for a tree) from the hills about Darjeling—*presented by Dr. Pearson, Civil Surgeon at Darjeling.*

Dr. Spry, in submitting this specimen to the meeting, mentioned that a full description of this plant, which is the Daphne Cannabina of Lawreire and D. Odorata of Thunberg, has been fully described by Dr. Wallich in the 13th volume of the Asiatic Researches, and is the identical plant whence the almost imperishable paper of Nepaul, (the particulars of which, by Mr. Hodgson and Dr. Campbell, are to be found recorded in the 5th volume of the Transactions of the Society,) is prepared. The flower is full of odour and much resembles the Jessamine in smell. A sketch of the plant on Nepaul paper is to be found in Dr. Wallich's description. For its fibre too, the plant would seem to be well worthy attention.

2. Seeds and corns of various kinds from the hills about Darjeling.

Dr. Pearson who forwards these as a contribution from the Darjeling Plantation Society, mentions that there are at least three if not four sorts of Oak at Darjeling. One an immense tree affording a dark mottled timber in appearance much like the English heart of oak, from 40 to 60 feet long, and 6 or 7 in diameter, or even larger still. One sort is what is called

*Phalant** in Nepaul, and is said to resemble the "she oak" in Australia. It grows to 40 or 50 feet long, but Dr. Pearson has not seen any that is more than 2½ or 3 feet at most in diameter. The wood is close-grained, reddish brown in colour and mottled; and exceedingly tough, though easily split. It makes excellent tool handles, superior indeed to ash itself, and would, Dr. Pearson considers, be valuable for gun-carriages; for although it splits readily yet it is a tough, strong wood, and does not fly in splinters, besides warping less and being less affected by the weather than any wood with which Dr. Pearson is acquainted.

Some of the seeds forwarded are reported by Dr. Pearson to afford flowers of a delicious fragrance; one resembles a myrtle—a second a cherry—a third a chesnut—a fourth a large tree, having a broad leaf and most beautiful flower which hangs in clusters, and varies in shades of colour from deep crimson to light scarlet—a fifth are the seeds of a large, tall and very beautiful tree, having a leaf and wood which is very like the holly—and a sixth is the Geelah†. Dr. Pearson further stated that the consignment of plants sent by the Society to the Darjeling Garden, reached for the most part safe and in tolerable good order. A second supply of vines, currant, apple, and pear trees, from the Cape, sent up by Mr. Bruce, reached in such excellent condition, that Dr. Pearson is anxious to give the particulars of packing. It appears the plants were packed in a long tin case with a quantity of reddish earth around them *quite wet*, so much so that at first view Dr. Pearson thought them rotten, but on examination found all to be alive and some to be budding. Some plants sent from America, which were packed amidst dry moss without earth and in tin cases, reached in a dead state. The Darjeling garden is get-

* *Phalaat* by the Parbuttees! Quercus Annulata.—H. H. S.

† Mimosa Scandens.

ting on better, Dr. Pearson states, than could be expected. English potatoes and hive bees are much wanted at Darjeling.

3. Specimen of ginger, cotton, and wild yam produced in the neighbourhood of Darjeling and collected in the valleys by the Lepchas, *presented by Dr. Pearson*, who mentions in his note, that the yam plant is a creeper having a leaf much like a pawn leaf, but twice the size at the root, of which the yam is found at a depth of from three to four or five and even six feet. It is *quite uncultivated*, even *self-sown*, yet of a flavour and whiteness far surpassing that of the yam of the plains; some specimens are however of a pinkish purple hue. Dr. Campbell and Lieutenant Montgomery, from whom these particulars were obtained by Dr. Pearson, saw the plant growing in abundance on a recent expedition which they have been making. In the Lepcha language the plant is called "Bookli," in Purbuttiah "Turool," and in Bhotecah "Kew."

The ginger was pronounced to be a very superior article and well worthy of attention. The cotton is indifferent.

4. Tea from the Tipperah Hills.

Mr. Watt, who forwards the leaves, states that while on a tour in the Tipperah Hills last month (February), his party came on large tracts of trees from which the leaves sent were taken; and considering it to be the Tea plant, a quantity of the leaves were taken into camp and prepared in a rough way by roasting in a fry pan, and then infused in boiling water. The result was, considering the hasty manner in which the article was got up, the infusion had really a very agreeable flavor of ordinary tea.

The examination of the leaf excited much curiosity among the members present from the circumstance of such an abundant supply of tea being found so near home as the Tipperah Hills, and although it was difficult from the leaf merely to pronounce whether it belonged to the genus "thea" or

"camelia," yet in point of importance the distinction was not likely to prove of great consideration. The fact of the specimen sent imparting the flavor of ordinary tea shows how closely allied these two genera are.

5. Thirteen specimens of Wool from various quarters of the globe—*submitted by Mr. Robert Smith.*

6. China Aster plants in full bloom—*exhibited by Dr. Spry.*

These plants were raised from seed furnished by Colonel Smyth of the 3rd Cavalry, when at Cabul. The flowers vary in color. Some are white, others purple, and one plant is giving double flowers of a delicate peach blossom in color.

7. Coffee, Hemp and seeds of the Arnatto and Sapan trees —*presented by Dr. Strong.*

Dr. Strong designs the Bukhum* or Sapan seeds for distribution among members, as it forms a prickly good hedge and is a valuable wood for its dye. The Coffee was grown by Dr. Strong at Rassapuglah, and was dried as recommended by the London brokers without sun, and has not the marks and blemishes the sample formerly sent to London by Dr. Strong had, which had been dried upon a masonry floor and in the sun, which causes the berry to crack, dries it too much, and in fact spoils it for taste and sale.

8. Fleeces of four sheep that obtained the prizes at the last Cattle Exhibition. No. 1, an imported Merino Ram; No. 2, a Merino Ram Lamb bred in 1839; No. 3, a Merino Ewe Lamb bred in 1839; No. 4, a half-bred Ewe Lamb by a Merino Ram and Patna Ewe in 1839—*presented by Mr. Gibbon.*

9. Six maunds of the Mauritius "pois noire," or black bean, from the Society's nursery.

10. A bag of the "pois noire" direct from the Mauritius.

* Cæsalpina Sapan.—H. H. S.

Mr. Hugon, who forwards this present, states that on the island of Mauritius these beans are sown in the old cane fields, and by the thick covering they afford, the fertility of the soil is restored in two or three years. It is of hardy growth, and hardly requires any care. The bean affords a cheap and good nourishment for cattle.

It was also stated at the Meeting, that these beans when young afford an excellent dish for the dinner table, and in Hindustan is an admirable substitute for the broad bean of Europe.

11. A sample of cotton from the third generation of acclimated Peruvian plants—*presented by Mr. W. C. Hurry.*

Mr. Hurry states, that he has no doubt that any quantity required could be grown in Bengal. The plants are remarkably large and woody, and bear well*.

12. The leaves, flower and fruit of the purple-fruited "Granadilla," described in Part XVI. of the Encyclopedia of Gardening, p. 983—*presented by Major Wood.*

13. A Machine for separating cotton from the seed. This machine was made as an improvement on the Guzerat Churka. It has been invented by Mr. John Potter, of Manchester, and differs from the machine lately sent out to India as the invention of Mr. Houldsworth of Glasgow. Any number of them can be set in motion by an adequate moving power, a bullock could turn 20 or 30 of them. That shown to the Society is one of several lately imported into Calcutta—*exhibited by Owen Potter, Esq.*

14. A sample of Black Pepper from a garden at Barripore, about 16 miles from Calcutta—*presented by Mr. Homfray.*

This pepper is very good of its kind, and the plant whence it

* This remark coincides with the experience of Mr. Quantin at Palmasdeah near Sook Saugor, where the Peruvian cotton seed has *improved* under acclimatation.—H. H. S.

is obtained, grows luxuriously at Barripore, where it appears, it was introduced some years ago by a gentleman from the eastward. The tree yields abundantly and grows without requiring any husbandry. Mr. Homfray will readily furnish cuttings to any one desirous of obtaining them.

Improvement of Indian Wools.

The first paper which engaged the attention of the Meeting was one on the interesting subject of Indian wools from the pen of Mr. Robert Smith, who also has forwarded musters, thirteen in number, in illustration of his subject.

Mr. Smith, during a recent visit to England, directed his attention to the subject of the Wool trade in general, particularly with the view of ascertaining the proper steps to be taken in the improvement of our Indian Wools; and Mr. Smith thinks, that the result of his experience may not prove uninteresting to the Members of the Society, who may be engaged in the growth of this rising staple of our Asiatic territories. For much of the practical information contained in Mr. Smith's communication, he is indebted to his brother, who is of the firm of J. T. Simes and Co., Wool Brokers, London, aided by personal observation of the Wool stapleries in the South of Ireland.

The first step to be taken by the India Wool grower will consist in selecting from the various breeds of Asiatic Sheep, one which crossed by Australian or Cape Merino blood, promises best to realize the expectations which are entertained of an amelioration in the quality of India Wools. Without venturing a decided opinion on a point of so much importance, where all has yet to stand the test of experience, Mr. Smith thinks, after careful consideration, that we must look to the Punjaub and Khorassan as the localities from

which to procure ewes; as it is from those quarters that the principal part of the wool known in the home market as "East Indian," at present proceeds;—and which, though intrinsically of an inferior quality, is much superior to the wool produced in other parts of the East. The rams, as before mentioned, should be of New South Wales, or Cape stock; bearing in mind, that the surest method of establishing a valuable fleece in India, is not to commence by breeding "fine," but by gradually breeding "upward" from a coarse stock to a finer, until the best commercial standard is obtained, of which the climate is susceptible. But as this part of the subject is scarcely within the intention of his paper, Mr. Smith must refer those who are desirous of obtaining particulars respecting the various races of sheep, their breeding and management, to a volume in the Library of Useful Knowledge for 1837,—entitled "*Sheep, their breeds, management and diseases,*" which contains very copious and correct information on all points connected with this topic.

A comparison of the specimens of wools, submitted by Mr. S. from different quarters of the world, will enable a ready judgment to be formed of the essentials, in which the superiority of the one over the other consists. The doughy, elastic feel, fineness, softness, and *spiral* fibre of the German Merino, Sydney superior, Sydney average, Spanish Merino, Van Dieman's Land, English Merino—compared with the in-elastic, coarse, hairy and straight composition of the Mogadore, Russian "Zigai," East India superior, Peruvian, Smyrna, East India average, Russian "Donskoi," and English Wether. sufficiently indicate the difference. Yet this is principally the result of cultivation; since the specimen of English Wether was taken from a South Down Wether in England, and can be matched from almost any Patna bred Sheep pasturing on the *meidan* of Calcutta. Yet inferior as the latter specimens

seem, they are in demand for blanketings, carpets, druggets, and all low goods, when, as is frequently the case, English wool is at a full price; though at other times they could not command a ready market. Respecting East India wool, the following remarks of an eminent wool-broker may be quoted:

"The wool is applicable to the manufacture of blankets, paddings, and all articles where weight is requisite. As at present imported, it has more the appearance of wool shaven as hair, than shorn as wool, but proves in manufacture better than it looks. Although not positively improved in quality, it has improved of late in public estimation, coming to hand whiter, better assorted, and got up; and at its relative value is currently saleable. The last quotations are,—

	d.		d.	
Supr. white, free from grey hair, soft and kind (relatively)	10	to	11	per lb.
Fair quality, and fair in other respects	8	to	9	,,
Inferior,—mixed with yellow, or grey	6	to	7	,,
Grey and low.....	4½	to	5	,,

From the prices paid, with the costs and charges, it is said not to leave a profit, and from the remarks made it is evident, it must be improved in quality, before it can assume a firmer place in the home market."

When the improvement which has been effected in Australian wools is taken into consideration, the suggestion naturally presents itself, whether the same result may not be produced in India, possessing as it does so many varieties of indigenous sheep with a choice of climates, and the advantage of procuring within an easy distance, the male stock which is to lay the foundation of improvement. Without judicious selection of climate, the most careful breeding will avail little. The Cape commenced long before the Australian Colonies; but with every precaution, the South African wool affects an

unkindly handle, which is attributed to the nature of the soil and climate.

The remarkable improvement in the Australian wools is not to be fairly tested by comparing them with those of Germany. In the latter country, wool is grown as an exotic, in-door production, the sheep being carefully housed during a great part of the year, and the rapid decline in the fineness and every other property in which the excellence of German wool consists, is so great, when the least neglect or undue exposure to the weather has been suffered to take place, that by one year's bad management the produce of a flock is often deteriorated to the extent of 25 per cent.

Not paying attention to this difference of system, the earlier wool growers in Australia attempted to raise wool, which should compete with the finer produce of Germany, and failed; and even had they succeeded, would only have had a fleece weighing 1½lb. at 3s. = 4s. 6d. They now have a less costly but more marketable staple, averaging 4½lb. at 2s. = 9s., and not unfrequently 5 to 6 lb. per fleece; but it took some years to retrieve the error that had been committed at the outset.

The following is the relative standing of the different kinds of wool sold in England:

1. { Saxon. / Silesian. }
2. Odessa Merino,—produce of flocks imported into Russia.
3. Australian.
4. { Spanish / Cape } Merino.
5. { English / Italian } Merino.
6. English improved cross breeds.
7. Zigai,—called the original Macedonian breed.
8. Italian cross breeds.

9. Italian Native.
Russian Donskoi.
" Native.
Peruvian.
East Indian.
Smyrna.

The following wools are washed on the sheep's back, and contain a large percentage of grease or yolk:

Saxon and Silesian, Australian, English, Italian, Peruvian.

The following being washed after shearing are white and dry:

Spanish, Odessa, and Russian, of all kinds.

The prices in the London market are principally regulated—

As to the finer kinds,—by the result of the German wool fairs in the month of June.

Of Spanish, Odessa, and the middling descriptions,—by the sales of Australian wool in June and July.

Of *all*,—by the English clip.

The small proportion which the whole amount of imported foreign and colonial wool bears to the English clip, may be estimated from the annexed statement.

The annual produce of the United Kingdom is *one million twenty thousand* packs of 240 lbs. each.

In 1838, the importations were as follows:

German,.....	79,320 bales
Spanish,..... ...	8,577
Australian,.....	32,200
Sundries,.....	61,675
	181,772

The importation of Australian wools was in 1814, 32,000 lbs.; in 1838, 32,000 *bales* of 260 lbs. each.

The progressive increase in the importation of E. I. wools has been as follows:

1835.....	1500 bales.
1836.....	3400 „
1837.....	5600 „
1838.....	6117 „

Bombay has taken the lead in this new speculation, and it is known, that more than one house in Liverpool is engaged in plans for extending operations in that quarter. It may not be uninteresting to learn, that the late ruler of Lahore, Runjeet Sing, not long ago forwarded a quantity of shawl wool for sale. It was, however, so indifferently got up, and so full of "kemp" or short hairs, as to be unsaleable for any thing near the price put on it.

Much valuable information for growers and shippers is contained in the following circular, addressed by Messrs. J. T. Simes and Co. to Australian constituents, and the remarks are equally applicable to India.

"It cannot fail to afford gratification and encouragement to the Australian wool growers, to learn that the produce of their flocks is at this time in very high and deserved repute in England. This reputation arises chiefly from the peculiar softness of the cloth, and other fabrics made from these wools; it is therefore very desirable, that the growers should exert themselves to combine the highest possible degree of fineness with this softness of handle, making it a rule to breed from rams of the finest wool and purest race they can obtain; purity of blood being the great essential towards producing wool of that uniform fineness of fibre, elasticity and closeness of staple, which alone can enable the manufacturer to make a cloth small on the face as well as soft to the touch.

Defect in breeding has undoubtedly much to do with the coarseness of the hair of a great portion of the wool grown in

Australia. To this general failing some choice flocks in each Colony are decidedly exceptions, and it is only by carefully attending to purity of blood, in the selection of the rams, that the inferior flocks can be brought to the same degree of perfection, and that perfection when arrived at, can only be maintained by constant attention to fresh crossing with pure blood.

Though it is highly necessary to the perfection of the fleece, that its fibres should be acted upon by the air, it is also strongly recommended that fine wool flocks should be kept under sheds every night, their constitutions being unable to sustain the effect of the cold nights and heavy dews, which commonly succeed the hottest day, from which transition they must be carefully guarded: care should therefore be taken to provide a constant succession of clean litter in the sheep stalls, that the full effect of perspiration on the fibre, may not be interfered with, by the fleece being loaded at the extremities with an accumulation of filth of any sort.

It is of great importance that the fleece should be well washed, that the wool may be brought to market with as bright a color as possible; every convenience, and a plentiful supply of pure water should therefore be provided; a running stream being most desirable.

The preferable mode of washing is that which is performed before shearing, according to the German manner; some growers have tried the plan of washing after the fleeces have been shorn and sorted; and, as is supposed, have used tepid water, following the French and Spanish method; but this has not been approved of by the buyers generally, and particularly by those who buy for combing purposes.

The breaking of the fleece and washing after shearing, gives the wool more the appearance of Spanish than of German wool, and consequently reduces it to a lower standard of

comparison. It is well known, that the sheep of those German flocks that are best washed, are after that operation driven into some shed strewed with clean litter, or penned up with hurdles on clean grass; that the utmost care is taken to prevent their exposure to dirt or whatever else might tend to sully their whiteness, and that they are not shorn until a sufficient degree of moisture is deposited in the fleece by perspiration, to impart a soft handle to the wool. It may here be added that it is very important, if possible, to prevent the sheep from filling their fleeces with grass seeds, broken leaves, and other extraneous substances which cannot be removed in the operation of washing, and which are productive of labour and expence in every process of manufacturing; in some cases indeed rendering wools almost unsaleable. It may here be observed, that so conscious are the Spaniards of the superiority of the German mode of washing and assorting, that they are making every effort to introduce it.

In order to assimilate the Australian wool as much as possible with the German in preparing it for market, the fleeces should not be broken, but merely divested of the breech and stained locks, and so assorted or arranged that each package may contain fleeces of the same character as to color, length of staple, fineness of hair, and general quality.

If the washing has been performed at the same time and place, and with an equal degree of care, the color is likely to be uniform, and it will then only be necessary to attend to the casting of the fleeces as to length, fineness and general quality; but if a large grower has flocks of different breeds, and fed on different soils, care should be taken that the fleeces be separated first as to color, and then again as to length, fineness, &c.

The fleeces being assorted, as already suggested, should be spread one upon another, the neck of the second fleece being laid upon the tail of the first, and so alternately to the extent

of eight to ten fleeces, according to their size and weight. When so spread, the two sides should be folded towards the middle, then rolled together, beginning at each end and meeting in the centre, and the roll or bundle so formed, held together by a slight packthread.

The baggage should be of a close, firm and tough nature. The material hitherto most generally used, has been sail canvas, which very ill resists bad weather on a long voyage, and when received here even in favorable condition, is so dry and crisp that it will tear like paper. A thicker, twilled, more flexible and tough material would be preferable. The size and form of the package may be in length about nine feet, and width four feet, sewed up on the two long sides, and at one end,—the other end being left open, and the sheet so formed, being suspended with the open end upwards, to receive the bundles made up as before directed, which are to be put in one at a time, one of the flat sides of the roll or bundle being put downwards, and so on in succession, being well trod down until sufficiently filled for the mouth to be closed. This is the German mode of packing; but it is doubtful whether smaller packages, of the dimensions that have been hitherto sent from the two colonies, may not be more convenient for so long a voyage.

The operation of screwing should be discontinued, where it has been practised; as the pressure by the screw, and remaining compressed during the voyage, occasions the wool to be caked and matted together in a manner that is highly prejudicial to its appearance on arrival. The practice also of winding up each fleece separately, and twisting a portion into a band, is productive, in a minor degree, of the same prejudicial effect, and it is to avoid this, that the making German bundles of eight or ten fleeces, is suggested.

It is very desirable that the wool should be shipped and

sent away from both Colonies, if possible, in all the month of January, so as to arrive in England in June.

J. T. SIMES & Co.

Coleman Street, London, 1st March, 1838.

Communication from the East India and China Association.

The Association in returning thanks for the several numbers of the Society's Proceedings which were forwarded, desires to state how much that body appreciates the desire of the Agricultural Society of India to make it acquainted with the progress and improvement of the Agriculture of India, in which it takes a lively interest, and always feels it to be its wish to promote. Such an interest is taken by the Association that it desires all the former numbers of the Society's Proceedings may be sent; and that the Society may be convinced how strenuously the Committee of the Association has advocated the subjects of East India Rum and Tobacco, a copy of the Papers the Committee has addressed to the Government is sent, and the Committee trusts that the ensuing Session of Parliament will not pass by without an equalization in the duties being effected.

The Papers on the subject of the growth of Cotton, which the Society sent to the Association, are deemed by the Committee to be very valuable; and the Committee expresses a hope that the several trials will lead to that success which will eventually make the Manchester looms in a great measure independent of America.

Extract of letter addressed to the Right Hon'ble C. P. Thomson, President of the Board of Trade, London 19th April, 1839.

"The Committee of the East India and China Association beg leave again most respectfully to bring under your recon-

sideration, the difference in the duty charged upon spirits and tobacco, the produce of the East and West Indies; and they feel a conviction that the present Session of Parliament will not be allowed to pass without provision being made by law to put them on an equal footing, because it has been admitted in the instance of sugar and coffee that it is not a just system of taxation for the produce of the British Empire to be charged with higher duties than those of another."

Promise of seeds from the India House.

The last overland has brought a letter from Professor Royle to the address of Dr. Wallich in which the former refers to an application which was made to him for a supply of seeds, in accordance with the announcement made by the Court of Directors in their despatch to the Right Hon'ble the Governor General on the 13th of February last year.

Extract. "I have had a letter from Dr. Spry applying for seeds. I have mentioned the subject to the authorities at the India House, and I have obtained permission to send seeds to the Agricultural Society."

An Annual Meeting of the Members of the Berhampore Branch Society.

The next communication which was submitted was the Report from Mr. Herklots, the Secretary of the Branch Society at Berhampore, of the result of the Meeting held for the exhibition of Horticultural prizes.

The Meeting was held at the house of the President of the Branch Society, F. W. Russel, Esq., Civil and Sessions Judge of Moorshedabad, and there were present on the occasion Messrs. F. A. Lushington, C. Smelt, J. Alexander, Rev. Mr.

Paterson, Major Norton, Lieut. Goldie, Baboo Kissenchunder Chowdry, Ramanaut Majoondar, J. D. Herklots, Esq. and several visitors.

The native gardeners with their several baskets of vegetables were introduced to the Meeting, and the President selected the Rev. Mr. Paterson, Major Norton, and Lieutenant Sissmore to be the umpires.

The first prize was won by Mr. Herklot's gardener for the best Brinjals, Carrots, Endive, sweet Potatoes, Potatoes, Love Apples, Turnips, Cross Beans, Plantains, Oranges, Gooseberries and French Beans.

The second prize to Mr. Russell's gardener for the best supply of Peas, Curly Cabbages, Brussel Sprouts, crowned Cabbage, Capsicums, Celery, Leeks, and French Beans.

The third prize to the Society's gardener for the best Cauliflower, Cabbage, Country Carrots, Beet-root, Lettuce, Turnips and Radish.

Three medals were awarded, and the sum of fifty rupees in money. It was also resolved that a second Meeting should be held in February* at the President's House, when three other silver medals, the expense of which Baboo Takoor Doss Mookerjee had generously offered to bear, should be awarded.

Horticultural Exhibition at Hooghly.

The report of Dr. Esdaile, Secretary of the Branch Society at Hooghly, of the result of the Second Annual Horticultural Exhibition held at Hooghly, for prizes on Saturday the 1st ultimo, was next submitted. The two silver medals allowed by the Parent Society and the sum of thirty-four rupees were

* The particulars of this have not yet reached the Parent Society.

awarded to competitors: and Dr. Esdaile mentions what he feels assured the Parent Institution will be glad to learn, namely, that the number of Exhibitions this year greatly exceeded that of last. On the first occasion only three or four native gardeners came forward, whereas on the last show *the number exceeded* 50.

Agricultural and Horticultural Exhibition at Azimghur.

Mr. H. C. Tucker, the officiating Collector of the Azimghur District and Secretary of the Branch Society there, communicates the particulars of the exhibition held at the station of Azimghur, to compete for prizes amounting to the sum of 300 rupees which he had set apart as a donation from himself to encourage the people of his District to exertion.

Mr. Tucker in his interesting communication states, that the Annual Meeting for the Parent Society's prizes and his own, came off on the 9th January in the presence of the respectable Landholders, both European and Native of the District.

The competition among the growers of the Otaheite Sugar-cane was very spirited, there being no fewer than twenty competitors.

A silver medal and 50 rupees was won by Mr. R. Nicholson, whose ten heaviest canes weighed seventy lbs. At the Meeting Mr. Nicholson stated that he had during the present year sold seed cane, the produce of one biggah of land, for 500 rupees, an announcement which created a great sensation among the Landholders present at the Meeting. Mr. Nicholson also exhibited rattoons of the second and third year which, to appearance, were hardly inferior to the first year's growth. "The effect," adds Mr. Tucker, "in favor of the cane was immense, and there is little doubt that it will soon be extensively spread thoughout the district."

A subscription is in progress for rewards for the best agricultural productions of next year. The successful competitors for the Parent Society's medals are Messrs. Nicholson of Maharajgunge and Gilbert D'Rozario of Azimghur.

Books from England.

The receipt of two letters from Captain Grindlay furnishes the intelligence of the despatch of a small consignment of books for the use of the Society which had been written for. Captain Grindlay desires that a selection of one of the parcels may be made and presented to the Society, in his name, as a sincere well-wisher to the prosperity of the Institution, and on all occasions Captain Grindlay states he shall give due attention to the wishes of the Society, and obtain such Proceedings and Reports of the home public bodies, as will be given in exchange for those of the Society. Captain Grindlay further states that he will lose no opportunity of giving publicity to the views and movements of the Agricultural Society of India, which he thinks is destined to assist in the birth of a new era for India.

State of Horticulture at Moradabad.

Major Sleeman in a long and interesting letter with which he has favored the Special Cotton Committee on the subject on which they were engaged, mentions incidentally that about thirty-five years ago Mr. Leycester introduced into his garden at Moradabad a Bombay graft, and that now Bombay Mangoe trees are spread over the whole station, giving double value to estates in the estimation both of Natives and Europeans: and that nobler fruit is not to be found in the world, delicious and wholesome. Thousands of grafts are now ready, Major Sleeman

adds, to be carried over the country; every garden has them for any one that will take them, and every gardener understands the art, and is spreading it. The apples and pears which have been introduced are utterly useless. The peach trees are also bad. In the city of Moradabad fine, very fine cauliflowers can be purchased at one pice a piece, four for an anna, and so on. The bazar is full of them; so of turnips, radishes, &c.; good carrots are rare.

Black Pepper in Bengal.

An extract of a letter from Mr. Dearman, Deputy Collector at Dacca, was next submitted, in which that gentleman mentions that the black pepper grows not only in the Dacca district but in the adjoining district of Tipperah, and that he has himself met with it there in several villages, growing very luxuriantly and bearing plentifully. It is planted at the foot of Betel and Mangoe trees, and attaches itself to them in the same way as ivy does to trees at home.

For all the foregoing presents and communications the thanks of the Meeting were awarded.

HENRY H. SPRY, M. D. *Secretary.*

PROCEEDINGS

OF THE

Agricultural & Horticultural Society

OF

INDIA.

APRIL,

1840.

CALCUTTA:

PRINTED AT THE BAPTIST MISSION PRESS,
CIRCULAR ROAD.

1840.

AGRICULTURAL SOCIETY OF INDIA.

PROCEEDINGS.

APRIL 8, 1840.

Agricultural Society of India.

A General Meeting was held at the Society's Room, Town Hall.

The Hon'ble Sir Edward Ryan, in the Chair.

(Twenty Members present.)

The Proceedings of the last General Meeting, were read and confirmed.

MEMBERS ELECTED.

The gentlemen proposed at the March Meeting, were elected Members of the Society, viz.

Dr. Douzell, Messrs. F. S. Brown. Alex. S. Brown, C. C. Newcomen, F. R. Hampton, A. S. Gladstone, and Thos. Hugon.

FOR ELECTION.

The names of the following gentlemen were read as candidates for election.

D. W. Fraser, Esq., of Gyah,—proposed by Major Carter, seconded by the Secretary.

Henry Moore, Esq., C. S.,—proposed by Dr. Strong, seconded by the Secretary.

Henry Pidcock, Esq., C. S.,—proposed by Mr. Thos. J. Turner, seconded by the Secretary.

Lieut. G. L. Cooper, (Commanding Artillery, Shah Soojah's contingent,)—proposed by Dr. Spry, seconded by Dr. Strong.

John Elliot, Esq. (Firm of Livingston, Syers and Co.)—proposed by Mr. Hodgkinson, seconded by the Secretary.

A. Mornay, Esq.,—proposed by Mr. W. F. Fergusson, seconded by Dr. Spry.

R. Barnes, Esq., of Purneah,—proposed by Mr. H. Piddington, seconded by Mr. W. Byrne.

Presentations to the Society.

LIBRARY.

A Copy of the Proceedings of the Quarterly General Meeting of the Agricultural and Horiticultural Society of Madras, held on the 15th January, 1840—*presented by the Madras Agricultural and Horticultural Society.*

MUSEUM.

1. Seven large and fifteen small packets of grape seeds of sorts, fifteen large packets of musk-melon seed, four ditto water-melon, one ditto large istambol or *scented* melon, three ditto small istambol or miniature *scented* melon, three ditto large pomegranate seeds, two ditto small shah toot'h, or royal mulberry, three ditto apple pips, one ditto pears, one ditto quince, and 2 ditto large pumpkin.

This handsome consignment of seeds has been received from Affghanistan from Colonel Stacy, who resides at present at Candahar. The flavour of the musk-melon is described by the donor as delicious, and so of the water-melon. The istambol melon is not eaten but is carried in the hand to smell to, as this variety, especially the little istambol melon, is much esteemed for its lovely scent. The shah toot'h, or royal mul-

berry, is nearly the size, and has all the flavour of the English kind.

These seeds were freely distributed to the members present, and but few now remain for applicants.

2. A small bundle of flax prepared from the Rhœa plant (urtica nivea) of the Province of Assam—*presented by Captain Jenkins.*

This fibre is described by Captain Jenkins, as being in universal use for the manufacture of fishing nets and lines. At present there is little trade in it, being only grown in such quantities as the fishermen require, and the present cost is 10 rupees a maund ; but as the plant can be grown with the least possible trouble, and the preparation of the flax from it is a very facile process, Capt. Jenkins states, that there is no doubt, the flax can be grown at half this price. In texture, it is remarkably strong, and is very likely to make good linens.

3. A sample of the root of a plant which the natives use as "glue" and call "serais." The plant is not cultivated but grows wild in quantities near Candahar—*presented by Col. Stacy.*

Dr. Spry mentioned, that he had tried some experiments with this gelatinous root by boiling and macerating it in water, but he had been unable to extract any strong adhesive quality. Further trials would probably give other results.

4. Samples of tea from Assam consisting of "Young Hyson," "Toichu Peko," "Pouchong," "Hyson," "Chateai," "Souchong," "Big Gunpowder," "Hyson Skin," and "Little Gunpowder,"—*presented by the Secretary.*

The Hon. the President, on these samples being submitted, begged to mention to the meeting the circumstance, that the Society was indebted for these samples to the Secretary, who had obtained them from the Assam Company as

one of the shareholders; whereas the Society who had made an application for a supply two months ago, had not received a particle, although he understood that some was coming. He thought in future, whenever the Society had any application of this sort again to make, it had better go direct to Government, instead of applying indirectly through Committees.

5. A large bale of acclimated Upland Georgia Cotton—*presented by Colonel Skinner.*

6. Three samples of indigenous cotton from Jalown in Bundlekund—*presented by Captain Shewers.*

7. Specimens of two kinds of gum, one known by the people of the jungles as the Piāsāl or Bijessār, very much resembling the kino of the Butea frondosa, of a beautiful lake color, and the other the gum of the Bahera tree.

Lieutenant Kittoe, who presents these to the Society, states that the leaf of the tree whence the Piāsāl is obtained yields a yellow dye as well as the chips of the wood. The Bahera tree* yields an immense quantity of gum, which appears in quality to resemble the ordinary gum Senegal of commerce, and is largely partaken of by the Chooars and Coles as food. It could be collected, Lieutenant Kittoe states, in large quantities in the Midnapore forests. The Peeār, another tree of these parts, yields a very hard adhesive gum of a clear white color, and there are several gigantic creepers that also yield gum. In the Passes there are many fine Saul timber trees, and the mountain Ash thrives well, and is much esteemed by the natives for banghies, bows, &c. &c. Ebony also is plentiful, and there is a powerfully aromatic grass resembling the famous grass oil of Mhow. The country (Upper Baumunghatti) would do well for any kind of cultivation.

8. A small bale of Egyptian Cotton brought from Alexandria—*presented by Col. Frith.*

* Terminalia Bilirica, *Roxb.*—H. H. S.

9. The plant and fibre of the "Moogah"—*presented by Mr. D. W. H. Speed.*

The fibre is a good deal used by the Natives and appeared on examination to be the Sanseviera Zeylanica of Roxburgh. Mr. Speed found that it was prepared from the leaves, which were gradually beat, either after or without soaking in water. On testing the strength of a single fibre, Mr. Speed found that the thicker bore seven ounces, while the fine broke at five ounces. The juice of the root of the plant is esteemed in fevers by the Hukeems.

10. Minute specimens of China Nankeen Cotton and Beerbhoom Brown Cotton—*presented by Mr. J. W. Laidlay.*

Mr. Laidlay in a recent visit to the Straits has been able to obtain some seeds direct from China of the Nankeen cotton plant, and is now engaged in experiments upon the usefulness of this variety of the plant in the climate of Bengal. The brown cotton of Beerbhoom, of which Mr. Laidlay furnishes the sample, is the indigenous sort that he is anxious to supersede.

11. Nine Brazil yams brought to India in the Ship *Allerton* —*presented by Mr. Bellairs.*

Mr. Bellairs has tasted a part of the supply, and finding them very superior to what Bengal furnishes, he thought they might be worth the acceptance of the Society.

Dr. Spry mentioned, that he had lost no time in forwarding a moiety of the supply to the nursery and distributing the remainder, where attention was likely to be paid to their cultivation.

12. Two Apricots (in spirits) grown at Barripore—*presented by Mr. R. S. Homfray.*

13. A bundle of fibre prepared from the plantain tree and a small quantity of hemp from the aloe leaf—*presented by Mr. Michael Betts.*

In his note which accompanied his present, Mr. Betts states,

that having been attracted by a remark in the London Price Current of the 2nd December last, from the respectable house of Messrs. Fry, Griffith and Co. that considerable supplies of a new sort of Hemp from the stalk of the *plantain tree* had realized from 6*d.* to 8*d.* per lb., he turned his attention to it and endeavoured to prepare the article; but the process he adopted was very slow, and he thought that it would not answer. Mr. Betts asks for any suggestions that the Society might be able to offer, and it was mentioned, that the mode of preparing the fibre in Manilla, as described in the 1st Vol. of the Transactions of the Society, might be recommended.

14. Apricot, cherry, melons, cabbage, clover (two sorts), almonds, cypress, quince, and China aster seeds, from Affghanistan—*presented by Col. Smyth.*

Colonel Smyth fears that few of these will grow in a Bengal climate, the rains being so heavy. Neemutch and Mhow are, he thinks, the finest climates for acclimating cold country plants in, and considers it a pity there is not a horticultural garden at these stations.

15. A log of oak, walnut, and cedar (deodar), from the Himalyas—*presented by Captain Caine.*

REPORT ON SOME SAMPLES OF ACCLIMATED UPLAND GEORGIAN COTTON GROWN AT HANSI, OF INDIGENOUS COTTON FROM JALOWN, AND THE THIRD GENERATION OF ACCLIMATED OF PERUVIAN OR PERNAMBUCO COTTON.

The Members of the Cotton Committee having had the samples of cotton lately received from Mr. Hurry, Captain Showers, and Colonel Skinner, before them for examination, have individually reported as follows:

MR. WILLIS'S REPORT,

Calcutta, April 2, 1840.

I have examined the several specimens of cotton sent, in accompaniment with your circular, to the Members of the Cotton Committee, dated the 19th March, and find them as follows:

That the three specimens Nos. 1, 2 and 3, from Captain Showers, A. D. C. of the Governor General, stated to be the produce of Jalown, are remarkably clean and well gathered: excellent in colour and complexion, indicating thereby healthiness of growth. Each very flexible and from very fine for No. 1, down to fine for No. 2; and good fine for No. 3. *Remarkably short* in fibre, and even much shorter than specimens of Bundlecund cotton frequently to be met with as an ordinary mercantile commodity for sale in the bazars. It is rather deficient also in strength. The No. 1, is rather better than the No. 2; and the No. 2, rather better than the No. 3.

That the specimen No. 4, of Peruvian kind, third generation of acclimation, is very creditable and valuable. It is gathered remarkably clean; it is good in colour, though I think it deficient in that hue which indicates the best and most natural grown cotton. It is neither flexible nor fine, but on the contrary harsh and uncongenial. It has good fair length and good fair strength of fibre. But as I have seen one or two specimens of imported Peruvian, from cotton possessing all the merits of great flexibility and fineness, great length and also great strength of fibre, I consider this specimen to be degenerate, notwithstanding its greatly superior value, when compared with the ordinary cottons of this country.

That the specimen No. 5, of a large bale sent by Col. Skinner, from Hansi, is satisfactory; first, inasmuch as it represents the article gathered in a considerable mass, and apparently without any care in regard to a separation of the dirty

and leafy particles and stained cotton, from that which is clean. It appears to be the produce of the American green seed, or Upland Georgia cotton, though in what year of generation or descent from the original imported seed, is not stated.

As observed, it is gathered altogether as it comes from the pod, and therefore unclean and stained, and consequently greatly prejudiced in value. It is flexible and fine; it has good fair length, though rather too short a fibre; and it is somewhat deficient in strength; and though in all these respects it is superior to much of the ordinary cotton of this country, I think it inferior to the general mass of Upland Georgia cotton, which is usually imported into England from the United States.

(Signed) JOS. WILLIS.

MR. HUFFNAGLE'S REPORT.

Calcutta, April 6, 1840.

In accordance with your wishes as per "Circular," I beg to add my remarks upon the samples of cotton sent, although not much reliance can be placed upon my judgment. I know very little about the article, and particularly of its value in the Liverpool or London markets.

Nos. 1, 2, and 3, Julown.—Fine, weak, and of *extremely short* staple, and as the value of cotton depends very much upon the length of fibre, these specimens must be considered as very inferior, although the colour is good, and the cotton appears to be free from remnants of seeds, leaves, &c.

No. 4, Peruvian.—Has comparatively a strong and long staple, and is greatly superior to the ordinary cotton we meet with in the bazars.

No. 5, Hansi.—This specimen I think the best; it has lustre, and in length of fibre equals the last, (No. 4,) without

its harshness; it has been very imperfectly cleaned, and contains remnants of crushed seeds, besides being much discoloured.

Of the value of each, I can say nothing, (Mr. Willis can tell us all about it,) but I do not think that the best would have a comparison with the ordinary American cotton, exported for the English market,

(Signed) CHARLES HUFFNAGLE.

MR. OWEN POTTER'S REPORT.

Calcutta, April 7, 1840.

The cottons you have sent me for report may merit the following remarks:

Nos. 1, 2, and 3, all short staples.—No. 1, the best; 2, next best, and 3, the worst—none of them equal to the bulk of the Guzerat cottons sold in England under the general term of Surats. 2 and 3, are quite unsuited to manufacturing purposes, but No. 1 might meet with a limited consumption to mix with other cottons of longer staple but inferior color. The bulk of Jalown cotton never comes to market so free from leaf and seed as these samples.

No. 4, I have reason to doubt being Peruvian cotton, and am inclined to think it Pernambuco. The seeds of the latter *cluster;* of the former they do not. The staple is regular, but not so long as generally characterises this description of cotton. It is harsh, does not open freely, and is not as silky as it ought to be. The cotton of Peru is always irrigated. This cotton I believe has not had that advantage. In growing this cotton, which I believe to be the production of a standard tree, it becomes a matter for consideration, whether the same quantity could be produced on the same ground as from the annual plant, now generally cultivated in India.

No. 5, has one great fault; viz., that the staple is very irregular, portions of it being as short as No. 1, (Jalown,) and

part longer than No. 4, (Peruvian.) The fibre is fine, silky and tolerably strong, but the color is dull and unhealthy looking; it is stained, leafy and seedy.

No. 4, if from Peruvian or Pernam seed, and No. 5, if from Georgian, have certainly both degenerated, but the Peruvian or Pernams not so much as the Georgian.

(Signed) OWEN POTTER.

Report of the Committee on Agricultural Statistics.

The returns which have been received from the different Medical Officers, who have been so good as to favor the Society with replies to its circular on the subject of the Prices of the chief Agricultural Products of the country, having been arranged by the Committee, the formula for the presentation to Government was submitted and along with it a map, in which the places whence the returns have been sent, are marked, with the chief geological features of the main mountain ranges and the plains.

The New Building.

The Honorable the President took an opportunity of observing, that although he was not empowered to communicate explicitly the pleasure of Government, relative to the site for the intended new building, yet he believed he might safely announce that by the next Meeting, the information would be fully before the Society. It might be the cost of the building might exceed the estimate given. Should such be the case, it would not be right to appropriate any more of the fixed assets of the Society, and the more preferable plan would be to ask the assistance of members individually for a small contribution. While they were about it, it was in every respect

desirable, that a handsome building should be reared, that should be an ornament to the city, and give ample accommodation to the institutions for which it was destined.

Information in Reply to the Circular regarding the Natural Productions and Interchange of Plants.

A large collection of returns of a most valuable kind were laid on the table, bearing on the subject of the plants of the country, and such as could be introduced with prospective advantage to the welfare of the country. Among these were some highly valuable communications which had been received from Sir James Carnac, Bart., the present Governor of Bombay, who, on receiving the Circular of the Society, had been pleased to direct letters to be addressed to some of the leading botanists under his Government, and from whom the information now transmitted was received in reply.

The honorable the President, in calling the attention of the Meeting to these documents, begged to recal to the notice of the Members, that in the month of June last year, a despatch had been received by the Society from the Supreme Government of India, in which the intentions of the Home Government to transmit seeds and plants for the purpose "of carrying on ex experiments for naturalizing in India useful and desirable plants indigenous in other countries," were communicated; that to give every support to so desirable a resolution, a Committee was appointed by the Society, and at its suggestion, a circular letter was addressed to many of the Residents in the Empire, asking them to furnish information regarding the productions of their part of the country, and what they deemed might be introduced with advantage. The replies now received were the result, and he begged to move that these papers should be referred to the Committee for its examination and report; which was accordingly done.

Promotion of Agriculture in the Azimghur District.

Three very interesting communications were read from Mr. Tucker, Officiating Collector of Azimghur, in which that gentleman draws the attention of the Society to the efforts he is making, by the offer of rewards, to promote the advancement of the agricultural resources of the District. Mr. Tucker, deeming it necessary to encourage artificial planting throughout his district, as being an object of great public interest and utility, in consequence of the jungles and groves being fast destroyed to furnish fire wood to the sugar boilers; has undertaken to offer, through the Azimghur Acbar, on his own account two rewards of 200 and 100 Rs. each, to any person who should make the most extensive plantations this year, of which the young trees should be well and healthy by the end of the hot season of 1841. Mr. Tucker would feel much gratified if the Agricultural Society would add Gold and Silver medals to these premiums. A schedule is also afforded by Mr. Tucker, as Secretary of the Branch Society, in which the handsome sum of one thousand rupees is assigned in various sums as prizes to exhibitors of the best Agricultural and Horticultural products, and a request is preferred for the grant of one Gold and five Silver medals from the Parent Society as a contribution. Mr. Tucker remarks, "that when the residents at a small station can raise upwards of 1000 rupees for the encouragement of Agriculture, the Agricultural and Horticultural Society of British India cannot surely refuse the grant of six Medals?" With reference to the annual grant of 50 rupees made by the Parent Society, Mr. Tucker mentions that he never contemplated using these funds after the Branch Society had once got over the first weakness of infancy. Having had frequent inquiries made of him by planters and others as to the cultivation and preparation of flax, which there is every reason to hope will become the staple produc-

tion of his part of the country, Mr. Tucker intimates that he has drawn up a brief account of the best modes of operation. The weavers of the Azimgurh district are anxious for the success of the experiment, and many of them have taken from Mr. Tucker, samples of linen cloth for imitation. Mr. Tucker proposes that the Society should print the memoranda and distribute them as a pamphlet.

The Hon'ble the president thought the Society was much indebted to the indefatigable exertions of Mr. Tucker in so ably assisting in the great work of improvement throughout his district, and every encouragement, consistent with the rules of the Society, should be afforded to him.

With regard to the allotment of medals, much conversation ensued, and it was at length determined that seven silver medals should be placed at the disposal of Mr. Tucker to distribute as he liked best; but that the Society only awarded gold medals to individuals in direct communication with the Society, and on very special occasions; it was therefore decided that this could not be given.

The notes on flax were referred to the Flax Committee.

Second Horticultural Exhibition at Berhampore.

The last communication presented was a report from the Secretary of the Berhampore Branch Society of the Exhibition held at Moorshedabad on the 20th ultimo.

Five English and five native gentlemen were present, and three silver medals and seventy-two rupees were awarded as prizes to the native gardeners.

For all the above contributions the thanks of the Society were awarded.

HENRY H. SPRY, M. D.

Secretary.

PROCEEDINGS

OF THE

Agricultural & Horticultural Society

OF

INDIA.

FEBRUARY,

1841.

CALCUTTA:

PRINTED AT THE BAPTIST MISSION PRESS,

CIRCULAR ROAD.

1841.

AGRICULTURAL SOCIETY OF INDIA.

PROCEEDINGS.

FEBRUARY 10, 1841.

Agricultural Society of India.

A General Meeting was held at the Society's Room, Town Hall.

The Hon'ble Sir Edward Ryan, President, in the Chair.

(Sixteen Members and four Visitors present.)

MEMBERS ELECTED.

The Gentlemen proposed at the Anniversary Meeting were elected Members :—

Messrs. A. C. Davidson, R. C. Bell, and H. Bonnevie, Captain W. McLeod, Rajah Khan Bahadoor Khan, Baboo Nursingchunder Mozundar, the Hon'ble Mr. Jourdain, Dr. Davenport, Messrs. Robert Neave, H. Stanley, Wm. Kirkpatrick and R. J. Lattey.

FOR ELECTION.

The names of the following gentlemen were submitted as candidates for election :—

The Hon'ble Mr. Hansen, Governor of Serampore,—proposed by Sir Edward Ryan, seconded by Dr. Spry.

T. Parry Woodcock, Esq., of the Civil Service,—proposed by Sir Edward Ryan, seconded by Dr. Spry.

Robert Lyall, Esq., of the Firm of Lyall, Matheson, and Co.—proposed by Mr. Charles Lyall, seconded by the Secretary.

John Rennie, Esq., of the Firm of Lyall, Matheson and Co.—proposed by Mr. Charles Lyall, seconded by the Secretary.

James Duncan, Esq., M. D., Civil Surgeon, Chittagong, —proposed by Dr. Strong, seconded by Dr. Spry.

R. Torrens, Esq., Magistrate of the 24-Pergunnahs,—proposed by Dr. Strong, seconded by the Secretary.

James Crooke, Esq. Merchant,—proposed by Dr. Spry, seconded by Dr. Wallich.

Major Eldred Pottinger, C. B., Political Agent in Toorkistan,—proposed by Dr. Spry, seconded by Dr. Wallich.

John Murray, Esq., M. D., Acting Inspector General of Hospitals,—proposed by Dr. Spry, seconded by Major Douglas.

Samuel Davies, Esq., Civil Surgeon, Patna,—proposed by Lieut. F. C. Burnett, seconded by Dr. Spry.

PRESENTATIONS TO THE SOCIETY'S GARDEN.

1. Sixty Apple Grafts of sorts from Nepal—*presented by Mr. Hodgson.*

Mr. Hodgson, in his letter announcing the despatch of the above, states that he has a number of Tea plants from Thibet and Camellias of Nepal that he takes to be true teas, and wishes to know if the Society require any ;—Mr. Hodgson further observes that the Camellia flourishes wonderfully on the lower and higher hills around Catmandhoo from $4\frac{1}{2}$ to $6\frac{1}{2}$ thousand feet above the sea, flowering and seeding without cessation.

2. A consignment of Sugar Cane, and some cuttings of the Morus Multicaulis from Singapore—*presented by Mr. Balestier.*

3. Two Boxes of Nopals with Cochineal Insect—*presented by M. Richard, Superintendent of the Botanic Garden at the Isle of Bourbon.*

In submitting these fruit trees and insects, the Secretary read to the Meeting a Report with which he had been favored by Dr. Wallich on the state in which they had been received at the Society's Nursery. The Apple Grafts were in a very bad condition,—every pot was broken and only thirty-two of the plants were alive. These have been potted without delay, in the hope that some of them may be preserved. Dr. Wallich considers that the utter neglect in allowing the plants to perish from want of water must have occurred during the latter part of the journey down from Nepal, judging from the perfectly dry and yet green state of the rind or bark of many of them. About half of the supply of Canes are in good order; the Mulberry plants look sickly, with a number of drawn blanched slender shoots, arising from the cuttings having been placed in an *unglazed* box, the lid of which had been closed wrongfully during the passage. Dr. Wallich adds that of the Nopal plants there is an abundance, with a number of the insects attached,—but that the latter are as yet in a torpid state.

The Secretary mentioned that owing to the ill success which had hitherto attended the efforts to propagate the Bourbon grana fina cochineal at the Nursery, it had been determined to take advantage of the departure of Dr. Duncan for Chittagong, to place one of the boxes at his disposal for trial there, as it was thought that possibly the climate might more closely approximate to that of St. Denis; with regard to the second box, as suggested by the Right Hon'ble the Patron of the

Society on the occasion of his recent visit to the Nursery, it was agreed to give the insects a trial in the hotter and dryer climate of the North Western Provinces. It was therefore resolved to despatch the box by the next steamer, to Allahabad for transmission to the Secundra Garden.

MUSEUM.

1. Three specimens of Cotton grown at Cawnpore, from acclimated Sea Island Seed—*presented by Dr. John Campbell.*

Dr. Campbell mentions, that the specimen No. 1, is the produce of seed sown in May last,—No. 2, from seed sown at the same time, but the shrubs transplanted,—No. 3, is from seed sown in June.

2. Two specimens of Cotton grown at Allipore, from Egyptian seed received from Mr. Waghorn—*presented by Dr. Spry.*

Messrs. Mercer, Terry, Finnie and Blount, the four American gentlemen who have come out under the auspices of the Court of Directors to establish a Cotton Farm on the banks of the Jumna, and who were present at the Meeting at the invitation of the Secretary, were so good as to favor the Meeting with an opinion on these samples. They spoke of them as being good and useful Cottons. The Egyptian, of which they had seen something of the cultivation on their way through Egypt, they did not consider deteriorated. Dr. Spry explained that he had paid no attention to the trees except pruning them, and that what he now presented was the produce of the *first* year.

3. Three specimens of Flax in a green state, the produce of *acclimated English* seed,—sown in the beginning of October, and in the middle and latter end of November last.

Specimen of Flax grown from *Country* seed, sown on the 25th November.

Specimen of Flax from *Saharunpore* seed received by the Society from Dr. Falconer, and sown on the 15th December.

These specimens were taken out of the ground in the latter end of January. They were grown under the superintendence of Mr. Deneef at Entally, and presented by Mr. H. Woollaston. Mr. Deneef considers the specimen from Saharunpore seed to be very superior to the other samples.

4. Two specimens of Flax, the produce of *acclimated American* seed, grown at Entally—*presented by Mr. Deneef.*

Mr. Deneef offers these specimens as the result of two experiments, the one having been grown in rather poor ground, the other in a rich soil:—the former, in Mr. Deneef's opinion, is a most beautiful sample, containing great length of stalk with thinness;—the other is of very little value,—*the goodness of the soil* having caused the plant to become stunted and branchy.

5. Specimen of Cord, spun under the superintendence of the Jailor, Mr. Hornby, at the Great Jail at Allipore, from the Aloe plant, extensively grown at the Insane Hospital at Russapuglah, by the convalescent Insanes; also a piece of Cord spun by the same parties from the fibre lately forwarded to the Society by Government on the part of Major Swetenham —*presented by Dr. Strong.*

The Secretary desired to mention, that as he understood from Dr. Strong that a hundred picked prisoners had been sent to Allipore from the contiguous Jails for the highly useful purpose of rope-making, it might not perhaps be an unfitting opportunity for members, who might be desirous of trying experiments in the strength of new vegetable fibres, to send their raw material to Mr. Hornby, the Jailor, to have them spun and tested.

6. Specimens of Raw Hemp, of seed, and of cloth made from the fibre,—received from Captain Kirke, of Deyrah—*presented by the Right Hon'ble the Governor General.*

7. Sample of Arrow Root the growth and manufacture of 1840-41—*presented by Mr. Wittinbaker.*

The specimen of Arrow Root was much admired by the Society. Mr. Wittinbaker states that he has taken a large spot of ground and purposes carrying on the cultivation largely.

8. A packet of English Flower seeds—*presented by Mr. H. C. Tucker.*

These the Secretary stated had in part been sent off to Col. Stacy at Khelat and been otherwise disposed of.

9. An elegant assortment of flowers of the Heart's-ease, grown at Garden-Reach—*presented by R. H. Rattray, Esq.*

This beautiful Nosegay consisted of Hearts-ease of many colours, the flowers of which for their size perhaps surpassed anything of the kind that had ever been grown in any Garden in Calcutta.

HORTICULTURAL EXHIBITION.

The awards made at the Annual Horticultural Exhibition on the 20th ultimo, were laid before the Meeting and approved of.

CATTLE EXHIBITION.

The following Report of awards made by the Judges at the Annual Exhibition of Cattle held on the 1st instant, was next brought forward, and confirmed.

Agreeable to Resolutions previously made, the Exhibition of Cattle for the year 1841, took place on the morning of the 1st February.

JUDGES.

Messrs. Charles Huffnagle and C. K. Robison, assisted by Mr. John Hughes.

The Judges have the pleasure to report the following award of Prizes.

IMPORTED NEAT CATTLE.

Nos. 1 and 2.—For the best and second best imported Bulls of the year 1840, there were no competitors.

PRODUCE.

1st. For the best produce of Imported Cattle—the Gold Medal and 250 Rupees was awarded to James Colquhoun, Esq. for his Brown Cow Calf dropped 6th May, 1840, from an imported Cow and Dr. Huffnagle's Nagore Bull "Jupiter."

2nd. For the second best produce of imported Cattle,—the Silver Medal and 200 Rupees was awarded to Ed. Whyte, Esq., for his Brindled Cow Calf by an imported English Bull of the Holderness Breed, and a Bengali Cow.

3rd. For the best *Bull* Calf of any denomination calved in 1840,—the gold Medal, was awarded to James Colquhoun, Esq. for his Brindled Bull Calf dropped the 6th May, 1840, out of a pure Bengal Cow and an Imported English Short Horn Bull.

NOTE.—This is the reverse of the experiment of which the result is seen in the first prize Calf,—the *former* being the produce of an *Imported Cow* and a *Native Bull*,—the latter, an *imported Bull* and a *Native Cow*; and both Calves dropped on the same day.

4th. For the best *Cow* Calf of any denomination calved in 1840,—the Silver Medal was awarded to Edward Whyte, Esq. for his thoroughbred Red and White Calf dropped the 23rd July, 1840.

SHEEP.

1st. For the best Imported Wooled Merino Ram of the year 1840, not less than two years old,—the gold medal and 200 Rupees was awarded to William Storm, Esq. for his Cape Merino Ram.

2nd. For the second best imported Wooled Merino Ram of the year 1840, not less than two years old,—the Silver Medal and 150 Rupees was awarded to Mr. Gordon Stuart.

3rd. For the best pen of Merino Ewes to the number of six,—the Silver Medal and 100 Rupees was awarded to Wm. Storm, Esq. for Ewes imported from the Cape in 1840.

4th. For the best thoroughbred Merino *Ram* Lamb, lambed in 1840, the gold medal was awarded to Wm. F. Gibbon, Esq. for his Lamb, lambed in January, 1840, got by the Ram that won the Gold Medal at the Society's exhibition in 1839.

5th. For the best thoroughbred Merino Ewe Lamb, lambed in 1840,—the Silver Medal was awarded to Wm. F. Gibbon, Esq. for his Lamb, lambed in January, 1840, got by the same Ram as above.

6th. For the best Lamb, either Ram or Ewe, cross of a Merino Ram and an Indigenous Ewe, lambed in 1840,—the small Silver Medal was awarded to Wm. F. Gibbon, Esq, for his lamb, lambed in Feb. 1840,—from a Patna Ewe and the same Ram as above.

In concluding their award, the Judges have much satisfaction in notifying to the Society the great improvement in quantity and quality of stock shown this year over that of the two preceding exhibitions. There were several other competitors in addition to those Gentlemen whose Cattle have won prizes; —altogether the Show may be considered a very interesting one.

C. K. ROBISON, V. P.
CHARLES HUFFNAGLE.

THE ANNUAL REPORT.

The Hon'ble the President desired to call the attention of the Meeting to the Annual Report which had been prepared by the Secretary.

On the motion of Dr. Wallich seconded by Mr. Johnson it was ordered to be printed.

A Medal placed at the Disposal of the Society to be given to the owner of the largest new Plantation of Trees in the Agra Presidency.

The Secretary desired to call the attention of the Meeting to a note and a gold medal which had been forwarded to him from Mr. Tucker, Collector at Azimghur. Mr. Tucker states that as the Society was unable to grant a gold medal as a prize for the encouragement of the tree planting in the Azimgurh District, he had written to England for one, intending to give it at the Annual Public Meeting of the Azimgurh Society held in January last. It however only reached Mr. Tucker a few days since, and being on the eve of embarking for England he considers the best use he can make of it is to make it over to the Parent Society, to be given next year to the owner of the largest new plantation of trees in the Agra Presidency. Mr Tucker remarks, that trees are the great desideratum throughout a great portion of the Upper Provinces, and as the extremes of temperature, which result from the want of wood and water, are very unfavorable to the rearing of young plantations, some encouragement is absolutely necessary to induce parties to undertake the trouble and expense of rearing the first considerable plantations. When these are once grown and begin to modify the soil and climate, Mr. Tucker considers that other plantations will follow easily.

and naturally. If by money prizes or medals the Parent Society would stimulate enterprising individuals to lay out money in making plantations much good might be done.

Arrival of American Cotton Seed.

The Hon'ble the President alluding to the presence of the four American gentlemen, Messrs. Mercer, Terry, Finnie and Blount, who he had the pleasure of seeing at the table, mentioned that he had the satisfaction of stating that these gentlemen had brought with them an abundant supply of Cotton seeds of different kinds, much more he believed than they would require themselves. An application he thought, should therefore be made forthwith to Government for some bags of each sort for distribution by the Society, as the sowing season was fast approaching and no time ought to be lost in transporting the seeds to the distant parts of the country.

The Hon'ble the President further added, that he thought it very desirable that Messrs. Mercer, Terry, Finnie and Blount, the short time they continued in Calcutta, should have every access possible to the contents of the Museum of the Society, and that a copy of the complete Transactions and Proceedings of the Society should be presented to them in order to put them in possession of the mass of practical information bearing on the soils and cultivation of Cotton which had been accumulated by the Society.

This was unanimously agreed to.

Agricultural Statistics.

The Secretary next submitted the accompanying acknowledgments from the Supreme Government for the Report and Tables on Agricultural produce which had been furnished.

To the Agricultural and Horticultural Society of India.

Genl. Dept. } GENTLEMEN,—In reply to your Secretary's Letter and its enclosures of the 25th of September last, I am directed to convey to you the acknowledgments of the Right Hon'ble the Governor General in Council for the returns of the prices of Agricultural Articles, therewith submitted, and to acquaint you that the papers will be forwarded to the Hon'ble the Court of Directors by an early opportunity, for the information of the Royal Asiatic Society of Great Britain and Ireland.

I have the honor to be, Gentlemen,
Your most obedient servant,
G. A. BUSHBY,
Secy. to the Govt. of India.

Council Chamber, the 16th December, 1840.

Progress of the Hop Cultivation in the Deyrah Dhoon.

The Secretary desired to recall to the recollection of the Meeting the particulars of an application which had been made to the Society by the Military Board on the subject of the Hop Cultivation in India. He stated that in conformity with the wishes of the Society he had addressed letters to Captain Kirke and Dr. Falconer soliciting information. From the former a reply had been received, but no communication from the latter had come to hand.

Captain Kirke gives a most gratifying account of the success which has attended his efforts in this novel and interesting branch of industry. He writes—

Deyrah, December 6th, 1840.—The progress of the Plant with me is very encouraging, and I feel every confidence in extending the plantation to at least an acre during this next year, as I

find from experience that it (the Hop plant) grows from slips as well as by dividing the roots early in spring.

The plants this year grew to the height of 14 feet and the bends were as thick as a quill. I believe it is customary in England for them to flower the third year, when raised from seed as mine were, I am therefore looking forward with great anxiety to the month of September next in hopes of seeing them in blossom.

Do you think the Military Board would be induced to allow a small establishment to be kept up for the purpose of looking after a Hop plantation ?

I have the plant growing in three distinct climates, viz. Deyrah, Lower Mussoory and Upper Mussoory, and find that it thrives better in the temperate climate of Lower Mussoory than at either of the other places, and feel convinced that if the roots were done justice to in the shape of manuring, watering, &c. &c., when necessary, that the plants would attain to a much greater degree of perfection than they now have a chance of doing, as my establishments for the cultivation of the Hop are, from necessity, very limited. In reply to Para. 3 of Major De Bude's letter, I should say that sending to England for seed was unnecessary as I have healthy plants fully sufficient to increase to any extent within the next two years, and as I received the seed from which they were produced from Lord Auckland, there can be no doubt but it is genuine.

At the close of the perusal of the foregoing letter the Secretary stated that he had embodied it in a letter of his own to the Military Board in which all the information which he possessed on the subject had been communicated to that body.

State of Horticulture in the Valley of Herat.

An interesting letter from Major Todd, Political Agent at Herat, was next submitted, on the condition of the country

about Herat. Major Todd, after acknowledging the receipt of a packet of seeds that had been sent by the Society, states, that he has lately received a supply of Potatoes for seed from Meshed, and hopes next year to introduce this valuable vegetable into the valley of Herat, the climate and soil of which are admirably adapted to its culture. Major Todd mentions, that a hundred thousand Persians were encamped in the valley for ten months, and nearly every one of its thousand gardens was wantonly destroyed, scarcely a tree was left standing in the country;—much has been lately done to repair this damage, and as confidence is gradually restored, Major Todd hopes to encourage the people to form extensive plantations, but they are great savages. In the spring Major Todd planted several miles of road with useful trees, and took measures to preserve them, but without effect, for they have all been destroyed. Major Todd mentions, that next spring he intends planting about a hundred thousand timber and fruit trees on his own ground:—the mangoe and all other Indian Fruit trees, would, Major Todd thinks, thrive at Furrah and in Seistaun. He has procured some Gooseberry seed from Tehran, and hopes to get some cuttings of this and of the Currant from the Residency Garden at that place.

On the Hemp Cultivation in the Himalayas.

The subject which next engaged the attention of the Meeting were some highly interesting papers which had been placed at the disposal of the Society by the Right Hon'ble the Governor General on the important subject of the Hemp culture in the Himalayas. The Secretary stated that the samples of hemp, hemp cloth, and seed which were on the table, came to him some time since, with a note written by desire of the Governor General to ascertain from the Society the cost of such

things in London or Calcutta, and also the probable cost of freight, &c. from Deyrah to Calcutta. Dr. Spry mentioned that he had in consequence of the receipt of this letter placed himself in communication with four gentlemen in whose practical knowledge he thought the Society could place every reliance, and that from their information he had drafted a reply which was duly presented to His Lordship.

Captain Kirke's memorandum states that 22½ feet of the fine sail cloth which he forwards could be bought for 9½ annas.

22½ feet of the coarse sack cloth for 6 annas.

20 seers of the rough hemp for 1 rupee, and

29 seers of the hemp seed for one rupee.

These specimens having been submitted to the gentlemen above alluded to, (viz. Messrs. Fergusson, Hodgkinson, Gibbon and Duneef,) the result was that the *cloth* in the Calcutta market, was not likely to meet with much encouragement.

The fibre and seed however were deemed of first rate quality. According to Mr. Hodgkinson, in the state in which Capt. Kirke sent the fibre its value in England would be from £17 to £18 a ton, if *better prepared* 50 per cent. more. Mr. Duneef says that it is equal to that from the North of Europe, and that he has been delighted to see so charming a vegetation of this plant the produce of India. Indeed all the defects of the sample would appear to consist in the mode adopted by the people of the country in preparing the fibre.

With regard to the *seed* it appears that on assimilating the *weight* with the dry measure scale, 2½ seers by weight of the seed equals a gallon by measure, and that comparing the selling price of the article in the London market with what it can be bought for at the place of growth, a margin of 29s. 8d. per quarter is left to meet carriage and other transport

According to a calculation which the Secretary said he furnished, it would appear that nearly the whole of this sum would be absorbed in the carriage to London.

On these particulars being furnished to His Lordship, Captain Kirke was addressed on the subject, and the following is that Officer's reply :

To Captain Hill.

Deyrah, December 23rd, 1840.

My dear Sir,—I have great pleasure in acknowledging your letter of the 27th ultimo, with its enclosures regarding Hemp and Hemp Seed, and calling upon me for any further information regarding its carriage to Calcutta. I have for some time been making inquiries on this subject, and have the pleasure of acquainting you with the result.

The inhabitants in the neighbouring hills are the sole cultivators of it, and sell the rough Hemp or "Sunh" amongst themselves at 20 seers per rupee, at present not more than four or five thousand rupees worth would be collected, but were a large demand again created, like what existed in 1810, and a few years subsequent, I have every reason to believe that very large tracts would be instantly cultivated, and that the price would be again raised to what it then sold for, which was four rupees per puckah maund in the districts, and five rupees if landed at a place called "Khote Dwarrah," distant from Sookertal Ghat on the Ganges about 30 coss.

It has lately been reported to me that since Government has been making inquiries on this subject, the cultivation has decreased, the cause mentioned to me is, that the Natives are afraid that a higher assessment will be put on the land, from its cultivation, being the most profitable crop which is grown in the Hills, viz. from the stems, Hemp ("sunh,") from the leaves an intoxicating drug called "Bhang" is produced, which

alone is said to defray the entire expense of cultivation. The seed also sells at 29 to 30 seers per rupee—so that every part of the plant is valuable, and as it only is grown as a rain crop, and is gathered in October, it does not interfere with the growing of Wheat on the same land immediately afterwards, indeed it appears to me to produce better crops of Wheat, than elsewhere, in consequence of the Hemp requiring a good deal of manure, which is liberally supplied.

At present there is not nearly so large a portion of land cultivated with Hemp, as there was thirty years back, in consequence of there being no demand for the article now,—further than their consumption calls for, (the Natives) who are clothed with cloth manufactured by themselves from the fibre, which they also convert into ropes, nets, bags and a variety of other useful things. Whilst the "Bhang," and "Churrus" are carried down to the foot of the Hills and thence to Hurdwar, Naejeebabad, and other large native towns, where it sells at very high prices.

All that is required to increase the cultivation a hundredfold is, in the first instance an assurance that the land will not be higher assessed for this than any other crop; 2ndly—Small advances given to each cultivator 3 or 4 months beforehand, when agreements as to quality, quantity, time and place of delivery, price, &c. would be made, and as there is very little chance of loss accruing to any speculation from the known honesty of the Natives, it seems to me a very sure return for whatever sum might be invested in it. The following is a rough sketch of what the probable expense would be in sending 500 maunds of "sunh" to England, but perhaps Calcutta would be a better market still:

Cost of 500 maunds at (the foot of the Hills)

Khote Dwarrah, ... Rs. 2,500

250 Brinjarah Bullocks, each carrying 2 maunds

to the Sookertal Ghat, at 2 annas a day each, for 4 days, ...	1,125
600 maunds Boat from Sookertal to Calcutta, ..	130
	2,755
Add 10 per cent. for extra charges such as Gomastah, Insurance, &c., ...	275
Total cost to Calcutta,.....	3,030
Freight to England at £5 10s. per ton for 18 tons,.....	990
Add 10 per cent. for all extra charges,.....	402
Total cost to England,.....	4,422

or about £24 11½s. per ton. Which if it even fetched £40 per ton in England would give a fair return for the length of time the money is sunk. The only difficulty appears to me to be getting honest Gomastahs to give the advances and see the article was equal to the agreement, &c., and the only plan which I would recommend would be employing the Head Zemindars in the district or in each village: these men are all perfectly honest both in word and deed, and as the advances need not be for more than half the value of the expected crop, very little risk would be incurred.

I am now in the midst of experiments made here, and shall shortly address you again with regard to the cultivation of the Himalayan Hemp in the Dhoon—I feel certain that its cultivation will repay the European Farmer better than any other crop, and think the seed alone would almost pay the expenses of cultivation, indeed so much so that I have already mentioned the circumstance to Messrs. Maxwell, Macgregor and Co., who are succeeding in every other way.

I have great pleasure in returning Dr. Spry's letter with the

following remarks regarding carriage from the Dhoon to Ghurmuctesur and Sookertal Ghat on the Ganges, which will shew that it is not so expensive as he anticipated.

From Ghurmuctesur Ghat—			
Carriage of 500 maunds from Deyrah to Ghurmuctesur Ghat on Brinjarah Bullocks, at 10 annas 8 pie per puckah maund, ...	333	5	4
Boat hire (700 maund Boat),.....	120	0	0
Bagging (500 Hemp Bags at 2 annas per bag, these bags would sell for more than prime cost either in England or Calcutta,)	62	8	0
From Sookertal Ghat—			
Carriage of 500 maunds from Deyrah to Sookertal, the nearest Ghat on the Ganges—at 10 annas a Bullock, each carrying 2 maunds (puckah,)	140	0	0
Hire of a 700 maunds boat or 600 maunds, ...	130	0	0
Bags as above, ...	62	0	0

(Signed) HENRY KIRKE.

Success of Affghanistan Melon Seeds in Calcutta.

The Secretary next submitted an interesting extract from a letter which he had been favored by Mr. Chew, stating that he has sown the greater portion of his acclimated Caubool, Candahar, Bokhara, Istambool and Cawnpore Melon seeds, and they are all coming up beautifully. The first sowings (in December) failed, and in the present successful one Mr. Chew mentions that he boiled the seeds very partially. Mr. Chew observes that if successful, he will have a few pounds of seeds to present to the Society for distribution; that in order to ensure success he has already distributed portions of the seed he grew last year, to several gentlemen in different parts of

Calcutta, and to the public. If successful in rearing Melons from these seeds, Mr. Chew intends becoming a candidate for one of the Society's medals, for having been the only successful grower of Affghanistan Melons.

Notes on the Cultivation of Sugar-cane and the best description of Restorative Crops for Cane land.

The last communication presented was one which the Secretary had been favored with from Mr. Stikeman, the Secretary of the East India and China Association in London. Mr. Stikeman, in his note, after adverting to the receipt of a letter from the Secretary of the Society offering to open a correspondence with the Association, states, the wish is so in accordance with his own disposition that he desires at once to lay before the Society (though not as coming from the East India and China Association) a few particulars respecting the cultivation of the Sugar-cane in the West Indies which he had collected and *arranged* in the hope that they may prove useful to the growers of Sugar in India.

The materials of this collection, Mr. Stikeman adds, were obtained through the kindness of Lord John Russell, and by his directions and those of the Governor of St. Vincent's, from four of the best planters in that Island on the occasion of procuring specimens of soils for the chemical examination of Mr. Piddington.

The best time for planting the Sugar Cane in the Island of St. Vincent, is stated to be, the months of November, December, January and February.

Rain. About May, or June, rain commences, and continues till December and January, with perhaps an interval of three weeks in September, the showers on the South side of the island being partial and unfre-

quent. This is called the cultivating season, while the remaining months are styled "Crop" or dry season; the hottest period being July, August, September and October. The average quantity of rain for the year on windward side of the island being 84 inches, and the climate is considered "moist" than otherwise,

Temperature. The temperature in the shade, at the commencement and full of the year, varies from 72° to 80° and in the summer, 76° to 84°. But on the South side of the Island, the Thermometer ranges from 74° to 84°, rarely reaching as high as 90° or being as low as 71°; so that the mean summer heat *there* is about 84° and the maximum* in the shade, 88°. The average quantity of rain being from 3½ to 4½ inches per month†.

Soil. The Soil is stated to be a black loam, black and brown vegetable moulds, sand, clay and the detritus of volcanic matter, varying in depth from a few inches to three feet, a particular description of which must be left to Mr. Piddington who has specimens for examination, and whose analysis will no doubt furnish all necessary information upon the subject.

Digging and Planting. Digging is performed with the hoe, (although the plough has been lately introduced) and varies with the depth of the soil, in some instances being 10 or 12 inches, and in others only half that depth; the size of the holes being in rich flat soils from 4½ to 5 feet *square*, or, 5 feet by 4½ feet; and in steep lands generally about 4 feet 4 inches by 4 feet wide.

* It is stated however that in lat. 13° 5′ the thermometer ranges from 76° to 96° and the atmosphere is *hot* and *dry*.

† The Barometer averaging from 30° to 35°. Hygrometer—50° to 59°.

The Canes, which, like all plants in their youth require great care and attention, are planted three or four Canes in each pole, which are always square (meaning not in a circle), and the distance to which planting has hitherto been confined not exceeding 4 to 5 feet apart, leaving the intervening space for the access of air and light* which are absolutely necessary in the cultivation of the Cane on lands long held in cultivation: and latterly it has been found advantageous to lay down plant *less* when the soil is strong and fertile.

If the Cane sends out ten shoots to each hole it is considered a fair average on poor soils, and 14 or 15 are considered a good crop on rich soils. Close planting is by no means favorable to the growth of the Cane, and ten or fifteen Canes grown in the before mentioned holes will yield more [juice] than double the number grown in the same space.

Manuring. With respect to manuring the land a difference in practice exists—in one case it is stated that the manure is commonly applied 3 months after planting—whilst on the other hand it is used either *previous* to holing or planting, and *again* manuring *after* the plants have grown sufficiently strong to bear it, that is in about six months. And it is asserted that the best mode of manuring the cane to afford nourishment to the plant is undoubtedly in an early stage, when it can be done with less sacrifice of manual labour and is more beneficial to the land.

The importance of manures as affecting a Sugar crop has been stated by one planter to be as 9 to 5,—for whilst a portion of land *without manure* would not yield more than

1¼ per acre the 1st year,
¾ „ „ „ 2nd „ and
almost nothing the 3rd „

* It seems to be essential to have as much air as possible, provided the land is covered from the sun.

yet by properly fortifying the land the crop would be

2¼ per acre the 1st year,

1¼ „ „ „ two following years; another gentleman gives for estimate—

3 tons per acre the 1st year,

1½ „ „ „ 2nd „ and

1¼ „ „ „ 3rd „

whilst *without manure*, the same land would in an equally favorable season, have produced *rather less than one-third* of those quantities; and notwithstanding that the same land when very highly manured, has, in a favorable season produced as much as 4 (four) tons per acre; but then the soil was 18 inches deep and the manuring was to the extent of 100 cart loads per acre.

Manures. The manures used are denominated "pen manure" and "foreign manure."

The first is made from withered cane-leaves, weedings, Guinea grasses, toppings of fences, &c. and is called "cane-trash," the whole being used as litter for horses and cattle, and then fermented by being well saturated with animal deposit and urine.

Foreign manure consists of crushed bones and rape cakes; likewise lime and soot.

The quantity employed may be 80 cart loads of pen manure, or 80 bushels of bones, or 70 bushels of rape cake per acre, and has been found invaluable in promoting the growth of the plant, its return of produce and fertility of the soil, and requiring also but little labor in the application.

Rotation of Crops. The rotation of Crops formerly practised was planting Yams, or sweet Potatoes every sixth year, after which the first crop of canes grew remarkably well, but the second and third very indifferently, unless the land was highly manur-

ed. But since ploughing has been introduced it is supposed the fallowing and rotation of crops will prove highly beneficial.

Restorative Crops. Several sorts of leguminous or green crops are grown for the purpose of fortifying the land, rendering it more pliable, more easily cultivated, requiring less manure, and yielding a greater return of Sugar than under any mode of cultivation; besides producing food for stock. For these purposes they plant the

Pigeon Pea.. .. .... (Pisum Columbinum,)
Sweet Potatoes .... (Convolvolus Batatas,)
Castor Oil plant.. .. (Ricinus Communis,)

Maizes and various vegetable productions, and plough them into the land when preparing for planting.

Pois Noir. The "Pois Noir" used largely in the Mauritius is supposed to be highly valuable for the purpose, but has not yet been tried at St. Vincent's.

Cutting. It now only remains to add, that in cutting the Cane the first crop called "Plant Canes" is performed when they are 13 to 15 months old; the second and third, when they are denominated "Rattoons," and 9, 10 or 11 months old: but when the plants are very luxuriant they are allowed to be 15 months old before they are cut.

Making Sugar. February to May being the dry season is the most favorable time for making Sugar, and it is found that the juice of the Cane matures better and is more easily fitted for crystalization when grown on a soil with a hard sub-stratum, which naturally prevents the manure from being washed below the roots.

Irrigation is not practised.

London, October 27, 1840. J. STIKEMAN.

Adverting to the allusion made by Mr. Stikeman to the quality of the "Pois Noir" or black bean as a nutritive crop, the Secretary desired to call the especial attention of the Meeting to the circumstance, as the Nursery had a large supply and any Member who might wish to try this useful legume on his lands or in his garden could be supplied freely.

For all the above presentations and communications, the thanks of the Society were accorded.

HENRY HARPUR SPRY, *M. D.*

Secretary.

PROCEEDINGS

OF THE

Agricultural & Horticultural Society

OF

DIA

MARCH,

1841.

CALCUTTA:

PRINTED AT THE BAPTIST MISSION PRESS,

CIRCULAR ROAD.

1841.

AGRICULTURAL SOCIETY OF INDIA.

PROCEEDINGS.

MARCH 10, 1841.

Agricultural Society of India.

A General Meeting was held at the Town Hall.

The Hon'ble Sir Edward Ryan, President, in the Chair.

(*Fifteen Members present.*)

Dr. Wallich informed the Members that in consequence of Dr. Spry's absence from Calcutta, he had undertaken to officiate as Secretary at this Meeting.

MEMBERS ELECTED.

The Gentlemen proposed at the last Meeting were elected Members of the Society :—

The Hon'ble Mr. Hansen ; Messrs. T. P. Woodcock, Robert Lyall, John Rennie, R. Torrens and James Crooke ; Drs. James Duncan, John Murray and Samuel Davies, and Major Eldred Pottinger.

FOR ELECTION.

The names of the following gentlemen were submitted as candidates for election :—

C. P. White, Esq., Deputy Collector, Midnapore,—proposed by the Rev. Chas. Driberg, seconded by the Secretary.

Captain Bayles, Superintendent of Government Cotton Plantations,—proposed by Dr. Spry, seconded by Dr. Wallich.

Major Huthwaite of the Artillery,—proposed by Lieutenant Hogge, seconded by Lieutenant Burnett.

Robert Trotter, Esq., of the Civil Service,—proposed by Sir Edward Ryan, seconded by Dr. Wallich.

John Taylor, Esq., of Gomalty, Maldah,—proposed by the President, seconded by Dr. Wallich.

Presentations to the Society.

LIBRARY.

1. Journal of the Committee of Agriculture of the Isle of Bourbon, parts 1, 2 and 3.

A Memoir on silk culture, by M. Perrottet.

A Report on the best means of encouraging the culture of silk at the Island of Bourbon, by M. Barbaroux.

The above Brouchures were presented by Dr. Wallich.

2. On the culture of Cotton in India, by J. F. Royle, M. D.—*presented by the Author.*

3. Ten copies of a view of the evidence given before a select Committee of the House of Commons on a Petition from the East India Company in reference to unequal Duties and other grievances, &c.—*presented by the Supreme Government.*

4. A copy of Premiums offered by the Society of Arts for the Sessions 1840-41 and 1842—*presented by the Society.*

MUSEUM.

1. A maund of the Genuine Bhilsah Tobacco—*presented by Dr. R. H. Irvine.*

Dr. Irvine, in his note announcing the despatch of this Tobacco, states that the delay in meeting the wishes of the Society in procuring the specimen, has arisen from the difficulty of obtaining the real article, and that his success in the present instance is to be attributed to the influence of Colonel Speirs, Resident at the Gwalior Court, who very kindly preferred his request, on behalf of the Society, to His Highness the Maharajah. Dr. Irvine further intimates his intention of forwarding in a month or so, a supply of the seed of this superior Tobacco.

The best acknowledgments of the Society were directed to be offered to Dr. Irvine and Colonel Speirs for their kind attention to its wishes—and the former gentleman was requested to favor the Society with a specimen of the soil on which this Tobacco is cultivated.

2. Specimens of Oil and of Oil Cake made from Hemp seed, and specimen of a Lichen,—received from Captain Kirke, of Deyrah—*presented by the Right Hon'ble the Governor General.*

Captain Kirke states that this Lichen, from which a valuable dye is extracted, can be collected in large quantities in the neighbouring Hills : the Pyaree name is " Chiewh" or " Chowh," the Hindustani name is " Ballchew."

In connection with the above contribution, Dr. Wallich brought to the recollection of Members that a large quantity of " Chulchulchera," or the Dyeing Lichen of the Himalayahs,—which would seem to be identical with the " chiewh,"—was forwarded to the Society by Dr. Falconer, in August 1839, and that a moiety of the consignment was then

transmitted to the Committee of Agriculture and Commerce, of the Royal Asiatic Society, but that body had not as yet favored the Society with its report on the specimen. Dr. Falconer mentions that he tried the "Chulchulchera" by the ammoniacal process recommended by Mr. Visger, but although abounding in colouring matter it did not communicate the rich violet or purple bloom for which the Orchill is so much prized; silk steeped in it for several days having acquired a buff or light reddish purple color.

On the proposition of the Honorable the President, it was agreed to transfer the Sample received from Captain Kirke, to Dr. O'Shaughnessy, with a request that he would favor the Society with a report on its colouring properties.

3. Specimen of Raw Hemp, grown in the vicinity of Lohooghaut, a small quantity of the seed, and two kinds of Canvass made from the fibre—*presented by Major Stuart Corbett.*

Major Corbett, mentions that Hemp is grown in the neighbourhood, merely to meet the demand of the Kussecahs for grain bags,—a bag of the inferior muster containing about 5½ yards costs eight annas, and one of better kind and little larger sells for a rupee. Some twenty years ago, Dr. Rutherford speculated in Hemp and procured fibre similar to the specimen now presented, at the foot of the Hills, at six rupees a maund. Major Corbett cannot learn if any Hemp has been exported since that time, but states that there is no doubt it could be cultivated to any extent, should it be of a quality sufficiently good for the European market.

4. Four specimens of Milky Sap taken from different trees at Penang—*presented by Mr. Maddock, on behalf of Mr. W. P. Lewis.*—(Referred to the Caoutchouc Committee.)

5. A specimen of Assam Caoutchouc—*presented by Dr. Royle.*

Dr. Royle forwards this piece of Indian Rubber, as a *test* sample, it being considered of excellent quality by the Superintendent of the Factory of the London Caoutchouc Company.

6. Three specimens of Assam Caoutchouc manufactured under his superintendence—*presented by Mr. E. A. Morgan.* —(Referred to the Caoutchouc Committee.) These specimens were much admired by Members, and considered as a near approach in quality to the test sample alluded to above.

7. Samples of unhackled Flax from *acclimated* English seed, from Saharunpore seed and Bengal seed—*presented by Mr. Woollaston.*

These samples are the produce of Plants grown at Entally under the superintendence of M. Deneef, and form a portion of the specimens, which were presented in a *green* state at the last Meeting.

8. Specimens of a Rape seed plant, the produce of Belgian seed, sown on 20th November—a Plant of the Cannabis Sativa from Russian seed sown on the 15th November; another specimen of Cannabis Sativa from Native seed, (Gunga) sown at the same time—*presented by Mr. Hodgkinson on behalf of M. Deneef.*

In reference to the afore-mentioned specimens of Hemp, Caoutchouc and Flax,—the Hon'ble the President stated that he considered it would be desirable, in order that the utmost publicity might be given to the subject, to incorporate in the present proceedings the following premiums which have been offered by the Society of Arts for those Staples.

GROWTH OF FLAX IN BRITISH INDIA.

To the person who shall raise the greatest quantity of flax, of good quality in any of the British possessions in the East

Indies, being the produce of not less than five English acres; —*the Gold Medal.*

Certificates of the number of acres cultivated, the mode of culture, the nature of the soil and weight of the produce, together with fourteen pounds of the flax, to be forwarded to the Society.

To the person who shall import into Great Britain or Ireland the greatest quantity of flax, of good quality not less than one ton, grown in any of the British possessions in the East Indies;—*the Gold Isis Medal.*

Certificates of the importation, together with fourteen pounds of the flax, to be delivered to the Society.

SUBSTITUTE FOR HEMP.

To the person who shall import at least two tons of any vegetable fibre, which shall be equally cheap, strong, and durable and applicable to all the purposes for which Hemp is now used;—*the Gold Medal.*

CAOUTCHOUC.

To the person who shall import not less than one ton of Caoutchouc from any country from which it has not hitherto been commonly imported;—*the Gold Ceres Medal.*

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9. Specimen of Cotton grown at Lucknow from Egyptian seed given to him by Colonel Frith, and a sample of Oude Opium—*presented by Colonel Caulfield.*

This specimen of Cotton is grown from the same seed as produced the sample submitted by Colonel Caulfield at a former Meeting of the Society. Opium is grown, Colonel Caulfield states, on the banks of the Gogra, and large quantities might be procured.

10. Three Sugar Canes sent by a friend, as the produce of Amherst Town—*presented by Mr. E. A. Blundell.*

11. Specimens of the flower and exudation of a tree supposed to yield the true Gamboge of Commerce—*presented by Mr. Blundell.*

The above specimens, together with a long and very interesting communication relating thereto are forwarded by Mr. Blundell, on behalf of a correspondent in the Tenasserim Provinces, who is anxious that the subject should be submitted to the Society, to have the question determined whether the trees of the Tenasserim Provinces are or are not the true Gamboge trees; for should the exudation procured from these trees prove to be the Gamboge of commerce, the writer considers the drug will become one of the most valuable exports from the Tenasserim Coast.

The specimens were, at his request, transferred to Dr. Wallich for examination, and it was agreed that the paper should be printed in the forthcoming volume of the Society's Transactions.

12. A few leaves of the Tea Plants growing in the Travancore Plantations—*presented by Dr. Wallich on behalf of Mr. W. Huxham.*

13. Seeds of the Sirish used as a paste in Khorasan—*presented by Major Pottinger.*

Acceptance by Government of the Society's Offer to distribute American Cotton Seed.

The first communication submitted to the Meeting was a reply from Government to the application made by the Society for a portion of the American Cotton seed imported by the *Bland.*

To H. H. Spry, Esq.,

Secretary to the Agricultural and Horticultural Society.

Sir,—In reply to your letter of the 11th instant, I am directed by the Right Hon'ble the Governor of Bengal to request that you will inform the Society, that His Lordship accepts their offer to distribute a portion of the Cotton Seed arrived per *Bland* from Europe. The Military Board have accordingly been instructed to transfer to the Society in communication with Captain Bayles, such portion of the seed in question, as may be in excess of the quantity required by that Officer.

I have the honor to be, Sir, your most obedient servant,

J. H. Young,

Dy. Secy., Govt. of Bengal.

Fort William, the 20th Feb., 1841.

Dr. Wallich stated that no time had been lost in despatching a large supply of this seed to the Upper Provinces and to other parts of the country,—there was however a considerable quantity yet available, for which, the sowing season being near at hand, early applications should be made.

Note on the Cultivation of Foreign Cotton in India.

The Hon'ble the President in submitting the following communication from the pen of Mr. Mercer, one of the American Cotton planters, informed the Meeting that it had been drawn up at the request of the Right Hon'ble the Governor General:

The best season for sowing Cotton seed, I think would be after the heavy rains of the S. W. monsoons are past. Much water would be likely to injure the fresh planted seed, and also the young plants.

The ground should be prepared by being well broken up with the plough, and cast into ridges eight or ten inches high, and six or seven feet apart—say, six feet for Sea Island. After the ground has been prepared in this manner, if it is allowed to settle for a few days previous to sowing, the young plants are likely to take root more vigorously, than if they sprang up in the freshly ploughed and loose earth.

In planting, one hand with a hoe should make on the top of the ridge, holes about an inch and a half in depth, and 16 or 18 inches apart, another should follow and drop into each hole five or six seeds, and a third coming after should cover them lightly taking care to leave the ground perfectly smooth.

When the plants are up and begin to put forth the third leaf they should be thinned to two stalks. In doing this the hoe should be used to scrape away from the remaining plants any grass or weeds that may have sprung up in the mean time. In a week or ten days they will be mature enough to require thinning again, when they should be reduced to one stalk, and the hoe used as before to remove any interlopers. At this stage the plough should be used and a light furrow turned with it towards the Cotton, taking care not to run it so close as to cover any of the plants. The hoe should follow the plough and draw the mould around the roots sufficient to replace what had been removed by the previous scrapings, but not any more. When this is done the spaces between the rows should be ploughed afresh to destroy the grass, and this operation should be repeated as often as they become foul, still using the hoe to keep the spaces between the plants on the ridge clean ; the hoe should be so set as to scrape and not to dig or chop. It is the most essential feature in this cultivation, to keep the ground free from all extraneous vegetation while the plants are growing.

Topping is important only when the plant is disposed to

produce wood and leaves to the detriment of flowers and pods. When this is the case to take off an inch or two of the top after it has fairly commenced podding—say about the beginning of the fourth month after planting, will materially assist that operation.

The Cotton should be gathered or picked as the pods burst, not leaving it exposed to dews or sun, if it is even dried under cover, it will advantage its glossiness of appearance. The picker should be provided with a bag about the size of a pillow slip, suspended to his side by a strap across his shoulder, in which to thrust the Cotton as he picks it, taking care to keep it free from trashy leaves or dirt of any kind, he should grasp the Cotton with his thumb and three fore fingers, and avoid as much as possible drawing away any of the pod or outer leafy covering.

Sea Island Cotton is always cleaned in America by the roller gin, the saw gin is never used.

Otaheite Cane Culture in the District of Dacca.

Mr. Sarkies, the Secretary of the Dacca Branch Society communicates the gratifying intelligence that the Otaheite Cane Culture is rapidly gaining favor with the natives and with every class of the community in the District to such an extent that in a year or two more the spread of this cane will be such, as in all probability, to supercede the other kinds. Mr. Sarkies states that the number of Otaheite Canes in the Society's Garden was about 12,000, that 2,000 had been distributed to about 50 individuals for planting and 5,000 sold for the benefit of the Garden. The average weight of a single cane was 8 pounds, its length from 7 to 8 feet and from 7 to 8 inches in circumference;—some of these canes were sold at two annas each.

Of foreign Cotton, Mr. Sarkies mentions four maunds were collected from the plants in the garden, while one maund of seed has been distributed to Members to increase the cultivation.

Horticultural Exhibition at Hooghly.

The Report of Dr. Esdaile, Secretary of the Branch Society at Hooghly, of the result of the third Annual Horticultural Exhibition held at Hooghly on the 5th February, was next submitted.—The two silver medals allowed by the Parent Society and the sum of fifty rupees were awarded for the best specimens of Cauliflower, Cabbage, Potatoe, Beet, Carrot, Celery and Lettuce,—also for Tobacco, Grain, Sugarcanes, Fruits and Flowers.

Dr. Esdaile mentions that the exhibitors were numerous, and the articles of excellent quality.

On the Culture of the Tea Plant at Travancore.

Mr. Huxham, in an interesting letter to the address of Dr. Wallich, embodying a communication to Dr. Wight, states that having been lately residing at the Plantations in Travancore where the Tea Plants are growing, he is enabled from personal examination to form an opinion regarding them, which goes far to prove that the success of the experiment has been established as far as regards the *growth* of the Plant in that District. Of the few plants preserved from a supply of the Assam Plants received in June 1839, Mr. Huxham mentions, a small number are now well rooted in the ground, are about two feet high, and have recently thrown out branches,—some of the leaves are very large, 9½ to 10 inches

long and 3½ inches wide,—their having grown to this size, Mr. Huxham thinks, is a proof of the adaptation of the situation selected for their cultivation and the best test of the congeniality of the soil and climate.

The greater part of the plants received in February last being then in a withered state have still a very unhealthy appearance, and Mr. Huxham is fearful that many of them will be lost during the ensuing hot and dry months.

Many of the seedlings raised from the Tea seeds received from Madras and Calcutta by barghy, and sown at Quilon in the early part of the year, were lost, Mr. Huxham states, in the process of transplanting, owing to the heavy rains and carelessness of the native gardeners, by which the tap roots, which were very long, were injured: Mr. Huxham mentions that the leaves of several of the Tea plants reared from seed at Quilon are large, two or three were seven inches long in October last.

For all the above presentations and communications, the thanks of the Society were accorded.

A. H. BLECHYNDEN,
Dy. Secy.

PROCEEDINGS

OF THE

AGRICULTURAL AND HORTICULTURAL SOCIETY OF INDIA.

FEBRUARY,

1839.

CALCUTTA:

PRINTED AT THE BAPTIST MISSION PRESS,
CIRCULAR ROAD.

1839.

AGRICULTURAL SOCIETY OF INDIA.

PROCEEDINGS.

FEBRUARY 13, 1839.

Agricultural Society of India.

A General Meeting was held in the Society's Rooms, Town Hall, on Wednesday, the 13th February, 1839.

The Hon'ble Sir E. Ryan, President, in the Chair.

MEMBERS ELECTED.

The following gentlemen proposed at the Anniversary Meeting were elected members, viz.:

Messrs. T. P. B. Biscoe, C. Scott, Jas. Wood, R. Wooldridge, and Dr. R. H. Bain.

MOTIONS OF WHICH NOTICE WAS GIVEN AT THE LAST MEETING.

The attention of the Meeting was first called to the consideration of the motion made last month by Mr. H. M. Parker, namely, 'That taking into consideration the duties expected to be performed by the Secretary of the Society, the salary be fixed at three hundred rupees a month.' The members who addressed the Meeting were the President, Mr. Parker, Mr. Cracroft, and Dr. Strong. Their sentiments were all confirmatory of the propriety of the proposition, which was carried unanimously.

During the discussion of the above measure, the President took occasion to remind the Society that the Secretary had expressed his willingness to undertake to do the duty of the Collector's office, and read the report of the Committee of Finance, in which his offer had

been embodied; so that it was for the Society to determine whether it would be desirable that the two offices should be separated or not —if the latter, then he would propose that Mr. Blechynden, who had shown himself to be a very useful Assistant Secretary, should be made Collector of the Society, with an increase to his salary of 50 rupees a month. Further, that the gentlemen who formed the Special Finance Committee, be requested to continue their services as a Standing Committee of the Society, and that they should take cognizance of all matters bearing on the 'ways and means' of the Society.

The statement of 'the ways and means' which the Special Committee had prepared showed a disposable balance of about five thousand rupees without encroaching on the 'fixed assets' which left no doubt of the capability of the Society to afford this extra expense, if the proposition were carried.

The sense of the Meeting being confirmatory of this step, notice of a motion was given, which will be found below.

The second point which engaged the attention of the Meeting, was the proposition of Dr. O'Shaughnessy, also submitted at the former assembly of the Society, 'That, in addition to the amount already voted, a sum equal to twelve months' salary be presented by the Society to the widow and orphan daughter of our lamented Secretary, the late Mr. Bell.

Dr. O'Shaughnessy addressed the Meeting in a few impressive words, in support of his proposition, and reminded the Society, that for a period of three or four years, while the Society were low in circumstances,—the late Mr. Bell gave his unremitting energies gratuitously to the advancement of the interests of the Institution; and that now that the Finances were so flourishing, they could well afford to grant to the widow and fatherless child, this substantial proof of respect entertained by the Society, of the worth and services of their deceased Secretary.

Dr. Wallich likewise asked for the grateful sympathy of the members, by giving their support to the vote. The motion was then put from the chair, and carried unanimously.

The President then adverted to a notice of an important motion which had been submitted by Mr. G. Prinsep, to be brought forward at the next Meeting for discussion as that gentleman was unable to be present now. It referred to the reward which the members of the Court of Directors had published to encourage the propagation of the Cochineal insect in their possessions in the East Indies.

NOTICE OF MOTIONS.

No. 1. Proposed by Mr. G. A. Prinsep, seconded by the President, 'That as it appears from documents laid before the Society, that since the year 1807 a resolution of the Court of Directors has continued unrepealed, offering a premium of £2,000 for the introduction of the live Cochineal insect of the fine species into their Indian Territories in a state fit for propagation; application be made to this Government to grant that sum (or 20,000 rupees) to the Society, on the ground of their having, by their arrangements, and at their own expence, effected the object for which that premium was offered by the Company; but under an engagement that the whole sum shall be devoted to the propagation of the Cochineal in different parts of India.'

No. 2. Proposed by the President and seconded by Mr. Piddington, 'That the gentlemen who constituted the *Special* Committee of Finance, be considered a *Standing* Committee for the regulation of all matters connected with the pecuniary transactions of the Society, and that the Assistant Secretary be the Collector of the Society under them, on a salary of fifty rupees a month in addition to his present income of one hundred and fifty rupees.'

The Secretary brought forward a list of gentlemen to be proposed, as members of the Agricultural and Horticultural Society of India. Before the names were read, the President requested to allude to a very interesting letter which he held in his hand from his Excellency the Right Honorable Stewart Mackenzie, Governor of Ceylon, of which the following is the substance. The letter was addressed to the late Secretary.

"*Queen's House, Colombo, Jan.* 17, 1839.

"With regard to your Transactions, I certainly place a very high value upon their publication, and am confident, that by increasing the intercourse throughout the interior of India, and by the continuation and extension of the labours of your own, and similiar Societies, more real good and advancement of the essential comforts, in clothing, and other luxuries, amongst the population of India in general, will be thereby ultimately effected, than has been during our past connexion, with the people of that country. The same doctrine is most applicable also to this island, and if I can open up its resources, by roads, canals, &c., in all directions, and effect the introduction of such an institution as you have recommended, I am well aware how essen-

tially beneficial it would be to this island. It is a vast encouragement to any Society commencing its operations, to have the advantage of communicating freely with one, like the Agricultural Society of India, whose Transactions and Reports you have laid me under so much obligation by presenting to me. The recent establishment here, within the fort, of a small Horticultural Society will, I hope, gradually grow up into one of the character, which you have pointed out.

"I shall feel highly gratified if Sir E. Ryan does me the honor, as you suggest, of proposing me a member of the Agricultural and Horticultural Society of India, though should that be irregular, it will by no means diminish the real interest I take in that most valuable INSTITUTION."

Adverting to the interest thus expressed by His Excellency in promoting the advancement of the great objects of the Society, the President asked whether the Agricultural and Horticultural Society of India would not be testifying their sense of approbation of His Excellency's sentiments as expressed in his letter more fully by enrolling his name among the Honorary Members of the Society, instead of putting him in nomination as an ordinary member. The Meeting approved of the suggestion thrown out by the President, and it was therefore 'Proposed by the President and seconded by Dr. Strong,' that His Excellency the Right Honorable Stewart Mackenzie, be put in nomination as an Honorary Member of this Society.

For election as Ordinary Members.

The Honorable Sir Henry Seton, John Trotter, Esq., C. S., and G. W. Johnson, Esq., Barrister, proposed by the President, and seconded by Dr. Wallich.

Woolriche Whitmore Ryan, Esq., proposed by Dr. Wallich and seconded by Dr. Spry.

Francis Curwen Smith, Esq., C. S., proposed by Dr. Spry, and seconded by T. P. B. Biscoe, Esq.

Wm. Sinclair, Esq. (Chundry, near Maldah,) proposed by Wm. Storm, Esq., and seconded by P. Macarthur, Esq.

J. W. Cragg, Esq., proposed by Wm. Storm, Esq., and seconded by Dr. Spry.

Captain Fenning, Artillery, and Lieutenant Burnett, Artillery, proposed by Dr. Spry and seconded by Dr. Wallich.

Arnold H. Matthews, Esq., (Asamchund, near Allahabad,) proposed by John Donald, Esq., and seconded by Dr. Spry.

Allen Campbell Dunlop, Esq., proposed by D. Hare, Esq. and seconded by Dr. Wallich.

The Annual Report for the past year, on the condition of the Society, was submitted by the Secretary, and will be printed in the monthly proceedings of the Society.

The report of the Cotton Committee recommending the purchase of the better sorts of indigenous cotton seed for transmission to Captain Jenkins, the Governor General's Agent in Assam, was next read.

The award of the Cattle Committee at the exhibition on the 1st instant, was laid on the table.

It was proposed by Mr. Cracroft, seconded by Mr. Piddington, and resolved, 'That the Cattle Committee be requested to lay before the next Meeting for discussion, what prizes they may recommend to be offered for the importation of cattle and sheep, specifying the amount of each, and the description of the animals.'

A list of the prizes awarded to native gardeners at the Annual Horticultural Exhibition on the 1st instant, was also laid on the table.

After this the Secretary circulated round the table, the various presents which had been forwarded for the Library and Museum of the Society.

LIBRARY.

1*st*. *Six copies of "the Report of the Committee, appointed at a Meeting of the Agricultural Society on the 3rd day of August* 1838, *to take into consideration the present state and condition of the Colony of Western Australia: embodying a statistical report drawn up to the end of June* 1837, *with a supplement to the close of the year, by His Excellency Sir James Stirling, Governor."* Transmitted by A. Wayler, Esq., Honorary Secretary, on the part of the Western Australian Agricultural Association.

Printed at Perth, Western Australia.

2*nd*. A pamphlet by Mr. H. Piddington, '*On the Scientific Principles* of *Agriculture, considered as a branch of public education in India;* presented by the author.

3*rd*. *Two copies of 'the proceedings of the Agricultural and Horticultural Society of Bombay;'* presented by the Society.

(*Note*.—From a paragraph in the preface to this report, it would seem that the support which the Agricultural and Horticultural

Society of India derived from the Supreme Government, was overestimated by the Bombay Society. What the Agricultural and Horticultural Society of India do at present get, is the sum of 2,675 rupees annually.)

4th. A copy of '*Transactions of the Society of Arts,*' Part 2nd, Vol. 51 ; presented by the Society.

5th. '*New England Farmer,*' Vols. 15 and 16 (6 and 7 of New series), presented by Dr. Wallich.

MUSEUM.

1st. Varieties of Barley and Rye, grown on the Estates of several settlers at Swan River ; also, specimens of Wool from 2 Saxon Rams, which were sold at public auction for 8 and 10 guineas : presented by the Western Australian Agricultural Society.

2nd. A sample of cloth, made from cotton, the produce of seed sent by the Society, to Suddiya, Upper Assam : presented by Dr. Wallich, on behalf of Capt. Jenkins.

3rd. A sample of cotton produced at Hidgelee from Seychelles seed, furnished by the Society : presented by Dr. Alexander Smith.

(*Note.*—The two last named articles were highly approved of by the members who were present. The staple of the latter was considered particularly good.)

4th. Sugar-canes, grown from Otaheite stock, in the garden of the Nizamut at Moorshedabad : presented by Captain Pemberton, Agent to the Governor General, on behalf of his predecessor, Colonel Caulfield.

5th. Specimens of Grain, (*'Ouse Dhan,'*) presented by the Branch Society of Assam.

The thanks of the Meeting were voted to the different donors for their various contributions.

Mr. Piddington submitted for inspection an instrument called Pyknomoter 'for testing the exact point to which sugars of all kinds, whether from cane or goor, should be boiled.' As a proof of the accuracy of this instrument Mr. Piddington states—'that of about twelve thousand maunds of goods, mostly of low quality, (and these are the most liable to failure,) only two hundred and ninety had to be re-boiled.'

COMMUNICATIONS.

1.—*Agricultural Statistics.*

The first communication submitted to the Meeting was a letter from Government, requesting that the Society would undertake the management of the scheme recommended in the Special Report recently made by the Society to the Government as to the best mode of obtaining the price of produce throughout the empire.

To H. SPRY, ESQ., M. D.
Secretary to the Agri-Horticultural Society.

SIR,

I am directed to acknowledge the receipt of your letter dated the 19th instant, submitting the Report of a Special Committee appointed by the Society on the best means of procuring local information in respect to the prices, &c. of agricultural products of India.

2. In reply, I am directed to state, that his Honor the President in Council has ordered the Lithographic Committee to give you the aid of that establishment in preparing forms and statements for circulation to the medical officers, and will be happy to learn, that the Agricultural and Horticultural Society can procure from the medical or any other officers, the information required by the Statistical Committee of Agriculture and Commerce of the Royal Asiatic Society of Great Britain and Ireland. His Honor in Council cannot think that the objects of the Society would be effected with sufficient care by imposing on the public officers, the necessity of furnishing the statements suggested in addition to the business already entailed upon them.

I am, &c.
(Signed) H. T. PRINSEP,
Sec. to the Govt. of India.

Council Camber, Jan. 23, 1839.

The Meeting was not indisposed to undertake the extra labour which the Government had thus delegated to them, and as far as their services went, it should be cheerfully given. The members, however, considered, that the Government in common fairness ought to hold the Society free from any expense, and it was determined, that the Secretary should, before commencing operations, address a letter on the subject to the Chief Secretary, requesting that besides the use of the Government Lithographic Press, which had been placed at the disposal of the Society by his Honor in Council, the trans-

mission of letters free of postage to and from the interior should also be conceded, as well as any other privilege, the withholding of which might cause an expense to the Society.

James Pattle, Esq. therefore proposed, Dr. Wallich seconded, and it was resolved—that the Special Committee remain as now constituted, and give the Society the benefit of their services. Mr. Ewart suggested, that the name of Dr. D. Stewart be added to the Committee, which was done.

2.—*Sugar-Cane from the Island of Otaheite.*

His Excellency Rear Admiral Sir Frederick Maitland announced to the Society through his Secretary, "that Captain Nias, who will on his arrival in India, proceed to New South Wales in H. M. Ship *Herald*, to assume the duties of Senior Naval Officer on the Coast of Australia, will be furnished with a copy of the (late) Secretary's letter, and instructions of the Society for packing the canes, and with His Excellency's orders to further the objects of the Society as therein expressed, as far as the service upon which he is to be employed will admit."

3.—*Caoutchouc and other Products.*

Committee of Agriculture and Commerce of the Royal Asiatic Society.

Professor Royle, Secretary to the Committee of Agriculture and Commerce of the Royal Asiatic Society of Great Britain and Ireland, in a letter to the address of the late Secretary, calls the attention of the Agricultural Society of India to concerns of great importance connected with the resources of the country. The letter and the discussion which ensued, excited great interest.

Royal Asiatic Society, Grafton Street, Bond Street, Oct. 27, 1838.

"You wish to know what are the more immediate objects of our Committee. Its title is a bad one as we cannot here do any thing for the Agriculture of India, except co-operating with and assisting you.

"In Mr. Holt Mackenzie's and my proposal for the formation of this Committee, you will see the general objects touched upon which we contemplated in its formation. On Mr. Mackenzie becoming the Chairman, he addressed the members on the more precise *present* objects of the Committee,—that is, the investigation, chemical examination, and practical application, of the different products of India, likely to be useful to manufacturers here. As I have not time myself,

my assistant, Mr. E. Solly, makes a chemical analysis of the different substances we obtain, and then see to what substances, already in use, by manufacturers, they are analogous. They are then presented to manufacturers interested in the kind of product, and these are very willing to submit them to further practical experiments and ascertain if they will answer the purposes of their trade or manufacture. Several very interesting results have already attended this mode of proceeding. I need not allude to the Caoutchouc, which your Society so actively took up, and the zealous and talented officers in Assam have so successfully carried out. You have been addressed on the subject by the Secretary of the Caoutchouc Company, as well as by Mr. Sievier, and I have written to Dr. Spry and previously to Dr. Wallich, who will no doubt make the contents known to your Society as far as they can be of any use to the Society or Collectors. I may repeat that there is not the smallest doubt of this becoming an extensive article of Indian Commerce, if managed with moderate prudence. The London Caoutchouc Company are willing to purchase all that is produced at prices of course proportioned to the quality.

"I have also written to Dr. Spry* for some Burmese varnish (*Chetsee*) which is also found in Munnypore and called Khew, (vide

* *Extract of a letter, from Professor Royle to Dr. Spry.*

London, October 27, 1838.—"There is still some doubt about the Assam caoutchouc as at present prepared whether it is fit for cutting into the finest thread or strong enough for that required for ropes for machinery, &c. But this can only be a doubt for a time as I feel well satisfied that from the quality of the rubber that it will eventually, nay very soon, be prepared of quite as fine, strong, and elastic a quality as the best from Para. Even at the price at present procurable, it must be a remunerating one and it may be nearly doubled or more by careful preparation. I hope you have enlightened the people on the subject of the necessity of preparing it in layers. The process is tedious and laborious if you please, but it is the only manner we at present know in which strength and elasticity are fully attained.

"The bottle or cylindrical form was required because there was no other way of cutting it into threads then known. But a knife has been invented and patented, and which the Caoutchouc Company have bought for £2,500 which enables a person to cut flat pieces into thread with the same facility that you saw done, when in London, with the circular pieces. So that now you may instruct your correspondents to prepare in *flat pieces* if more convenient, as the less bulk it will occupy will be a further advantage in carriage and freight. But be particular in still enforcing the rubber being prepared in layers free from porosity or moisture as in this alone depends the highest price being paid.

Wallich ;) as well as for some wood oil (*Gurjun*) and both Persian and Rangoon Petroleum, if procurable, for the sake of experiment. In the *Athenæum* and *Literary Gazette* you may have seen reports of the analysis by Mr. Solly of the astringent gum of the *Dhak Pulass* or *Butea frondosa*, which is so common all over India. Mr. Brewin, an extensive tanner has called upon me and made trial of some which I recommended to Mr. Beckett late of Allygurh. He approves of it highly and would gladly get 20 tons if he could get any intelligence respecting the price, but I have no doubt it might be afforded at the same rate as Catechu (*Kath*) ; it would be an experiment well worthy trying. If you were to make the fact known of its being in request, residents all over India might be induced to collect it.

"The Barbary wood and root is also in demand here. The supply from the South of Europe fails, and the dyers want it much. We have had some Barbary root from Ceylon tried here. It is pronounced superior to any in the market: I have suggested that the extract which is made in the hills and sold in the bazars by the name of *rasout* might be tried as a dye. Mr. E. Solly's paper on this Barbary will be among the first read when our meetings commence next month, and I shall address you on the subject, as well as on that of the *Butea kino*, which might, I think, also be prepared of a superior quality for medicinal use, as it is particularly eligible from the conjunction of astringent with gummy principles. As the Barbary is no doubt common in the hills near Capt. Jenkins, will you suggest to him the subject as well as of the Butea kino.

"I have written to Dr. Falconer and Capt. Cautley for articles from Northern India.

"You will be tired of all the above instructions; but I see the people in India complain, first of not knowing in what form a thing is best suited for the market here, when a form is sent and a mode recommended it is found fault with as being tedious and not complied with.

"With respect to the quantities required here I believe there will be no limit to the demand. * *

"If they attempt to raise the price above what is fair it will recoil upon themselves as the South American will immediately be bought and reduce the price again; and the West India proprietors are growing the caoutchouc tree on their estates. But there is room for all. Has any one thought of my suggestion of planting the *Ficus Elastica* all over the country. It yields good caoutchouc up as high as Saharunpore. * *

"The *kino* of the Butea or Pulass or Dhak ke gond, is likely to be in great demand"

"The seeds have been received from Dr. A. Campbell and I will make some observation on them on some future occasion."

Dr. O'Shaughnessy begged permission to remark, that he had made *three* of the *four* articles mentioned by Dr. Royle, the subject of extensive experiment. For specimens of the black varnish of Burmah and of Assam, Dr. O'S. was indebted to Dr. Wallich. He applied it to leather, wood and metal, and found that in richness of color, flexibility and impermeability to moisture it was in every respect equal to the article employed by the patent leather manufacturers in Europe. The "*Gurjun*" or "wood-oil" Dr. O'S. observed was properly speaking a balsam obtained from several species of Dipterocarpus, common in many parts of India. By distillation this balsam yields volatile oil, a resin being left behind. The oil Dr. O'S. found to be isomeric or identical in chemical composition with that of the Balsam of Copaiba, and he had accordingly used it extensively in his hospital with exactly the same medicinal effects. He had sent specimens to England by Mr. Johnson of the "*Catherine*" now leaving this port. Not only was this article likely to become of importance in Medicine, but also in the Arts in many of which Copaiba is now used. While Copaiba by the latest "Drug Price Current" was at 5 shillings and 6 pence the lb., twenty lbs. of the essential oil of *Gurjun* may be obtained of the very best quality for about ten shillings.

The *Rasout* alluded to by Dr. Royle and which that gentleman was the first to discover the source, Dr. O'S. stated to abound in a rich and valuable yellow coloring matter. It was moreover of great efficacy in the treatment of intermittent fevers. It would readily be obtained for from 4 to 6*d*. the lb. by proper arrangements in the districts where the Barbary is found.

Two Reports, from Mr. Sievier, Manager of the London Caoutchouc Company, were brought to the notice of the Meeting. (See Appendix, Nos. 1 & 2.)

4.—*Cochineal.*

The Secretary communicated a most acceptable piece of intelligence regarding the prospect of an early supply of fine grained cochineal insects and nopal from the Isle of Bourbon through the kindness of Monsieur Bedier, Commissioner of Marine Affairs at that island.

"J'ai recut tout recemment votre lettre du 39 Aout dernier. Vous n'avez pas à craindre de commettre, d'indiscretion en reclamant de mon zéle pour votre Société. Je vais m'occuper avec M. Richard à vous préparer un nouvel envoi de cochinelle et de nopal, mais afin d'en assurer le succès, nous attendions, pour vous l'expedier le retour de la mousson du S. O. pendant laquelle les traversées d'ici au Bengale sont tres courtes. Il en peu probable que des cochinelles qui vous seraient envoyées dans ce moment pourraient supporter la langueur d'un voyage de plus do 90 jours. Soyez du reste bien convaincu que nous continuerons à vous faire des envois jusqu'au moment où vous serez assuré de la propagation de ce precieux insecte au Bengale, ayant le vif desir de contribuer à procurer à votre immense population cette lucrative et importante cultur.."

5.—*A New Branch Society at Backergunge.*

The Secretary read a note from F. Stainforth, Esq., the Judge at Backergunge, communicating the intelligence of the residents at that station being about to establish a Branch Society there, and asking "what assistance the Parent Society is disposed to render."

The Secretary informed the Meeting that as Mr. Stainforth's letter was pressing, he had ventured to reply to it by return of post, and had intimated that the Society would be willing to contribute to the Backergunge Branch Society the support which was afforded to the other Branch Institutions, namely, two silver medals and fifty rupees annually.

6.—*Mysore.—School for Gardeners.*

A copy of the Proceedings of two Meetings of the Mysore Agri-Horticultural Society was laid before the Society. (See Appendix, No. 3.)

7.—*Egypt.—Cotton and Indigo Seed.*

A letter was read by the Secretary from Mr. Waghorn at Cairo, offering his services to assist the Society in procuring more cotton and other seeds. Mr. Cracroft spoke on the superiority of the Egyptian Indigo seed, and proposed that a small quantity should be obtained which was agreed to.

A letter from Mr. Chambers, of Calcutta, was submitted by the Secretary, requesting to be supplied with cotton seed for transmission to the Swan River. The Secretary stated, that he had complied with the request, and had furnished Mr. Chambers with a parcel of Seychelles and Egyptian seed.

8.—*Western Australia.*

The letter of Mr. Wayler, Honorary Secretary to the Western Australian Agricultural Society, was also read.

"A communication with India has always been a desire of primary consideration, and its tardy accomplishment has almost precluded expectation in the minds of many. It was anticipated that from that quarter, labor might be drawn to any extent, and it is to the want of such invaluable assistance, that we are making no more rapid progress than we are doing; few will venture to improve or cultivate to the extent of their means, from the uncertainty of gathering the produce of their labors, while the extortionate demands of such of the working class, as may be procured, exhaust the profits of farming operations. Still we *are* progressing, and under such varied disadvantages, at a rate, that is the surprise of all who visit our shores. That many may be induced to become not only visitors, but fellow-colonists, from your less salubrious climate, is the ardent wish of us all."

Before the Meeting broke up, the Secretary called the attention of the Society to the necessity of adopting measures for obtaining a new die for the Society's medals, the present die having a flaw in it. Mr. Cracroft was so good as to mention that as he was about to sail for England shortly, he should be happy to take charge of any commission he might be intrusted with by the Society, that he should willingly attend, at all times to any request he might receive as to the purchase of English seeds and so on, and that as the great expense of a new die for the Society's medals was now the chief consideration, he should be happy, as soon as he reached London, to consult Mr. James Sharp on the most economical mode of proceeding. The Meeting expressed themselves grateful to Mr. Cracroft for his polite offer, and willingly accepted it.

It should be mentioned that to the whole of the numerous correspondents who had favored the Society with their communications, the thanks of the Meeting were accorded in the order in which they were read.

HENRY H. SPRY, M. D., *Secretary.*

APPENDIX.

No. 1.

London Caoutchouc Company, 36, King Street, Cheapside,
14th Aug. 1838.

SIR,

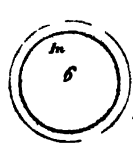
In answer to your communication of the 18th of November, 1837, for which we feel exceedingly indebted, I beg to say there are not at present any works published treating upon the manufacturing properties of Caoutchouc: its notice is solely confined to lectures.

The Company will shortly have the pleasure of sending with this, specimens of the different articles manufactured, and hope the Agricultural Society will favor them with placing the same in their Museum.

In procuring the Caoutchouc for manufacturing purposes, two sorts can be used; one for dissolving for waterproofing fabrics, or for the manufacture of Caoutchouc by destructive distillation: the other for weaving into fabrics, to give them an elastic quality; in the first case it is much better to have it free from bark or extraneous matter, in the second it is absolutely necessary; in fact it is *useless* if not free even from porosity. The mode of manufacture in the second case, is to cut it by circular knives into long and even threads, which are afterwards stretched upon drums to their utmost extent: the least piece of bark or an air-cell will cause it to break.

We can cut it into threads should the Caoutchouc be gathered in the form of a disc, quite as well as if made upon the shape sent by Professor Royle: the bottle shape as alluded to in our former communication, causes considerable waste.

If it should be found more convenient to collect it in the form of a disc, the mould should be in the form of a wooden trencher, but not more than 6 inches in diam. and $\frac{1}{2}$ to $\frac{5}{8}$ of an inch deep—thus



This may be filled by layers put on with a brush, or any other convenient method, layer after layer, until it is $\frac{1}{2}$ to $\frac{5}{8}$ in thickness.

The form sent by Dr. Royle with instructions will save the cutting off of the neck, and is much more suitable to fit the cylinder upon which it is absolutely necessary to place it, previous to cutting.

The disc is cut by a different machine.

I send you a sample of Caoutchouc given to me by George Swinton, Esq. of the India Company's Service, gathered in the Province of Sylhet. I understand from him that it abounds for many hundred miles over the country. This is the best quality I have seen; it might from its colorless quality be made extremely useful in the arts if properly collected. You will perceive upon examination that there are some parts collected colorless and semitransparent: and on other parts of the same mass it is colored, which evidently proceeds from the bark. If you cut the mass through with a sharp knife, it will be better understood, and you will find some pieces of the bark from whence the coloring matter proceeds, if the pieces are taken out and put into water it strongly tinges it. Whether or not the tree when touched should have a portion of the bark removed to prevent this I cannot say, but that it exudes from the tree in a colorless state is quite evident by the samples.

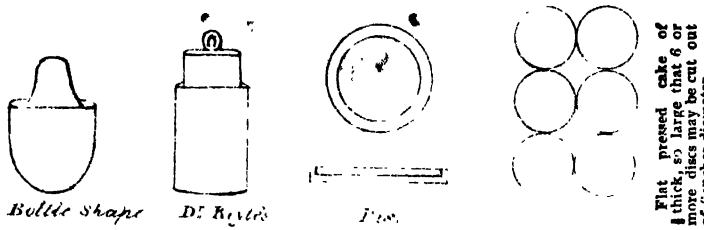
Should it be possible to collect the Caoutchouc in the semitransparent state, it would fetch a high price for varnishes, and could be used in the most delicate tints of portraiture: it would be invaluable to coachmakers by rendering their varnish and colours flexible.

I have by me some of the juice or milk from the Ficus Elastica sent over in a bottle. I find by looking at it through a microscope, that it is composed of small solid angular atoms floating in a serum, in the same manner as you find the red globules of the blood, and that these solid atoms when pressed together or the aqueous part being abstracted by blotting paper so as to bring them into immediate contact, become perfect Caoutchouc fit for immediate use and quite as solid as if dried by inspissation.

This proves that the process of inspissation need not be resorted to, but that the milky juices might be put into bags and pressed by an Hydraulic press precisely in the same manner that spermaceti is obtained from the oil, or stearine from tallow. I should recommend this method to be tried as we should then obtain it perfectly free from air bubbles or dirt.

The exudation from the tree might be collected in barrels, and brought to Calcutta, or any convenient place: there strained through a sieve, and afterwards subjected to the pressure.

On referring to your diagram in your letter you say "Would not Caoutchouc be equally valuable if made on *hollow* earthen vessels" of the bottle form? the South Americans make them precisely the same upon a *solid* clay mould, when a sufficient quantity of Caoutchouc is inspissated upon the surface, a quantity of the moulds with the Caoutchouc upon them are thrown into water, and the clay dissolving is washed out. The form will do for us, but not quite so well as that sent by Dr. Royle. If clay shapes are to be made one would be as easy as the other. You also speak to objections as to the form for the English market. I do not believe it would make any difference if sent in any of the underneath forms, with a breadth proportionate to the length.



The black color shewing the rubber and the yellow, the mould or shape. It would not matter if the large flat mass was 1 inch or 1½ thick.

So great is the demand for Caoutchouc at this time, and I believe it is only as a commencement, that it is a valuable and saleable commodity in any state; its value at present is from 2½*d.* to 2*s.* 3*d.* per ℔. I have no doubt that could a quantity be collected as I have before mentioned in the transparent state, it would reach a price of from 4*s.* to 6*s.* per ℔.

I have the honor to be,
Your most obdt. Servant,
R. W. SIEVIER, *Manager.*

No. 2.

Report of Mr. R. W. Sievier to Dr. Royle.

22*nd June*, 1838.

I have tried the qualities of the Caoutchouc collected by Captain Vetch, 1st, as a solution for flexible cement, also cut into threads or fibres for the manufacture of elastic fabrics.

I have not yet had time to try what per cent. of Caoutchoucine it will yield by destructive distillation. You will receive with this

3 Bottles of solution marked A, B, C.
3 Samples of the Caoutchouc Do. Do.
3 Ditto ditto, - - - - Thread Do.
3 Ditto ditto, - - - - Strained upon a small reel fit for use.

Two pieces of the Caoutchouc cut thin and placed between two pieces of glass that you may see the different colours—one is transparent, the other opaque. I have tried to exclude the air from them, that they may keep in the same state. The letters A, B, C, are corresponding with the samples of Caoutchouc, viz. Solution marked A, B, C, is from A, B, C, Caoutchouc, as also the thread.

1st. Solution in Naphtha, B and C. These solutions are equal to that made from the best South American Caoutchouc, (Para.) It is better in one respect; viz. it dissolves easier and more Caoutchouc is taken up by the same quantity of spirit.

A will not dissolve so well and is cloudy.

N. B. These initial letters refer to the samples of Caoutchouc collected by Captain Vetch, and so marked by him.

2nd. Thread—for the manufacture of elastic fabrics.

This is by far the most important use that has yet been discovered for Caoutchouc; that from Para has been held in high estimation for this purpose on account of its great purity and strength. You will find a sample of thread from each of the pieces of Caoutchouc A, B, C, also, a piece of A and C cut thin between the glass, that you may see the strata (if so it may be called) that it is forwarded in. C is evidently a number of pieces which have been laid together in a new state and adhered in one mass; and although they are all made in the same manner, and at the same time, there is a considerable difference in their strength, that of the lighter colour being much the best.

A. Thread, on account of so many strata or layers is unserviceable for thread; the layers are very irregular and imperfectly united; this Caoutchouc is opaque, which if gathered from the same tree, and at the same time, is very singular, it makes also the most imperfect solution. (I have examined it with the microscope, which see afterwards.)

B. Thread: when this has had the advantage of six months' exposure to the air, it will be equal to any Caoutchouc from Para*. The

* The Caoutchouc from Para will not work well until it has aged, as we term it.

threads upon the reel have undergone a process which gives them the quality of age, and this marked B is fit for any purpose; this is from sample B.

C. Thread; is a good qualitied Caoutchouc in the lighter coloured strata, as is seen by looking at it through the double glass, but the darker is comparatively rotten, which renders it useless for thread.

I have been obliged in the samples A and C to cut out the bad parts and join the thread at least 40 times in each of the short lengths reeled.

In examining the different parts with a microscope to discover if possible the cause of so much difference in their qualities, I find that A in the lighter parts, which is very strong, is composed more visibly of fibres running lengthways: crossways is represented by the small strips of paper in the sample between the glass. When this Caoutchouc is strained lengthways the fibres are plainly seen by a microscope, having a silky appearance, if stretched crossways in the direction of the strips of paper, the fibre is not half so visible and it quickly breaks. Caoutchouc gathered or inspissated in this manner is perfectly useless for thread.

B. In this hardly any fibre is perceived—it seems a mass.

C. Has but very little.

I have no doubt, if taken up in the East with the spirit it has been begun with, that in a few years the production of Caoutchouc will be as valuable an article to the grower and merchants as indigo. There is still great improvement to be made in the collecting of that sent by Captain Vetch, although it is worth 100 per cent. more than any I have seen sent as an article of commerce from the East Indies.

(Signed) R. W. SIEVIER,

Manager.

P. S. I presume all the samples are collected at the same time and from the same tree, you will remark the great difference in the quality, as well as one being opaque and the other transparent—can this be in the mode of inspissation?

No. 3.

Mysore Agri-Horticultural Society.

To the Secretary to the Agri-Horticultural Society of Bengal.

DEAR SIR,

Enclosed I have the pleasure to forward to you a copy of the proceedings of two meetings of the Mysore Agri-Horticultural Society.

I regret that we have lost our late able Secretary Lieut. Munro by the removal of his Regt. from the station; and the loss of many subscribers has very much reduced our means of usefulness; we still hope to be able to continue the Society.

Your's faithfully,
THOS. J. SMITH, *Assistant Surgeon,*
Secretary.

Bangalore, January 22, 1839.

At a Meeting of the Subscribers held at the Public Rooms, Bangalore, on Wednesday, 9th January, 1839.

Major General Sir Hugh Gough, K. C. B. in the Chair.

It was Resolved,—That in consequence of a great part of the members of the Committee, including the Treasurer and Secretary, having left or being about to leave the station, the following gentlemen be requested to form the Committee for the year commencing on the 1st January, 1839.

Brigadier Burton,	Captain McCally,
Major Montgomerie, C. B.	,, Cunningham,
,, Stones,	Dr. Boyd.
,, Ley,	

Captain Coffin, *Treasurer.*

Dr. Smith,
Geo. S. Gough, Esq. } *Joint Secretaries.*

The Treasurer submitted his accounts, shewing a balance of Rupees 679-15-5 in favour of the Society to 31st December, 1838.

In consequence of the falling off in the number of members occasioned by so many having left or being about to leave the station, and the consequent low state of the funds, the Patron and Subscribers present at the Meeting, earnestly request a full meeting of the Society on Monday morning the 14th instant, at ½ past 7 o'clock, at the Public Rooms, to form some rules consequent thereon.

Resolved,—That the Officiating Secretary be requested to give publicity to the Rules of the Society amongst the new arrivals at the station and to request those who wish to avail themselves of the advantages of the garden, or to support so useful an institution to send in their names as subscribers to him.

(Signed) WILLIAM MUNRO,
Officiating Secretary.

At a Meeting of the Subscribers held at the Public Rooms on Monday 14th January, 1839.

Present.—Major General Sir Hugh Gough, K. C. B., Brigadier Burton, Major Montgomerie, C. B., Captains McCally, Coffin, Bingham, Whittock, Western, Lieutenants Munro and Gabbett; Drs. Mouat, Smith and Parkison; Rev. G. Trevor, Geo. S. Gough, Esq.

Major General Sir Hugh Gough, K. C. B. in the Chair.

Captain Coffin having stated his inability to take the office of Treasurer, Captain McCally was elected, and the Rev. G. Trevor, Captain Bingham and Captain Western added as Members of the Committee.

Proposed—Brigadier Burton, Seconded—Major Montgomerie, C.B.

That the cordial thanks of the Society be presented to Lieutenant Munro, H. M. 39th Regiment, for his constant and assiduous exertions in the service of the Society, and this Meeting desires to record its grateful sense of the many obligations under which they are placed by the zeal displayed by him on behalf of this institution, which is mainly indebted to him both for its original formation and its subsequent and increasing prosperity.

The Meeting desires also to record its high sense of the services of their late Treasurer Major Ley, who with Lieutenant Munro was one of its earliest supporters, and one of the warmest friends of the Society.—Carried unanimously.

Proposed—Dr. Mouat, Seconded—Lieutenant Munro.

That the sale of fruits and vegetables be in the first instance confined to the Members of the Society, and that the Committee be authorized to take measures if necessary for limiting the other advantages of the Society to Subscribers.—Carried unanimously.

Proposed—Rev. G. Trevor, Seconded—Brigadier Burton.

That in consequence of constant applications to the Secretary for gardeners from all parts of the country, the Committee be requested to make arrangements for instructing such boys as are desirous to learn gardening and to establish a school for this purpose in the garden.—Carried unanimously.

Proposed—Captain Coffin, Seconded—Captain Whittock.

That the thanks of the Meeting be given to Major General Sir H. Gough, K. C. B. for his obliging conduct in the Chair.

THOS. J. SMITH, *Assistant Surgeon, Secretary.*

Bangalore, Jan. 22, 1839.

PROCEEDINGS

OF THE

Agricultural & Horticultural Society

OF

INDIA

APRIL,

1841.

CALCUTTA:

PRINTED AT THE BAPTIST MISSION PRESS,

CIRCULAR ROAD.

1841.

AGRICULTURAL SOCIETY OF INDIA.

PROCEEDINGS.

APRIL 14, 1841.

Agricultural Society of India.

A General Meeting was held at the Society's Room, Town Hall. The Hon'ble Sir Edward Ryan, President, in the Chair.

(Seventeen Members and two Visitors present.)

The Proceedings of the March Meeting were read and confirmed.

MEMBERS ELECTED.

The gentlemen proposed at the last Meeting were elected Members of the Society: viz.

Captain Bayles, Major Huthwaite, Messrs. C. P. White, Robert Trotter and John Taylor.

FOR ELECTION.

The names of the following gentlemen were submitted as candidates for election:—

Lieut. A. P. Phayre, Senior Assistant to the Commissioner of Arracan,—proposed by the Secretary, seconded by Dr. Strong.

A. J. Dunbar, Esq., M. D., Civil Assistant Surgeon, Azimghur,—proposed by Mr. Robert Neave, seconded by Dr. Spry.

J. W. Kaye, Esq.,—proposed by Lieut. Burnett, seconded by Dr. Spry.

Lieutenant G. W. Bishop, 71st Regiment, N. I., Commanding Sappers and Miners at Darjeeling,—proposed by Mr. Chas. Huffnagle, seconded by Dr. Wallich.

Captain R. Napier, Executive Officer at Darjeeling,—proposed by Mr. Huffnagle, seconded by Dr. Wallich.

J. M. Vos, Esq., Architect, Calcutta,—proposed by Mr. Woollaston, seconded by Dr. Spry.

Captain J. A. Crommelin of the Engineers,—proposed by Mr. John Cowie, seconded by Dr. Spry.

Robert Smith, Esq., Firm of Alexander, Turner, and Co.,—proposed by Mr. Wm. Hickey, seconded by the Hon'ble Sir E. Ryan.

Presentations to the Society.

LIBRARY.

1. Madras Journal of Literature and Science (No. 28)—*presented by the Madras Literary Society.*

2. Six copies of a Table and Appendix shewing the selling price of most of the ordinary productions of India in various districts of the Empire,—deduced from tabular statements made up in the office of the Agricultural and Horticultural Society—*forwarded by Government.*

MUSEUM.

1. Specimen of Cotton grown at Sydney from Seychelles seed,—and a maund of Seychelles Cotton seed received from the Mauritius—*presented by Dr. J. V. Thompson of Sydney.*

Dr. Thompson mentions that although this seed did not reach him in a fresh state, yet he has been very successful in rearing many plants, by subjecting the seeds to maceration in

closed vessels with water mixed with 1-10th part of Chloride of Soda.

Dr. Thompson intimates that he has above thirty different kinds of Cotton under culture in a small and experimental way, and hopes to submit a short paper to the Society on the subject of this important staple. In the meantime, Dr. Thompson states that he is collecting all the best kinds of seed, and should feel obliged by any assistance the Society could render him, particularly by forwarding him seeds of the Dacca, Guzerat and Tavoy Cotton.

The Secretary intimated to the Meeting that he had already addressed some Members on the subject, and hoped to be shortly able to comply fully with Dr. Thompson's wishes—moreover that he had transmitted packets of the American seed lately received.

2. A few seers of acclimated Seychelles Cotton seed and a small quantity of acclimated Carolina Paddy, grown at Hidgelee—*presented by Dr. Alexander Smith.*

In his note submitting the above seed, Dr. Smith states that about nine months since he received from the Society one seer of the Carolina Paddy, which Mr. Hodgkinson presented in June last; that with the exception of one chittack, the whole was sown in one cottah of land and the produce has been *one maund and twelve seers*, which exceeds the rate of 25½ maunds for one maund of seed per begah; Dr. Smith mentions further that this is the produce under many disadvantages, for he received the seed late in the season, and the Rice crop in the Hidgelee district was, last season, for the most part a failure from the want of rain. Several of the Natives having seen the success which has attended the introduction of this new kind of Paddy have been clamorous for seed in order to give it a trial.

This specimen was highly thought of by the meeting, and a very good judge of the staple considered that this Rice was quite

equal to the original Carolina stock, and at the present market price would realize fully fourteen shillings more per cwt. in the English Market than the ordinary Bengal kinds.

3. A few Bulbous Roots from Tavoy—*presented by Major McFarquhar.*

Major McFarquhar does not know the name of this plant, which bears a very pretty flower, but thinks it is of the Tulip tribe;—it thrives best in a cool moist place.

4. A small assortment of stones of English fruit trees, and a few other kinds of seeds,—received by the March Overland Mail—*from the Hon'ble the Court of Directors of the India Company.*

5. An enormous specimen of the Bail fruit (Ægle Marmelos) two feet in circumference, grown in his garden near Barrackpore—*presented by Baboo Prosonocomar Tagore.*

In transmitting this specimen Baboo Prosonocomar Tagore mentions that he considers the tree whence this fruit is obtained to be indigenous to Gangetic India, since it is consecrated to *Shiva,* one of the Hindu Deities. He states moreover that it is known to possess medicinal properties and to be very largely used to make a particular sherbet of.

6. Specimens of New Zealand Wheat and Oats, and a sample of the wild Flax of New Zealand—*presented by Mr. Stocqueler on behalf of Capt. Shuttleworth of the "London."*

7. Specimens (1 and 2) of Moonga Silk—*presented by Mr. M. Herring of Bissnath.* (Referred to the Silk Committee.)

8. Twelve seers of the seed of the Sapan Wood (Cæsalpinia Sapan) grown under the cultivation of the Convalescent Insanes at Russapuglah Insane Hospital—*presented by Dr. Strong.*

Dr. Strong mentions that a further quantity for distribution among the Members will be available by the next Meeting.

9. Sample of Rope, spun under the superintendence of Mr. Hornby, the Jailer of the Great Jail at Allipore, from the fibres

of the Aloe plant, which has likewise been grown under the cultivation of the Convalescent Insanes—*presented by Dr. Strong*.

Mr. Hornby has been at the pains to test the fibre of this rope relatively with country Hemp, Jute, and Coir, and states, in a note to Dr. Strong, that it far exceeds any of them singly. He is of opinion that it would make splendid running tackle for shipping, if it was tarred to preserve it from the effects of weather.

The following is the memorandum furnished by Mr. Hornby:

CALCULATION OF THE POWERS OF ALOE FIBRE ROPE, COUNTRY HEMP*, JUTE†, AND COIR ROPE‡, TRIED AT THE ALLIPORE JAIL ROPE WALK.

Aloe Fibre Rope, 1 fathom long, and 3 inches in circumference, broke in a weight of,

lbs. 2,519½ Troy.

Coir, ... do.. do.. do.. „ 2,175 do.

Country Hemp,..... do.. do.. do.. „ 2,269½ do.

Jute,..... ..... do.. do.. „ 2,456½ do.

From the Cocoanut fibre (coir) Rope of every size to a 14 inch cable has been made by the prisoners and is now under trial by the Government Marine authorities. Mr. Hornby mentions that he can make the Rope to any size that is required.

State of the Nursery.

The Garden Committee submitted its report on the state of the Nursery. It was mentioned that in accordance with the wishes of the Society, the Committee had the satisfaction of reporting that the recommendation to break up and plant some extra land to meet the growing demand for Sugar Canes had been carried fully into effect. Seven additional begahs have been planted, making the Sugar Cane cultivation in all to

* Crotolaria Juncea.—H. H. S. † Corchorus Olitorius—ditto.

‡ Cocos Nucifera—ditto.

amount to thirty-one begahs, while the whole extent of garden cultivation exceeds fifty-three begahs. The Statement in detail the Committee reported as follows:

A statement shewing the measurement of the ground of the Agricultural and Horticultural Society's Nursery, including Sugar Cane Plantation, Tanks, Roads, Building, and various other plantations, ...

	B.	C.	C.	P.	B.	C.	C.	P.
					53	9	2	3
Otaheite, Singapore, Bourbon, and Java Cane plantation.	27	15	1	3				
Extended Otaheite and Singapore Cane plantation this season (between 1840 and 1841), ...	4	1	2	0				
					31	16	3	3
Guinea Grass, ...	0	13	2	0				
American Guava, ...	0	13	0	0				
Pomegranate beds, ...	1	5	2	0				
Cactus Cochinellifer beds, ..	1	7	1	0				
"Pois Noire" Cultivation, ..	0	14	2	0				
Mango Groves,.....	1	16	2	0				
Patna Plum trees,.....	0	7	0	0				
Arrow Root plantation, ...	0	5	2	0				
Sea Island Cotton, ...	0	6	0	0				
Musa Textilis plantation,....	0	12	0	0				
Four Tanks, ...	4	2	3	0				
Roads, ...	2	13	1	0				
Building, Flower Garden and out offices,..	0	12	0	0				
					15	8	3	0
					47	5	2	3
Uncultivated Ground, ...					6	4	0	0
				Total,....	53	9	2	3

Or near 17 acres.

The Committee desires to call attention to the Statement. It will be perceived by it that the principal varieties of Cane in cultivation are the Mauritius, (Sleeman's,) Singapore, (Montgomery's,) Bourbon, (Richard's,) and Batavia, (Balestier's.) A portion of the ground, however, is in China Cane, and in Otaheite Cane as received originally from Tahiti, and as there appears an impression on the minds of some persons in favor of the China, the Committee proposes to extend the cultivation of it to a small extent.

Twelve Cottahs, or little more than the sixth part of an acre, (since extended by planting out) of ground is in cultivation with the Abaca, (Musa Textilis) or Manilla Hemp, and the Committee desires to record its favorable sentiments on the healthy and satisfactory condition generally in appearance of this highly valuable plant. The Guinea Grass, the Nopalarie, the Arrow Root crop and the Black bean cultivation the Committee state to be all looking well.

Memorandum on the Distribution of Cotton Seed lately received from Government.

The Secretary submitted a memorandum which he had prepared of the progress made in the distribution of the American Cotton seed, lately received from the Supreme Government. The number of barrels sent to the Society amounted in all to one hundred and five, or upwards of four tons; of these 88 barrels contained Mexican and 17 Sea Island seed, and the distribution up to the present time, to ninety-three persons in sixty-one distinct quarters of the Empire, had amounted to fifty barrels, leaving still fifty-five barrels or about two tons to be disposed of. Dr. Spry said that he had not waited to receive applications in all instances, but had at once despatched supplies to those parts of the Provinces where he thought the seed might be acceptable and likely to thrive.

He further intimated that large quantities were under despatch to various parties, and desired to mention that any one wishing to try the seed might still obtain a supply by making application at the office.

Provision of Cotton Seed for future Years.

The Hon'ble the President desired to mention to the Meeting that the large supply of fine fresh Cotton seed, which the Supreme Government had made over to the Society for distribution, had superceded, for a time, the necessity for the Society obtaining any; still in order that the country might be kept duly furnished he thought it proper to state, that a channel for obtaining a regular supply with certainty had offered, and that as a money vote he begged to give notice of motion to the following effect:

"That the Secretary be empowered to expend the sum of 500 rupees, annually in the provision of Cotton seed from America."

It was mentioned that 1,000 rupees was already in the hands of an American Agent for the purchase of Cotton seed, but this the Secretary stated would be repaid and the order which was out be recalled, unless the mail from Europe, now daily expected, brought intelligence of the despatch.

Spread of Tree Cultivation throughout the North Western Provinces.

The Hon'ble the President desired to call the attention of the Meeting to a subject which engaged much the consideration of parties interested in furthering the Agricultural welfare of the provinces in Upper India. He alluded to the great want which was felt for a sufficiency of timber trees and firewood throughout the Azimghur, Jaunpore, parts of the Bena-

res, the Dooab, Rohilcund and Delhi Provinces, now that the manufacturing energies of the people were becoming aroused by the increasing demand that there was for sugar.

The Society (he stated) had a gold medal placed at its disposal by Mr. Tucker, late of Azimghur, for presentation to any individual, who might raise the largest plantation of trees in the Agra Presidency, so impressed was this gentleman of the necessity of some steps being taken to promote so important a measure. Other gentlemen were equally impressed with the urgency of the measure, and as he had reason to believe, that the subject had not been overlooked by Government, he begged to propose, that in order to assist as much as possible in this most laudable desire of Mr. Tucker's, whose form of premium he had now the pleasure to submit for publication, an application should be addressed to Government in the General Department for any recent information, or correspondence it might be pleased to communicate on the subject of promoting the growth of forest and other trees throughout the North Western Provinces of the Empire.

The proposition was unanimously agreed to.

Value of East Indian Flax.

The Secretary next submitted an extract of a letter which he had been favored with by Mr. Hodgkinson on some samples of Flax (similar to those so favorably reported on by the Flax Committee of the Society) forwarded by him to Liverpool.

The letter which bears date January 30, 1841, is from Mr. Grey, and he says, "From what I can judge, and having shewn them to a friend here who has probably as much through his hands as any other in Liverpool, a partner of William Jackson, Son and Co., I was surprised to see them so well, and some appeared to resemble Flax of £50 and 60 per ton value. I find in getting them into my hands however, that the quality

is far under that, as Mr. Murray seemed to consider, but the evil is probably capable of a remedy in the preparation. Mr. Murray seemed far from sanguine about them, but I trust they indicate the capability of producing an article of great importance and extent.

Presuming you have duplicates, of course I refer to the small samples and should say,

1st. The best is a lot (country Flax, native seed, 26th May, 1840)—this may be worth £40 to £45 per ton here, it is finer, softer and better than

2nd. The large parcel (country Flax, native seed, 27th May, 1840)—which has a fine broad fibre, and not much inferior; it is worth £40, if in quantity equal to sample.

The lengths are too unequal, which makes it fall upon the hackle, and is a disadvantage. Of these two samples the fibre is by no means weaker than of many other such flaxes, and probably when this is the case it arises from the preparation, which you say is so imperfect. The above seem steeped, and not dew ripened, which bad plan I think from the color and appearance of the ends, &c. has been the case with the next.

3rd. (Bengal, May, prepared by Belgians) dew-ripening, weakens, I understand, the fibre, hurts the color and even prevents its bleaching as it ought to do, and for which such flax would be used. Where water is obtainable for steeping, this method should not be resorted to.

4th. (Indian Flax, No. 1, grown in the neighbourhood of Calcutta, worth at least £30 per ton). This is better, but seems, if I mistake not, also to be dew-ripened. It is worth £35 here however.

5th. These from imported seed don't seem equal to the produce of Native.

6th. The heckled Bengal Flax, does not shew to advantage, being imperfectly dressed, and happens to be of a dry hard nature.

7th (Country Flax, Native seed, 26th May, 1840.) This mark is similar to the first, but you will distinguish it being darker colored and harsher.

Soft fibre, of lengths, so as to yield the most by hackling, silky, and with *natural sap*, in which all these are very deficient, is what is wanted,—the first is the best, I think, decidedly. Weakness of fibre is an insuperable fault where it exists, and it may be perhaps avoided by better preparation. The Belgians is very weak, and some of the others. When I get any quantity I'll see how it yields in the heckle.

Tows. One of these (Bengal Tow, native seed, 30th May, 1840), seemingly the clearing or last tow is a very good thing, worth in Dundee £30 to £35, I should say, the others from firmer tools before this, £20. Another of same mark as first worth perhaps £16. These are of great consumption as recommended before to your attention. The fine heckle tow of course can't be looked for, as I suppose that operation of dressing would rather be performed in this country, both indeed, every part of the raw fibre being well worth its freight. Codillas from £12 @ 16 20 per ton would do well, and could be obtained from the waste in preparing the better flax, observing always that the staple be good (not like "Cadifs" as some occasionally is) and the fibres strong, though they need not be of great length by any means. In flax the longer the better, though not required beyond moderation, but the fibres should be *equal* and uniform, so as all to split and yield as much dressed as possible. These flaxes on the whole resemble most the common Newry flax, which costs £40 @ 50 per ton, wanting the natural sap however as before said. They don't resemble much the Baltic or other flaxes of which I sent you samples, but that is not necessary—observe these samples of mine were bad ones as then stated, the then crop having been very inferior Hemp.

The Arracan Hemp might bring £23, or might be sold at

£19, it wants color for that sort of Hemp, as Sunn Hemp. The coarse article (16th June, 1840) could be worked into bagging, &c. but would not bring beyond £12 @ 14 per ton probably. It seems real Hemp (Cannabis), and may be deserving of attention, not coming near our Baltic kinds however, but a good article may probably be raised from the plant by right culture, &c.

I have now gone over them all, and the values given are such as I think (as well as others) might be put on them without deduction or addition here on the spot, without going far from accuracy. Probably your other reports may be different, and I shall get more decided accounts from Dundee afterwards, where the above rates I think may be improved upon.

Of course wide margins must be left in invoicing any to this country, at least reasonable ones, and you may anticipate the quality and value to be much improved I think by care in future. Would it do any good to send a Flax dresser out to you? there are plenty would go. Also parties for the cultivation?

I have been hurried a little to-day, being the last for the Mail, and I hope you will be able to read this epistle; I examined the Flax with other parties and made notes at greater length before. The quality I think will not be of the best for some time, but much that would sell largely in Dundee or even Belfast might be obtained; in Dundee every thing is used down to the coarsest, but flax worth £40 to £60 per ton is most saleable and to the most certain and best buyers. The Codillas and Tows there seems no doubt of, and flax to bring from £30 to £45 per ton also."

In the course of discussion which arose out of the reading of the foregoing interesting communication, it was stated that the quantity sent to Liverpool were sample parcels merely, but Mr. Wollaston mentioned that the first consignment of about two tons of prepared Flax from India, had just gone

home to Mr. Rogers, in quality very similar to the samples now reported on. It was understood that the expense of the Flax-growing experiment had been hitherto borne principally by Mr. Rogers, whose spirited exertions the Meeting seemed fully to appreciate.

Practical Information on the best mode of cultivating Flax in India.

The Secretary informed the Meeting, that having been applied to by more than one individual for information on the best mode of prosecuting the flax cultivation in India, he had asked M. Deneef, the Belgian farmer, now that he had had some practical experience in India in the cultivation of flax, to favor him with a paper on the subject, and this M. Deneef, at once, was so good as to do. Dr. Spry further stated that the communication which he then presented was the instructive paper which M. Deneef had just put into his hands :

A Monsieur H. H. Spry, Sécrétaire de la Société d' Agriculture et d' Horticulture du Bengale.

D' après ma promesse, je vous envoie ci-après un rapport détaillé de ce que j'ai observé, en cultivant le lin, depuis mon arrivée dans l' Inde.

Je ne vous entretiendrai point de la manière qu' on cultive cette plante en Europe ; car rien n'est plus aisé que de cultiver sur du papier ; mais je veux seulement vous informer, d' après mes expériments par pratique, des moyens que nous avons ici à notre disposition, et qui peuvent être aisément employés pour la production du lin et de sa graine.

1. Les terrains qui sont renouvelés annuellement par les débordements du Gangès, ou qui sont frais et riches, conviennent le mieux pour la culture du lin.

2. Après deux ou trois labours avec la charrue des Indiens, il serait très convenable de se servir du rouleau ; (the

roller, because without its aid, the large clods cannot be reduced, and the land rendered fine enough to receive the seed.) En employant cet instrument avant qu' on ensème et après qu' on a ensemé le terrain, la surface en est rendue serrée, et l'humidité du sol est mieux conservée et plus á l'abri de l'ardeur du soleil : (about and near Calcutta, where manure can be obtained in great abundance for the trouble of collecting it, flax may be produced of as good a quality as in any part of Europe.) L' engrais est l' âme de la culture ; il serait cependant préférable, si l'on enfume bien le terrain, d'y semer d' abord, soit du *sunn*, du chanvre, du riz, ou quelqu' autre plante de la saison des pluies, et de semer le lin après, où l'une de ces plantes a été récoltée. Les terrains cultivés au moyen de la bèche ou de la hache employée par les natifs (méthode qui surpasse beaucoup le labourage par charrue) avec un peu d' engrais ou d'arrosement en temps utile, rapporteront le double du produit de ceux qui n'ont été que simplement labourés. (The mode of forming beds of six feet in width, with intervening furrows, in use in Zealand and in Belgium, is very inconvenient in India, because great care must be taken to preserve the moisture of the soil, and on the other part, for the purpose of weeding, they are unnecessary ; when proper linseed, freed from mustard seed, is sown, I think that the flax requires no weeding at all in India.)

3. The proper time to sow the flax in India is from the beginning of October until the 20th of November, according to the state of the soil, the culture must be performed, if possible, some time before the sowing. The flax which I have sown in November, was generally much finer and much longer than that sown in the former month, which I attributed to the greater fall of dew during the time it was growing. The quantity of country seed required to the Bengal Beega is 20 seers, and only 15 seers of the foreign seed, because it is much smaller and produces larger stalks ; the latter should be pre-

ferred, it is not only more productive in flax, but owing to the tenderness of its stalks it can be dressed much more easily.

4. The flax must be pulled up by the roots, before it is ripe, and while the outer bark is in the state of fusibility; this is easily known, by the lower part of the stalks becoming yellow; the fusion or disappearing of the outer bark is effected during the steeping, which may be fixed according to the temperature, say in December at six days, in January five, in February four days, and less time during the hot season; the steeping is made a day after the pulling, when the seed is separated, and then the stalks are loosely bound in small sheaves, in the same way as the *Sunn*; the Indians understand this business very well; but in taking the flax out of the water, it should be handled softly and with great care on account of the tenderness of its fibres. When it is newly taken out, it should be left on the side of the steeping pit for four hours, or until the draining of its water has ceased; it is then spread out with the root-ends even, turned once, and when dry, it is fit for dressing or to be stapled.

5. To save the seed, the capsules, after they are separated from the stalks, should be put in heaps to ferment from 24 to 30 hours, and then dried slowly in the sun to acquire their ripeness.

6. When flax is cultivated for the seed alone, the country flax should be preferred, six seers per beega are sufficient for the sowing; it should be sown very early in October, and taken up a little before perfect ripeness, by its roots, separately when it is mixed with mustard seed; the flax seed being intended for the purpose of drying oil, is greatly injured by being mixed with mustard seed, by which mixture its drying qualities are much deteriorated.

Quant au dressage, plusieurs coolies connaissent cela maintenant, je ne vous en ai point parlé, si vous désirez d'autres renseignemens ou informations, je suis prêt à vous les donner.

J'ai envoyé diverses espèces de lin et de chanvre dressés à Londres pour connaître le prix effet du marché de ces articles.

J'ai l' honneur de vous saluer avec la plus haute considération.

Votre très obéissant Serviteur,

Calcutta, 14th April, 1841. G. DENEEF.

Favorable Prospects for Wool Growers in India.

The Secretary next submitted a highly flattering report which he had been favored with from Mr. Gibbon, on some samples of wool (similar samples it was understood to those which had earned the gold and silver medals of the Society) sent to Liverpool.

The report, which is from Mr. Syers an old Member of the Society, is dated Liverpool, February 2, 1841, and is as follows:

"The *Mary Somerville* made a long voyage so that I only received your samples of Wool three days ago, and immediately got a report on them from one of the most eminent Brokers here, which is as follows.

"Sample of cross between Patna and Merino is equal to a good fair lot of Cape Wools, clean and in good condition, worth 1s. 2d. per lb.; this quality of Wool is in good demand.

"Sample of Patna, coarse and white: worth 5½d per lb.

"I hope this report will be satisfactory, and that before many years Calcutta may be able to export a large quantity of good Wool, for I fancy many parts of the Upper Provinces of Hindoostan would be favorable for the breeding of a cross between the Merino and Patna."

Superiority of Otaheite Cane Cultivation over the indigenous kind for producing Sugar.

The Secretary mentioned that as an opinion was entertained by some leading authorities that the produce from Oatheite

Sugar Cane, was not so great as many thought, thus rendering the propriety of superceding the indigenous varieties doubtful, he had taken advantage of the result of an experiment, tried in Tirhoot, on a large scale, which had likewise been communicated to him by Mr. Gibbon, to ask for a memorandum on this interesting subject, and it was as follows:

I find that country Cane gives an average of about eight maunds of Sugar per Tirhoot Biggah, Otaheite Cane from 20 to 25; but this is *Brown Sugar* not Khar; one Biggah of very good Cane gave 32½ maunds (one ton three hundred weight,) but this is very great produce.

(Signed) W. F. Gibbon.

31*st March*, 1841.

The Secretary mentioned in addition that he had been kindly promised by Baboo Dwarkanath Tagore, a statement of a similar kind which had attended an experiment he had made under his own superintendence at his grounds near Calcutta.

Practical Illustration of the Use of Bone Dust in Gardening Operations—Cauliflower Cultivation.

The next paper submitted was a communication which had been received from Berhampore, containing an account of the great success which had attended the application of bone dust in the growth of cauliflowers in the garden of a gentleman at that station.

It appears that while the plants which had been dressed with very good black manured earth had not at all thriven; those grown in a spot on which an unusual quantity of the finest bone dust had been expended were the admiration of the station. It must be mentioned that during the progress of their growth earth was filled round the plants. The testimony of several gentlemen at the station is borne to the success of the experiment, and the experience of a consecutive

trial of four years leaves no longer any doubt of the value of this article in the garden as well as in the field, where its use has become very extensive.

New Sugar Company in London.

The prospectus of a Sugar Company "forming in London under the most favorable auspices for the benefit of India, and which is expected to be in full operation in a short time" was next submitted. The Secretary stated that it had been received overland from Mr. Howell.

Beer Brewery at Mussouree—Himalayas.

The Secretary desired to inform the Meeting that he had received a letter from Mr. Bohle at Meerut, stating that he has for several years past manufactured beer for the men of the European Regiments at Meerut. That at times the consumption has been to the amount of four thousand three hundred gallons a month. At the present time the consumption is 40 gallons a day. At Mussouree Mr. Bohle states he has found a ready sale amongst the Officers and their families resident there, and thinks, if he were duly encouraged, he could brew a superior description of beer for the Canteens.

Mr. Bohle was induced to communicate the foregoing information in consequence of what he had seen published in the proceedings of the Society, relative to the hop cultivation in Upper India. As Mr. Bohle does not state whether his beer was brewed with hops, the Secretary undertook to address a note to Mr. Bohle to ascertain a few particulars.

For all the foregoing presents and communications the thanks of the Society were accorded.

HENRY HARPUR SPRY, M. D., *Secretary.*

PROCEEDINGS

OF THE

Agricultural & Horticultural Society

OF

INDIA.

MAY,

1841.

CALCUTTA:

PRINTED AT THE BAPTIST MISSION PRESS,

CIRCULAR ROAD.

1841.

AGRICULTURAL SOCIETY OF INDIA.

PROCEEDINGS.

MAY 12, 1841.

Agricultural Society of India.

A General Meeting was held at the Society's Room, Town Hall.

The Hon'ble Sir Edward Ryan, President, in the Chair.

(Sixteen Members present.)

MEMBERS ELECTED.

The Gentlemen proposed at the April Meeting, were elected Members of the Society :—viz. :

Dr. A. J. Dunbar, Lieut. A. P. Phayre, Lieut. G. W. Bishop, Captain R. Napier, Capt. J. A. Crommelin, Messrs. J. W. Kaye, J. M. Vos and Robert Smith.

FOR ELECTION.

The names of the following Gentlemen, were submitted as Candidates for Election :

D. McComish, Esq., of Gorruckpore,—proposed by Mr. W. Dunlop, seconded by Mr. Hodgkinson.

Lieut. Geo. Biddulph, 45th Regt., N. I. at Dacca,—proposed by Dr. Spry, seconded by Dr. Wallich.

A. Lang. Esq. (Civil Service) Allahabad,—proposed by Mr. R. Montgomery, seconded by Dr. Spry.

Capt. T. E. Napleton, A D. C. to His Excellency the Commander-in-Chief,—proposed by Dr. Spry, seconded by Mr. Stirling.

Dr. R. M. M. Thomson,—proposed by Dr. Spry, seconded by Dr. Strong.

PRESENTATIONS TO THE SOCIETY.

LIBRARY.

1. Proceedings of the Agricultural and Horticultural Society of Madras—*presented by the Madras Society.*

2. The Theory of Horticulture, by John Lindley, P. H. D. F. R. S.

3. Essay on the Productive Resources of India, by J. F. Royle, M. D. F. R. S.

} *Purchased by the Society.*

MUSEUM.

1. Four specimens of Cotton grown at Tirhoot from Bourbon, Tinnevelly, Seychelles and Egyptian seed—*presented by Mr. H. Fitzgerald.*

2. Three specimens of Cotton grown in the garden of the Cuttack Branch Society—*forwarded by Captain F. N. Reid.*

Captain Reid intimates that he is unable to state distinctly from what description of seed these specimens have been produced, since no care had been taken in having the seed sown separately, but he is inclined to think they are the produce of Sea-Island, Bourbon and Pernambuco seed.

3. Specimens of Cotton produced in the garden of the Saugor Branch Society, from Upland Georgia, Nankeen and Chunderie seed—*submitted by Mr. Ommaney.*

The foregoing specimens were referred to the Cotton Committee for report.

4. A supply of Genuine Bhilsa Tobacco seed—*presented by Dr. R. H. Irvine.*

Dr. Irvine mentions in his note that he had been favored with the seed from the Durbar through the influence of the Resident, Col. Spiers.

The Secretary intimated to the meeting, that on the receipt of this most acceptable present, he had despatched small quantities of the seed to those parts of the country where he thought it might be acceptable, and likely to thrive ; that although the month of Kartick or October was the usual one for sowing Tobacco seed in India, he had thought it better to distribute it at once, to avoid the risk of sending it out during the rainy season. He moreover submitted a list shewing that up to the present time the seed had been distributed to sixty-four individuals in forty-five localities, while a portion had been reserved for the Nursery of the Society.

5. A quantity of Lucerne seed—*presented by Dr. Alexander Gibson.*

The Secretary mentioned that the Society was indebted to the kindness of Mr. Borradaile for obtaining this supply of seed from Dr. Gibson, and that any member wishing for a small quantity may be supplied.

6. Seed of the Crimson Shiraz Pomegranate—*presented by Captain Charles Siberne at the Island of Karrack.*

Captain Siberne sends these seeds to the Society on account of their superiority over the ordinary kinds. Half were presented to the Botanical Garden and the remainder sent to the Hills.

7. Specimen of Cane produced at Gowhati, Assam, from Otaheite stock—*presented by Mr. Wm. Prinsep on behalf of Dr. K. M. Scott.*

8. Melons reared from Cawnpore and Caubool seed—*presented by Mr. R. W. Chew.*

Mr. Chew states that after many difficulties and much perseverance he has succeeded in establishing the growth of the melons of the North of India in his gardens at Calcutta, and offers the present specimens as an illustration of his success. Mr. Chew's paper will be found further on. In consideration of the great exertions that Mr. Chew has evinced in acclimating the melons of the North of India in the gardens of Calcutta, Dr. Spry proposed the grant of the Silver Medal of the Society, and it was unanimously agreed to.

9. A Stand or Cage for feeding silk worms—*presented by Lieutenant E. B. Stevenson of Cottdyam.*

10. A maund of Coffee grown at Travancore—*presented by Lieutenant Stevenson.*

Dr. Spry informed the Meeting, that Mr. Stevenson's interesting communication containing a very full account of these presentations, and of the Agricultural Products of Travancore generally, would be found in the seventh volume of the Society's Transactions.

The specimen of Coffee was very highly thought of, and considered by good judges of the article to be fully equal to that known as Mocha Coffee.

11. An assortment of seeds of English Fruit Trees, consisting of peach, gooseberry, raspberry, currant, apple, pear, grape and a few other varieties—*presented by Dr. Royle on behalf of Dr. Lindley,* and received by the April Overland Mail from the India House.

The Secretary mentioned that he had transmitted a portion of this consignment to Mr. Hodgson at Nepaul, and the remainder to five or six Members at the Hill Stations.

12. A further quantity of the seed of the Sapan Wood (Cæsalpinia Sapan) grown under the cultivation of the Convalescent Insanes at Russapugla Insane Hospital—*presented by Dr. Strong.*

Dr. Strong submits this additional supply to the Society,

having heard that all the seed which he presented last month had been distributed.

13. Three Cocoanuts of a rare variety—*presented by Cowr Kaleekissen Roy.*

Cultivation of Foreign Melons.

The Secretary stated that the first paper which he had to submit to the Meeting, was a valuable practical one by Mr. Chew, on the best mode of cultivating the Melons of Northern India in the gardens of Calcutta.

According to promise, writes Mr. Chew, I now proceed to lay before you a detail of my several experiments to grow Affghanistan and other foreign Melons from imported seed, as well as that obtained from the few Affghanistan Melons I, by chance, succeeded in growing last year. We all have to pay dearly for our knowledge when it is self-acquired, and I have not escaped doing so ; but I shall deem myself amply remunerated, if my observations serve to protect any party, who may undertake the cultivation of foreign Melons, from the errors I was led to commit, and their concomitant consequences.

My first experiment was made at Seebpore, in November last year. On the 15th of that month, I took a quantity of Cabul, Candahar, Istambool and Cawnpore Melon seeds, from the stock raised by me in March preceding, and having prepared the earth according to the method recommended by Colonel Stacy, I believe, as being the one most successfully pursued in Affghanistan—i. e. by raising the earth in ridges about two feet high, and burning straw on it, to destroy the insects that might be lurking in the clods—I then scooped little holes on the tops of the ridges, which I filled with equal portions of prepared cow-dung manure and earth. Into these holes I put the seeds, without subjecting them to any previ-

ous process, and though I took every care of them, not one vegetated. On the 20th of December, I caused the same ridges,—which I must premise were partially shaded, during the greater part of the day, by trees growing in their vicinity, —to be weeded and prepared afresh, precisely in the same manner as they had been prepared before; and having parboiled a quantity of the seeds, sowed it exactly as I had done previously. Every seed vegetated, and on the fifth and sixth days were all out of the ground. But the cold then seemed to affect the plants, and they advanced very slowly in growth. In about fifteen days afterwards they became sickly, spotted, warped and cankered, and ceased to grow after obtaining the height of three or four inches. A species of the yellow spotted insect, commonly called lady-birds, then attacked and entirely devoured them in a few days.

On the 17th of January, I sowed some more seeds, in the vicinity of the former locality of operations, and pursued the same conduct towards them, as I had done with former sowings. I also gave Mr. Beauchamp, of Howrah, a quantity, and sowed some more myself, in a garden in Mott's Lane in Calcutta. All these obtained the height of three or four inches, then assumed the appearance of the former crop, and were ultimately devoured by the small insects I have already mentioned, which I have found to be by far the most destructive enemy of all the insect tribe that attack the Melon plants. A small quantity of Cawnpore Melons, sowed, at the same time, on ridges, exposed to the sun in the garden at Mott's Lane, also failed.

On the 3rd of February, I again parboiled the Melon seeds, and sowed them on ridges, as before, and also on level ground, digging a pit about two feet deep, which I filled up with prepared earth. The whole of the seeds vegetated very freely, and the plants soon obtained the height of about four inches, after which they ceased to grow, and remained in a dormant

state, until the 20th of February, when they began to trail, and about the 15th of March, those on the plain had stretched themselves out to the extent of about twelve feet from the site of their roots, while those on ridges did not obtain a greater longitude than two and a half to three feet : and while the former have produced a rich crop of fruit, from four inches to a foot in length, and from three to four inches in diameter, the latter has yielded nothing, the few Melons that grew upon them, having dropped off after obtaining the size of hen's eggs.

On the 15th of March I sowed another crop of Affghanistan Melons, both at Seebpore and in Mott's Lane. Those at Seebpore were all destroyed by cattle and poultry, as were some French Melons, when full of fruit ; but those in Mott's Lane, have grown with surprising vigor, as also have some that I have sowed in gumlows, on the roof of the *Hurkaru* office. They are in fruit simultaneously with those sown two months before.

On the 25th of April I sowed the last crop, boiling the seeds, as I have done in all but the first experiment, which proved a complete failure. The plants grew up very fast, but flowered, after they had grown to the height of three inches, and will yield no fruit,—thus clearly showing, that the season for sowing had passed.

It would be both tedious, and occupy more time than I can afford, to write you a history of all my disappointments, successes, and observations, during the growth of these Melons ; I shall, therefore, confine myself to the writing of some brief directions for the cultivation of this fruit, on which you may rely, as they are founded on dear-bought experience and careful observation, and do not emanate from any wild theory of my own.

CHOICE OF A LOCALITY.

A great deal depends upon the selection of a proper locality; for if it be too damp, or too much shaded, a certain failure, in raising Melons, must be the result. The best site would be an open field, far removed from bushes or trees, the insects, of all descriptions, from which, would be sure to find out and attack the melons.

CHOICE OF SOIL.

The best soil to grow Melons in, I have, after several experiments, made during the last four years, found to be composed of about one-eighth of silica and seven-eighths alumina (for the benefit of country gentlemen, one-eighth of sand and seven-eighths of clay.)

MANURE.

Cow dung or horse dung, gathered in a heap, or in a pit, and allowed to rot for about six months, is the best manure for the Melons. Rotten feathers and the dung of poultry, pigeons particularly, the next. I should give the preference to horse dung. Fresh dung will cause the destruction of every seed or plant. The dung should be dried and slightly burned, before being used, or else the maggots that lurk in it, will destroy the seeds.

MODE OF PREPARING THE GROUND.

Plough or dig up the earth, and then carefully denude it of grass and little shrubs, after which level it again. Then take equal portions of the prepared manure I have recommended, and earth, and digging holes about two feet deep, fill them up with the mixture: make these holes about four or six feet apart, and your ground will be prepared for the seeds.

PREPARING AND SOWING THE SEEDS.

Take a quantity of seeds and soak them in tepid water. The water if so warm as to make you feel inconvenience on

holding your finger in it, will be too hot for the seeds, and destroy vegetation. It should be hot enough, however, to discolor the hand, if held in it. Let the seeds steep for twenty-four hours, and then tie them up in a piece of wetted cloth, for two, three or four days, until they germinate. Take and sow them then, an inch or an inch and a half under ground, with the little pointed roots that will have protruded from the seed downwards. Sow from six to eight seeds, at equi-distances, round each prepared spot, two or two and a half feet in diameter, and immediately deluge the place with water, and keep doing so every *evening*, until the plants appear about two inches above ground, when you may leave off watering altogether, if you wish, although an occasional drenching, until the fruit ripens, will prove beneficial. A great deal depends upon the plants being well watered at first, for I have found that those that spring up with vigor, are not so soon attacked by insects, as the sickly, fragile ones.

THE BEST TIME TO SOW THE SEEDS.

The best time to sow Melon seeds, would be from the tenth of February to the tenth of April, at intervals, to ensure successive crops. The largest fruit will be yielded by the plants grown from the seeds sown about the middle of March. Cold, I have found does not agree with Affghanistan or Cawnpore Melons, and is far more prejudicial to them than even the greatest heat ever experienced in this country. I have never yet known a Melon plant to be scorched with the heat, if slightly watered every two or three days. I should say, that the seed should be sown, about the time there are indications of rain, from the latter end of February to the middle of March, in preference to all other seasons, as a single shower of rain will make them spring up much faster, than twenty waterings, which do not affect the state of the atmosphere. A humid atmosphere, however, while beneficial to the growth

of the plant at first, is prejudicial to it when it arrives at a more advanced state.

MODE OF TREATMENT AFTER GROWTH.

This merely consists in dibbling out the grass, preventing the earth from hardening round the roots, and keeping the plants clear of insects.

MODE OF DESTROYING INSECTS.

The several enemies that the Melon plants must be protected against, are a very small black fly, a small white maggot, a large green caterpillar, a large cricket, and a yellow fly, or lady-bird, a quarter of an inch in length. The three first are easily removed, by a sprinkling of wood ashes, or slight fumigation with tobacco or brimstone; but the two latter it takes vast trouble to destroy, or drive away; and so destructive are they, that in a few days, they would nip to pieces a whole plantation. The best thing for driving away insects, is a solution of tobacco leaves, macerated in equal quantities of horses' or oxens' urine and water. This composition sprinkled on the plants, with a brush, whenever the insects are perceived on them, will drive them away immediately, and benefit the plants. The little white grub, which I believe to be the young of the yellow insects I have mentioned, attack the plants close to the root, and eating into its core, very soon destroy it; but I have only found them after heavy showers of rain; and very hot weather, or exposure to the sun, invariably kills them. I would, therefore, advise, that after every heavy shower of rain, the compound of tobacco and urine should be slightly sprinkled over the plants, as the maggot is not easily detected until it has killed the plant, or progressed so far towards doing so, as to render all protective measures useless. The other insects are easily perceived, but not so easily removed, as the yellow fly clings to the plant until it

has been several times saturated with the mixture. When the Melons themselves have been punctured, means should immediately be taken to destroy the insects or grubs, or the fruit will soon wither. The mixture will not answer in this case, and the only method I have found to be efficacious, is by drowning the worm that has entered the fruit, before it has injured it so far as to render all protective measures useless. The idea of drowning the worm first suggested itself to me, about a year since, when my attention was attracted to the subject, by the vast quantities of pomegranates I used to lose, from the ravages of grubs and insects. I fully succeeded, by my experiments, in saving this fruit, and eradicating the worms that attacked it, and have since met with equal success, in the case of Melons and other fruit. This, however, is a very troublesome operation, as it requires a minute inspection of the fruit every two or three days, the first puncture not being much larger than a pin's head, which sometimes would not be perceptible but for the exudation of juice from it. The method of proceeding to eradicate the grubs or insects, is to put the fruit into a pot of water, and letting it remain immersed in the fluid, for two or three hours. At the end of that time, the maggot will either be killed inside the fruit or, which is more generally the case, be found drowned in the water. Then dip a blade of grass in mustard oil, and, introducing it into the perforation, cut it off close to the surface of the orifice, and the fruit will be saved, merely having, when ripe, a hard black crust round the locality of the perforation.

PROTECTING THE FRUIT.

The fruit is subject to destruction by splitting, when very tender, through the fervidity of solar heat, also by being pierced by insects. The best way to provide against these contingencies, is to scoop a slight concavity in the earth, immediately under the fruit, and to line it with a layer of well dried

hay. On this layer place the melon, and then strew a quantity of hay over it. The fruit will grow larger, and be of superior flavor when it has thus been protected.

GATHERING THE FRUIT.

When the fruit is ripe, take a knife and cut it off from the tendril, taking care to avoid drawing the plant out of its position, as the remaining young fruit may become injured by so doing.

MODE OF PRESERVING THE SEED FOR THE NEXT CROP.

Cut the melon round slightly, longitudinally, and pull the parts asunder. Then take the globule of seeds, contained in a gelatinous matter, and wash it to pieces in a bowl of water. Drain off the water and gathering the seeds, rub them with some wood-ashes, in a cloth, for a few minutes between your hands; then wash them anew, and clearing them of any particles of the fruit that might still adhere to them, dry them for two days in the shade, and for the same period in the sun: after which put them in clean, dry bottles, which cork and seal. The seeds will remain perfectly fresh for the next year's planting, if thus treated.

FINALE.

I have penned the above instructions with reference to fruit gardens. By strictly following them, the cultivator will be enabled to raise first-rate fruit; but of course, he will be put to some expense. From my observations, this year, however, I have found that, without any further cultivation than ploughing and manuring the land, the acclimated Affghanistan melon seeds will grow just as vigorously as the "phootee," or common musk-melon, indigenous of Bengal; but, of course, like the musk-melon, the fruit will be both larger and better flavoured by cultivation. In a few years I hope to see it selling commonly in the markets of Calcutta.

(Signed) R. W. Chew.

Encouragement of Tree Plantations in Upper India.

An answer to the communication which had been addressed to the Government of India agreeably to the resolution of the former Meeting of the Society was next submitted.

To H. H. SPRY, Esq., M. D.,

Secretary to the Agricultural and Horticultural Society.

Genl. Dept. } SIR,—With reference to your Letter dated the 17th instant, I am directed to transmit for the information of the Agricultural and Horticultural Society, copy of a letter addressed to the Government of the North Western Provinces relative to the alleged decrease of fuel and timber trees in the sugar districts of the North Western Provinces and the effects said to be experienced and apprehended therefrom.

I have the honor to be Sir, your most obedient servant,

G. A. BUSHBY,

Secretary to the Government of Bengal.

Fort William, the 21st April, 1841.

To J. THOMASON, Esq.

Secretary to the Hon'ble the Lieutenant Governor for the North Western Provinces.

Genl. Dept. } SIR,—I am directed to transmit a copy of a Letter from the Secretary to the Agricultural and Horticultural Society, and to request, if the Hon'ble the Lieutenant Governor has any recent information respecting the increasing scarcity of fuel and timber trees in the Sugar Districts of the North Western Provinces, or the detriment apparent in the deterioration of the soil or diminished irrigation by the decrease of trees, that it may be furnished to this Government.

2. The Right Hon'ble the Governor would observe, generally, that where the demand for fuel and the high price attendant thereon, leads to cutting, the same causes will lead to planting trees; and that the interference of Government ex-

cept perhaps by the planting of trees in the lines of the main canals and roads, and by a preservation of the public forests, would generally appear to be inexpedient, if it were indeed practicable.

I have, &c.,

(Signed,) G. A. BUSHBY,

Secy. to the Government of Bengal.

Fort William, the 21st April, 1841.

Agricultural and General Statistics of the District of Allahabad.

A valuable practical set of statements bearing on the Agricultural wealth of the Zillah of Allahabad was next presented by Mr. Montgomery, Magistrate of the District.

In his communication to the Secretary Mr. Montgomery states, that the papers have been prepared from the official statements made during the late settlement of the district. The paper which shows the disposition of the cultivated land at the time of measurement will, Mr. Montgomery thinks, be interesting and at the same time useful to speculators, as he imagines, that but little variation takes place in the amount of the different kinds of crops raised in the district taking one year with another. Mr. Montgomery intimates that similar returns have been furnished to the Government for all the districts in the North Western Provinces, and he doubts not but that on application being made by the Society they will be granted.

The Hon'ble the President, in allusion to the very acceptable presentation which Mr. Montgomery had made, spoke of the great value of obtaining a complete set of the returns, and thought it highly expedient that the suggestion of Mr. Montgomery should be followed. In this the Meeting coincided and the Secretary was directed to address Government on the subject.

Purchase of Cotton Seed.

The motion for which notice was given at the last Meeting by the Hon'ble the President—" That the Secretary be empowered to expend the sum of 500 rupees in the provision of Cotton seed from America"—was carried unanimously.

Contribution of Ploughs and Hoes by the Government.

The next communication submitted, was a letter from Government intimating that the Right Hon'ble the Governor of Bengal has been pleased to issue orders for the delivery to the Society of twenty ploughs recently received by the Persian.

The Secretary mentioned that subsequent to the receipt of this letter he has learnt that besides the ploughs some hoes are destined for the Society, and as these agricultural implements have been made with peculiar reference to the wants of India, that they will be distributed to any Agriculturist or Planter who may be anxious to avail himself of one of each kind.

Intelligence Regarding the Provision of Seeds from England and other Subjects.

The Secretary desired to call attention to a long and interesting letter which he had the pleasure of receiving from Dr. Royle by the last overland English Mail, relative to the wishes which had been conveyed to him on the subject of a provision of seeds for the Society. Dr. Royle, after expressing his sorrow at learning the result of the efforts made by the Society

to import English seeds, states, that he feels very happy that his letter offering his services to the Society was at hand, and he feels much pleased at being appointed Agent in London for the Society, of which he was one of its earliest Members, and whose useful and energetic labours have done and are doing so much good to India and therefore to England.

Dr. Royle feels glad that the labours of the Society have met with the approval of Government, and that in future forty copies of the Proceedings of the Monthly Meetings are to be regularly sent to England, as it will insure the labors of the Society being more generally known: for several who wished to read what was doing by the Society were obliged, Dr. Royle says, to borrow the few copies of the Proceedings which casually came to hand.

As inquiries have frequently been made of him of late as to where a copy of the Transactions could be procured, Dr. Royle recommends that some copies should be sent home for sale. Dr. Royle mentions further that in the Gardener's Chronicle, Dr. Lindley has given a notice of the Proceedings of the Society and that he himself will do his best to make known in England what the Society is doing.

Dr. Royle then goes on to say—

"I proceed to the main object of this letter in reply to yours on the same subject. Before proceeding to Messrs. Noble, I thought it would be better to ascertain from those most accustomed to purchase and distribute seeds and plants, what would be considered the best plan of proceeding, supposing the measure was to be now first carried into execution, and nothing had previously been done. My inquiries are not yet completed. But I have received much valuable advice from Dr. Lindley, which has in most points been in conformity with my own opinion. He informs me that the Horticultural Society of London obtain their seeds for distribution to

members chiefly from Paris and Belgium, as the seeds are usually better ripened, &c. and are more valued by members. But this is not necessary for India, at least at present. It was also suggested that in giving an order for large quantities of seeds, it would be much preferable to employ three or four, instead of any one Nurseryman, however extensive his line of business or however respectable he might be, as by this means the Society would have the advantage of whatever each had better than his neighbour, or had peculiar; besides smaller orders would be more carefully executed, they might be dispatched in separate ships, and the Society would have the opportunity of comparing the results of the several investments of seeds. This would give a little more trouble, and might be attended with a little more expense, but this would be immaterial as the order should not be frittered away. The names of the principal Nurseryman mentioned to me, were Chalwood, Beek and Allen of the Strand, Wrench of London Bridge, Menheer, Mank and Adams, Strand, Gordon, &c. Fenchurch Street, as well as the Messrs. Noble.

Packing in smaller boxes seems essential, the *tin* unnecessary, if not injurious; a good place in the ship most important, indeed the sine qua non. After the seeds, I made inquiry respecting the plants, which have been equally unfortunate. These I have no doubt were mismanaged, both from the form of the boxes, and the quantity which was stowed into them. I will see both Mr. Warde and the Messrs. Loddiges on the subject as they have had the most extensive experience, few or none of the Nurserymen either understand the principle or practice. Speaking to Dr. Lindley on the subject, he expressed his surprise that you should go to so much expense in getting fruit trees from this country with the uncertainty of their doing well in the country, or yielding the same variety of fruit, when growing in different soil and climate, to that in

which the variety was originally produced. He thinks, and I coincide, that you should adopt the practice of the Nurserymen when they wish to get new varieties, that is sow the seeds of the best varieties, of as many as you please, and see what varieties you can obtain, some of them may be finer than those you sow—their being different will be of no consequence if they are as good as fruit, your members need not care much if they be exactly the same as the English varieties. The American varieties are quite distinct from the English; though derived from them. These American-apples are now imported here in considerable quantities. To carry out this object, you must have a nursery in the Mountains, either at Darjeeling, Katmandoo, in Kemaon, at Mussooree or Sind, or at all of them, and only require zealous members in the neighbourhood, who would watch the growth of the seedlings and see that they received suitable treatment. To carry out this, you would require a continued supply of fruit seeds of all kinds. I sent you some by the last mail, chiefly Apples sent by Mr. Groome of Walworth. But I do not say, that you are not to get any fruit trees, they may be sent in smaller quantities, that is only so many as the boxes will conveniently hold.

But on all these subjects you will receive more ample and detailed information by the next mail, when I have seen all the people whom I wish to consult. My time is not very abundant, as my Lectures still go on with my India House duties. But my course will be over in about a month, when I shall have leisure to make visits to the Nurseries, as well as for writing, &c. Fortified with the requisite degree of information, and having laid down what appeared to be the best plan of proceeding for the Society quite independently of what had already been done, I proceeded to the Messrs. Nobles, who I found had received a letter from you intimating the failure of all the seeds of last year, and informing them that

the business had been referred to me for settlement. They expressed the greatest regret at the ill success of the seeds, which they cannot in any manner account for. They positively assert that the seeds were all of the best quality, and that they never get in any seed for subsequent distribution, which is not in the first instance tried by sowing a small portion of each kind and thus ascertaining its being possessed of vegetating power. When I visited their shop, I saw numerous small pots, in which seeds had been sown, and were vegetating. They expressed their willingness to make any compensation that was thought reasonable, or which I might think necessary. The extent of the remuneration which they ought to make, I have not yet made up my mind about. But I have told them that they ought to make a shipment of seeds to the extent of the deduction to be made from their bill, and pay this in full. I think a part of the damage is owing to the whole of the seeds being packed in bulk, instead of in divided packages, something also to their being *tinned* up, which is very good for soups, vegetables and meats, but not for living seeds—at least the experience of every one here is against seed being closely packed up—those sent from abroad in bottles, jars and *tinned* cases, always turn out worse than those sent in open parcels, simply wrapped up in moderate quantities in brown paper. But the great injury must have been caused, I conceive, by the seeds having been placed in some improper part of the ship. Messrs. Nobles said they had arranged for the seeds being placed between decks and that they had extra freight for this purpose.

In this however there appears to be some mistake, as on looking at the bill for the freight, nothing is mentioned respecting the part of the ship, and nothing extra paid for such a purpose, at least as far as the bill gives information ; the only extra sum paid was for some plants for yourself which

were I suppose in a glass case, and placed upon deck. If the seeds were placed between decks, the space they occupied measuring nine tons, was too great a temptation for many Captains, who you know, would not hesitate in sending a set of lumbering boxes down into the hold, instead of allowing them to occupy space, which might in their idea be so much better occupied. Of what was done with these seeds, Messrs. Noble have no information, but are going to make inquiry of the Brokers who shipped the seeds. I would not, however, in future send so much in one ship—and I would select some in which we knew some of the passengers, who might have an eye to the seeds, if only for the sake of partaking of the good vegetables, when arrived and settled in India—of this and all other arrangements in future letters. Messrs. Noble not being Nurserymen, gave the order for the fruit trees to one of their friends, who I suspect not understanding what should be done and how, crowded together too many plants. They took the precaution, however, of planting some time before the boxes were closed up, and thought the quantity of earth was required for so many plants in so small a space. From the above you will perceive that as far as I can at present form a judgment, there was probably no defect in the seeds as originally packed, but the packing and tinning were not the best, though I believe ordered by you. But as far as I have been able as yet to learn, sufficient precaution does not seem to have been taken to ensure a good place in the ship between decks. You have not said whether you found them well placed in the ship, but you ought to send on board immediately a ship arrives, to see where they are placed, and I will endeavour and get some passenger to take charge of them or to take an interest in them, if I cannot get a Captain who will be sure to do so. The Flax Company I believe failed entirely in the seeds first sent out, and when consulted by Mr. Pri-

deaux, the Secretary of the Assam Tea Company, respecting seeds and their mode of transmission, the subsequent dispatches of seeds have, I believe, succeeded remarkably well. But great precautions were taken to have them placed between decks.

Having detained you I think a sufficiently long time, I will now conclude with a promise that by next Mail, you will have an account of the measures that have been taken or are to be taken about the despatches of seeds which ought to sail, I suppose, in all April.

The Botanical Garden of Calcutta.

The communication which was next submitted to the Meeting was an official report made to Government by Dr. Wallich, the Superintendent, on the state of the Botanic Garden. The Secretary stated that the Society had been favored by Government with six copies of this document.

The report is submitted to the Right Hon'ble the Governor of Bengal. Dr. Wallich respectfully apologises for the delay that has occurred in preparing it, and, in explanation, asks permission to refer to his letter of the 3rd of September last.

Dr. Wallich alludes to four documents extracted from the records of his office which he trusts will serve to place in a clear light the exertions and progress which have been made during the last five years, that is, from the beginning of the year in which his last report was submitted, to fulfil the objects of the institution, and on their details Dr. Wallich respectfully ventures to rest his hopes that his anxious efforts to promote as far as he is able the Agriculture and Horticulture of India, will not be found quite vain and fruitless.

These papers consist of—

1. A list of such species of growing perennial plants, including tubers and bulbs, as have been distributed from the garden during the period in question, namely, from the beginning of January 1836 to the end of November 1840 arranged according to their natural orders, placed alphabetically.

2. A general list of all the parties who have been supplied from the preceding series of living plants, specifying the dates of delivery, the number of species and individuals furnished on such occasions, the number of plant boxes when flower pots were not exclusively used, and the destinations, whenever the assortments were not intended for Hindustan.

3. A separate list of plants despatched by sea, detailing the sort of boxes sent, the parties supplied, the destinations, the names of the ships and their Commanders, as well as the dates of despatch. Lastly,

4. A list of boxes of plants received by sea, exhibiting the names of donors and ships, the number of species contained in each case, with remarks on the condition in which the assortments arrived. These three lists comprise the same period of time as the first mentioned.

From these documents it appears that one thousand seven hundred species, belonging to 690 genera which are placed under 150 natural families, have been distributed in the five years to 2,107 parties.—Annuals have been excluded, as these are for the most part supplied by means of seeds. One exception is the henbane plant; of this annual 50,000 full grown individuals were sent at the beginning of the year to the Dispensary, the Medical College and other places. Another exception is the Datura fastuosa.

Some trees and shrubs have been purposely excluded. Some of these Dr. Wallich mentions; the Nutmegs and Mangosteens are of these. The stock is kept up by annual importations

of young plants from the Eastward, but the latter has never blossomed, much less fruited in the Calcutta gardens. There are several tolerably good trees of the Nutmeg, and a number of younger plants, but although a few ripe Nutmegs are obtained, Dr. Wallich has never been able to preserve a single seedling, nor to multiply the stock by layer or like means. Neither it nor the Mongosteen, Dr. Wallich states, can ever be expected to become objects of cultivation except as objects of curiosity, as they are extremely impatient of the arid heat and foggy cold of Bengal. The same remarks apply to the clove.

Of fruits Dr. Wallich thinks the list will be found to exhibit a very fair assemblage. Five varieties of the Mango, Plantain, Pine Apple, Litchee, Loquat, Pumplenose, Guava (Psidium Cujavillus the best). Alligator Pear, Peach, Aloobochara, Sapota, and others are mentioned. Two sorts of Oranges are cultivated—the Sylhet and Bencoolen kinds. Several sorts of Grape vines annually leave the garden, but he is forced to rely in a great measure on imported stock. The cultivation requires more attention, labor and expense than the Garden, the soil of which somehow or other is peculiarly unfavorable, can bestow.

The bread-fruit tree has been made to outlive the year, but neither this tree nor the cherimolia of New Spain have ever made any effort to set fruit. Arabian Coffee seedlings are annually sent abroad.

A vast quantity of tea seedlings has been sent away in all directions.

No success has hitherto attended the introduction of extensive cultivation of foreign Grasses. The climate of Bengal being in the most eminent degree characteristic of a rice country, this species of cultivation, must, Dr. Wallich says, ever take precedence of all others in point of importance and extent.

Among the perennial Grasses in the list two require particular mention—these are the Sugar-cane and Guinea Grass. They are both wholly confined to the nursery of the Agricultural and Horticultural Society, who entirely bear the expenses. Of the Majestic Martaban or Burma Bamboo, plants have been sent to several parts.

In respect to plants yielding wood applicable to all purposes of life, the list, Dr. Wallich considers, will be found as rich and varied as could be expected from the means which so fine an institution as the Botanic Garden possesses. Climate and other discouraging circumstances operate to the detriment of the successful introduction of foreign plants. Dr. Wallich states, on this subject, that he has much hesitation whenever the question is the introduction of any new article of very momentous and extensive cultivation. He has not (he says) lived long enough to witness any such grand improvement, and most gladly will renounce his notions on the subject the moment it can be proved, not by mere reasoning, but by strong facts that they are not well founded. He thinks the tobacco may be taken as an exception and also the country almond, (Terminalia Catappa.)

Of timber trees the Madras Government has required the importation of the Saul and Sissoo from Bengal to Southern India.

In the lists will be found the Amherstia, Poinciana regia, (second only, Dr. Wallich considers, to the former in floral beauty), Poinsettia, various Passion Flowers, Thunbergias, Cassias, Russelia, Euphorbia Bojeri and Splendens, Spermadictyon, Manettia, and a large series of Orchidæ.

Of the Muddar plant (Calotropis procera) 1120 lbs. have been sent to the Dispensary. Almost to every part of the world with which India has any direct communication the Botanic Garden has during the five years furnished collections of plants.

Dr. Wallich expresses himself anxious for an opening to occur for a direct line of commerce with tropical America as the vegetation of its low and inferior altitudes is remarkably well suited to the climate of Bengal. A communication however has recently been established with Jamaica, the auspicious circumstances connected with which, in a great measure, will compensate for its not being direct.

The incessant and laborious correspondence which his duties entail on him would be far less extensive, Dr. Wallich states, in other parts of the world, where the business of a man's life, official or not, is less burthened with writing. Nor is this all, for unless the Superintendent of the Garden assumed, in some degree, the function of Ship Agent he never would be able to keep up the exportations by sea, on which depends so much the usefulness of the Garden.

The list of parties to whom plants have been sent by sea is stated by Dr. Wallich to be simply a more extended detail of each of the entries on that score in the general list. The advantages of the closed boxes for the conveyance of plants for long voyages are every where universally acknowledged. Collections frequently arrive at present from Europe with scarcely one species lost during the transit.

Among the more interesting plants for their medicinal or other useful or remarkable properties which have been introduced of late and in most cases established at the Garden to a considerable extent, so as to admit of distribution, Dr. Wallich enumerates—

1. *Manettia cordifolia*, a very beautiful flowering plant, the root of which is a substitute for the real Ipecacuanha. In connection with this article, Dr. Wallich mentions that the Crinum Asiaticum Toxicarium, a valuable substitute for the Squill, has been increased to a very large extent.

2. *Guajacum*. This valuable shrub seems to stand the climate of Bengal tolerably well—but it has not yet flowered;

Quassia has several timesp roduced its beautiful blossoms in the Garden.

3. *Smilax Sarsaparilla.* This plant does not as yet grow very freely. An excellent equivalent to it as a medicine is found in the Ananta Mūl (Hemidesmus Indicus), which is so plentiful that it can be procured at an expense of threepence a pound.

4. The *Dyer's Mulberry* or Fustick (Maclura tinctoria) has been extensively propagated and much distributed.

5. *Acacia vera.* Although the tree is very healthy, Dr. Wallich has not been able to increase it, nor has it blossomed. It is certainly quite distinct, Dr. Wallich states, from the Acacia Arabia of Wildenow.

6. *Cæsalpinia Coriaria or Libidi of South America.* This very elegant as well as useful shrub (on account of the tanning principle contained in the pod) has been much increased by means of layers, and a number of pods are reported to be, at the time of writing (December 21), on the pod.

7. *The Kie Apple* from Western Africa—which grows well and has already been increased.

8. The *Granadillo* of tropical America has of late blossomed rather freely and some layers have been obtained.

9. The remarkable *Palo de vacca* or Cowtree (Galactodendrum utile of Humboldt), introduced by Lord Auckland, does not like the climate at all.

10. *Ipomœa Macrorrhiza* of Michaux, is easily propogated. Dr. Wallich considers it a most desirable plant both on account of the profusion of blossoms which it produces almost throughout the year, and its gigantic esculent tubers, which are perfectly harmless and contain scarcely a particle of the active principle of the true Jalap.

11. Pois Noire of the inhabitants of Mauritius and Bourbon (*Mucuna utilis*), is a very valuable annual or at most bienneal bean. Large quantities are distributed from the

Nursery of the Agricultural and Horticultural Society. It was introduced some years back from Bourbon and the Mauritius. It is a wholesome and nutritious food for cattle and the tender pods a tolerably good substitute for French beans, at a time of the year when this vegetable is not in season.

12. The celebrated *Tanghin* of Madagascar, a legitimate species of *Cerbera*, thrives extremely well and blossoms freely. It is remarkable for possessing the noxious properties of the genus in an excessive degree, and is said to be one of the most formidable vegetable poisons. Dr. Walljch hopes before long to succeed in getting a variety of the interesting productions of Egypt and the adjacent countries. He states in connection with these countries that the garden possesses an introduced plant of the Medicinal Aloe. On the 22nd of July last the attention of Dr. Wallich was drawn to the subject by Government. There is a large cultivation of what Dr. Wallich takes to be undoubtedly the *Aloe Barbadensis* of Miller (A. vulgaris of Lamarck) as pointed out by Dr. Royle.

Dr. Wallich concludes his observations by reminding the Government, that all the collecting parties who used formerly to be attached to the Garden have been abolished, with the single exception of Mr. Blinkworth in Kamaon, but whose time is chiefly taken up with the Tea Nurseries. That without the aid of collections it is impossible to maintain the Botanic Garden in a state of practical efficiency. That there exists no Botanical Garden in any part of Europe which does not directly or indirectly employ collectors of seeds and plants in foreign countries, and infinitely more urgent is the want of similar means in India, which is almost entirely destitute of private Botanical, and utterly so of Nursery Gardens. It is impossible, (Dr. Wallich adds) that the friends of the institution, however anxious and zealous they may be in their laudable exertions for its good, can accomplish what is so

much required. He therefore begs leave to repeat his most respectful anxious solicitation that the Right Hon'ble the Governor of Bengal will not longer suffer the Garden to continue destitute in that most important branch on which its means of doing well so eminently depends : a monthly expenditure of a few hundred rupees (Dr. Wallich continues) would remedy the defect, and he trusts he need not pledge himself that the disbursement would be carefully and economically applied for the satisfactory accomplishment of the great object in view.

Nursery.

A Report from the Nursery Committee was next submitted, from which it appears that all the new land alluded to in the Report made at the former Meeting had been broken up and planted, and that the Nursery altogether is in a highly satisfactory state.

Spread of American Maize and Cotton Seeds in the District of Allahabad.

An extract from the letter of Mr. Montgomery, Magistrate at Allahabad, which accompanied the valuable Agricultural Statistical Tables, was next submitted, conveying the pleasing announcement that the American Cotton Planters, on their way through Allahabad, were shown the specimens of Indian Corn, and pronounced them nearly, if not quite, equal to what is commonly met with in America. Mr. Montgomery states that he has sufficient seed to sow about forty acres this year.

He adds further, " I am much obliged to you for sending me three barrels of the Mexican Cotton seed, which I will immediately distribute, and give prizes for the best samples of not less than a certain quantity. I will issue some general

instructions as to the mode of cultivation and which I learned from the American Planters on their way through this station. I also shewed the American gentlemen some specimens of Flax raised from seed given me by Mr. Saunders of this Station, which they pronounced to be good but too *branchy*, owing to the seed not having come up thickly. I have saved some seed to sow this year, and would be glad to get some fresh seed from the Society, at the proper season."

For all the foregoing presents and communications the thanks of the Society were accorded.

HENRY HARPUR SPRY, M. D., *Secretary*.

PROCEEDINGS

OF THE

Agricultural & Horticultural Society

OF

INDIA.

JUNE,

1841.

CALCUTTA:

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CIRCULAR ROAD.

1841.

AGRICULTURAL SOCIETY OF INDIA.

PROCEEDINGS.

JUNE 9, 1841.

Agricultural Society of India.

A General Meeting was held at the Society's Room, Town Hall.

The Hon'ble Sir Edward Ryan, President, in the Chair.

(Eighteen Members Present.)

MEMBERS ELECTED.

The Gentlemen proposed at the last Meeting, were elected Members, viz.

Messrs. D. McComish and A. Lang; Lieutenant Geo. Biddulph; Captain T. E. Napleton and Dr. R. M. M. Thomson.

FOR ELECTION.

The names of the following Gentlemen were submitted as Candidates for Election:

AS AN HONORARY MEMBER.

John Forbes Royle, Esq., M. D., F. R. S., F. L. S., F. G. S., Professor of Materia Medica, King's College, London, as an Honorary Member,—proposed by the Hon'ble the President of the Society, and seconded by Drs. Wallich and Spry.

The Hon'ble the President of the Society in introducing the name of Dr. Royle for ballot as an Honorary Member, said he thought that the distinguished services which Dr. Royle had rendered the country by his scientific labours, well entitled him to the distinction which it was now proposed should be conferred on him, and as it was one of which the Society was sparing, he doubted not that it would not be less acceptable on that account.

Dr. Wallich in bearing testimony to the zeal of Dr. Royle said that he took the opportunity of repeating, what he had before said both publicly and privately, that Dr. Royle was the most practical Indian Botanist the country ever had, and he most cordially joined with Dr. Spry in seconding the motion.

AS ORDINARY MEMBERS.

A. Ross Morton, Esq., Bengal Medical Service,—proposed by Dr. Spry, seconded by Dr. Strong.

Frederick Mouat, Esq., Officiating Deputy Apothecary General,—proposed by Dr. Wallich, seconded by Dr. Spry.

Baboo Rajmohun Roy Chowdry, Landholder, Rungpore, —proposed by Mr. H. Bonnevie, seconded by the Secretary.

Baboo Gourypersaud Roy Chowdry, Landholder, Rungpore, —proposed by Mr. Bonnevie, seconded by the Secretary.

J. O. B. Saunders, Esq., Indigo Planter, Allygurh,—proposed by Mr. John Lyall, seconded by the Secretary.

Major R. J. H. Birch, Judge Advocate General,—proposed by Sir Edward Ryan, seconded by Dr. Spry.

John W. Donaldson, Esq., Indigo Planter, Dacca,—proposed by Mr. Leith, seconded by the Secretary.

C. S. J. Montague, Esq.,—proposed by Mr. W. Byrne, seconded by the Secretary.

Presentations to the Society.

LIBRARY.

Annual Report of the Chamber of Commerce and Manufactures at Manchester for 1840—*presented by the Chamber.*

A few copies of Memoranda on the "Chulchulhera" of the Hills, and some other Lichens from the Himalayas in the collection of the Asiatic Society—by Henry Piddington, Officiating Curator—*presented by the Asiatic Society.*

MUSEUM.

1.—A specimen of No. 50 hank twist, spun at Manchester from Cotton grown at Bombay, without the intermixture of any other kind of Cotton—*presented by the Manchester Chamber of Commerce.* [A detailed notice will be found in the body of the proceedings.]

2.—A further quantity of Carolina Paddy acclimated at Hidgelee—*presented by Mr. J. H. Barlow.*

3.—Seeds of the Silver Tree* and seeds of two species of Pine from the Cape of Good Hope—*presented by Mr. Robert Trotter.*

Mr. Trotter states, that having long seen reason to regret the increasing scarcity of wood in most parts of Behar, and knowing that the same want is felt to a greater extent in the North Western Provinces,—his object in presenting these seeds to the Society is to induce the cultivation of trees of a rapid growth. Mr. Trotter mentions that at the Cape the Silver Tree grows to the height of 25 or 30 feet in six years, and thinks it is not improbable that its growth in the Upper Provinces will be much more rapid should, the climate be found

* Leucadendron Argenteum.—H. H. S.

to agree with it. The wood of the Silver Tree is only grown for fuel, whereas the Pines, which are also of rapid growth, are used for timber. Mr. Trotter further adds that all these trees grow chiefly in a dry ironstone and kunkur soil.

4.—Several specimens of Himalayan Lichens—*presented by the Asiatic Society of Bengal.*

5.—Specimen of Georgia Sea Island Cotton soil, and soil from the Island of Cheduba—*presented by Mr. Piddington.*

In his memorandum forwarding these specimens, Mr. Piddington states, that the Cheduba Island soils were brought up by Captain Halsted of H. M. Ship Childers, and on comparing them with some specimens of American Cotton soil in his possession he recognized one sample, said by Captain Halsted to be of some extent, to be identical with the Sea Island Cotton soil of Georgia, and upon analysis it proved to be so; the minute differences discernible were so trifling as not to be worth notice. Mr. Piddington accordingly submits for the museum of the Society a portion of each for the purposes of comparison.

These interesting samples were ordered to be added to the valuable stock of soils which Mr. Piddington has already presented to the Society, a detailed account of which will be found in the 6th vol. of the Transactions of the Society.

The propriety of practically testing the capability of Cheduba Island for the production of Cotton was immediately suggested, and to give effect to the experiment efficiently, it was determined to forward to Captain Williams at Ramree a cask of Sea Island Cotton seed, with a request that he would place it in the hands of some intelligent Soodree on Cheduba, as no European resides there, for the purpose of distribution and cultivation.

6. A small quantity (about half a pound) of Sea Island, Upland Georgia, and Verde Island Cotton Seed received from

the India House by the May Overland Mail—*forwarded by Dr. Royle.*

The peculiar novelty of the above despatch from Dr. Royle consists in the two first mentioned varieties having been sent to the India House from Manchester, where it appears the attempt to grow Cotton has been most successful. The following is the memorandum which accompanied the Manchester grown Cotton:

In the month of March, 1840, some Sea Island cotton seeds were sown in Manchester, and in October and November, Cotton, as fine in staple, long, clear and strong as any other in use, was gathered from the plants.

A compost, consisting of 2-5ths river sand, 2-5ths soil, and 1-5th manure, well saturated with water, containing in solution one oz. common salt to one gallon of rain water, was prepared, in which the seeds were sown and afterwards into which the plants were transplanted. The plants were regularly watered with rain water, having had only 1-10th of an ounce of salt dissolved in one gallon. In the early progress of the plants, constant moisture is very essential, and till matured a moderate degree of moisture must be maintained. Each plant should have not less than a two feet cube of earth, equal to eight feet. The temperature in which the plants grew was never less than 50 nor perhaps more than 100 degrees. The plants were always vigorous and healthy. Seeds may be sown in October and November and the plants transplanted in March. Probably the inferiority of Cotton generally, and of East Indian in particular, arises from an insufficiency of depth of soil, and of moisture, but irrigation might supply the latter.

7. A basket of remarkably fine peaches grown in his garden at Howrah—*presented by Mr. C. Hampton.*

Mr. Hampton states that the trees, whence this fine basket

of fruit was obtained, have been so productive, that for a week past (his note is dated 21st May), he has plucked daily about four hundred peaches from eight trees. Mr. Hampton mentions further that he has many more trees bearing, yet untouched, and if the whole of the fruit could be brought in, he might safely calculate upon obtaining, from the sixteen trees, 9 or 10 thousand peaches.

8. Three hundred Tenasserim Seed Yams, the produce of his garden at Allipore—*presented by Mr. Richard Vaughan.*

This very excellent vegetable was particularly alluded to by one or two Members conversant with its superior qualities, and most of the contents of the basket was appropriated by the Members for their gardens. A portion, however, was reserved for the nursery where it was determined it should be propagated for distribution hereafter.

9. Melons grown in the neighbourhood of Calcutta from Cabool and Candahar Seed—*presented by Mr. Robert Smith.*

The vines were trained in semicircular trelisses, and each Melon, as it set, was tied up in a linen bag, by which means, in most cases Mr. Smith succeeded in protecting the fruit from the fly, and thus brought them to maturity. Mr. Smith states that his endeavours to acclimate the Rock Melon, Cantelupe and other choice European kinds have not yet proved successful; but he intends pursuing the experiments by means which he thinks may be more likely to secure the object contemplated.

10.—Ten English Ploughs,—50 Hoes and a Steel Yard—*presented by the Supreme Government.*

Government Botanical Garden at Saharunpore.

The first paper the Secretary desired to submit was an official Report, of which six copies had been received from

Government by Dr. Falconer, the Superintendent, on the state of the Botanical Garden at Saharunpore.

The Report is made under the new organization authorised by the Right Hon'ble the Governor General. The orders of Government were received on the 31st of July 1839, and the first step was to put the Establishment on the increased scale authorised. Also to re-establish the Mussooree Garden.

To arrange adequately for following up the important objects embodied in the Resolution in regard to the collection of Seeds from the Himalayas for transmission to Europe, and the introduction of useful and ornamental species into India, to both of which objects the attention of the Superintendent was specially directed by His Lordship the Governor General, large parties of collectors were started early in the Seed season of 1839 into different parts of the Himalayan Mountains, and a most extensive and valuable collection was formed along a very wide range, embracing the following tracts: a party of collectors in Kemaon whose beat extended from the Plains up the Aluknunda River to the Neti Pass on the Thibetian frontier, four detached parties in the hill tract between the heads of the Ganges and Sutluj, with a range of collection extending from the outer ridges to the snowy mountains; a large and valuable collection from Cashmere gathered around the valley and the adjoining portions of Thibet; and a collection from Affghanistan, for which the Superintendent was indebted to Mr. Wm. Griffith, employed on special Botanical duty. This last comprised several valuable and rare species; among others Edgeworthia Buxifolia (Fal.) which yields an edible fruit unknown in England; the Bulloot Oak of Central Asia, and the Neoza or Edible Pine from the borders of Caffristan.

In the previous year of 1838 a large mixed collection, com-

prising upwards of 500 species from the Himalayas, was sent at different times by the overland route; but although they came up freely a great majority of them was deemed hardly worthy of cultivation in England, and in consequence in the dispatches of the season 1839-40, attention was directed more to abundant supplies of selected choice species than to numerical variety. The collection sent was still rich. The Seeds reached England in excellent order, and for the estimation in which they were held, and their successful germination (hardly one failed) Dr. Falconer desires to refer to the communications from Dr. Royle and other annexed documents. The dispatches have not been limited to the transmissions made to the Hon'ble the Court of Directors; and Dr. Falconer has been duly informed that so many as 5,000 Deodar Plants have been raised in some Nurseries in Scotland. The object contemplated by His Lordship the Governor General in so far as regards Himalayan Seeds, has been eminently successful under the new system.

The arrangements for the current season have been on a similar scale, and a still richer collection formed. An abundant supply has been sent of the Neoza or Edible Pine, and other species of which but sparing quantities went last year. The amount of the dispatches is only limited by the capabilities of the Overland Mail to transmit them.

As regards the introduction of valuable species into India, a nearly constant succession of seeds has been received since November 1839 from the India House, through Dr. Royle, comprising Agricultural, Vegetable, Medicinal, useful and ornamental plants adapted to the Himalayan mountains and the plains of the North of India.

The first dispatches were imperfectly packed and arrived in a damaged condition. The subsequent supplies have been more successful. In regard to the general results of the sow-

ing it has been remarked that such seeds as come directly from England generally vegetate, while those which are imported from abroad and thence forwarded to India generally fail. Besides the dispatches from the India House, other valuable seeds have been received under the arrangements of the new system. Of this description are the following seeds received through the Bombay Government from the British Consuls at Alexandria, Damascus and Latakia, the varieties of Wheat cultivated in Upper and Lower Egypt, the Senna of Commerce, the very superior Tobacco of Latakia, and the Carob Tree or Ceratonia Siliquastrum. These were specially applied for under the measures adopted by the Right Hon'ble the Governor General, and the introduction of them, with one exception, has been successful. Of the Carob Tree, the seeds of which are used as an article of food in years of scarcity in Syria, several hundred plants have been raised, and will be distributed eventually along the dry and sandy tracts of the North-Western Provinces, where they will constitute a valuable boon to the inhabitants. In reference to the estimation in which it is at present held, it may be here stated, that the pods of the Carob Tree at present sell in the Bazars of Upper India at the rate of Rs. 10 per seer. (10 shillings per lb). Of the Latakia Tobacco, two kinds, the "Curarri" and the "Gebeh," have been received and are now growing freely. Instead of the Cassia Acutifolia, or Senna of Commerce, which was applied for, seeds of the Cassia Occidentalis were sent, which yielded an abundant crop; but the leaf is of a very inferior value compared with the kind indented for. The varieties of Egyptian Wheat are extremely productive, and as compared with the Indian sorts, are much less dependant on moisture for the production of a good crop. They are therefore well adapted for introduction into the dry sandy tracts of Upper India. Three sorts are now growing freely in the Botanic Garden,

and the produce it is expected, will admit of extensive distribution.

On the same point it remains to be added, that part of the supplies received from Dr. Royle, comprised an assortment of agricultural Grain Seeds from Switzerland, communicated by Monsieur De Candolle. Some of these, such as Rye, are, Dr. Falconer believes, new introductions into India. On their general character it may be remarked, that the grains were far superior as articles of food to the same sorts now commonly cultivated over India. It is a received axiom in scientific Agriculture in Europe, Dr. Falconer remarks, that grains gradually wear out if the same sort is continuously grown on the same spots, and that an importation from distant localities is required to keep up the produce at its highest standard of quality. On comparing the Switzerland grains with the best Indian grains of the same sort, the superiority of the former was very apparent. The body of the seed of European Wheat was formed of a farinaceous powdery albumen, which flew off into a fine dust on crushing, while the Indian grains were seen to consist of a hard bony looking albumen, which was broken with difficulty, showing what English Agriculturists call a "sleety body," and indicating a comparatively very inferior grain. Dr. Falconer adds, that according to his observation this is the general character of the wheats cultivated in the plains of India: and that it is worthy of consideration whether the grains of the country might not be improved by the Government encouraging the importation of seed from other countries.

Chesnuts have been received in several dispatches for introduction into the Hill Provinces, as an article of food in years of scarcity, like the Carob tree for the plains, but none have yet arrived in germinating order. Among other useful plants which have been introduced and successfully grown, may be

enumerated 12 species of Rhubarb, Atropa Belladonna, Hyosciamus Pallidus, Aconitum Hycoctonum, Althæa Officinalis, Gum Ammoniac, species of Datura Aconitum, &c. The vegetable seeds have, for the most part, been very successful and yielded excellent products.

An attempt was made during the cold weather of 1838-39 to forward slips of English Fruit trees, by the Overland Mail to India, for grafts in this country. The dispatch was sent by the Horticultural Society of London to the Right Hon'ble the Governor General: but the result was unsuccessful. A repetition of the experiment was made last spring in a similar dispatch of cuttings and roots from the India House through Dr. Royle. They were received at Suharunpore on the 21st March, packed up in numerous alternate envelopes of coarse brown paper and Caoutchouc cloth, so as to be perfectly air and water-tight. The cuttings were rolled up in separate bundles of moss. The contents were found on their arrival to be quite dead, the bark and buds being sphacelated and mildewed. The collection was very choice and valuable, and the want of success with it is much to be regretted. The failure in these two instances, however, is not conclusive against the practicability of the plan. Dr. Falconer is of opinion that the package was made too air-tight, and that the layers of moss were not sufficiently dry at the time of package. The cuttings were destroyed not by dissication but by mildew, and the moss exhaled a liquorish yeasty odour, from partial decomposition.

In regard to the increase of the riches of the Botanic Garden in ornamental plants and species generally, it may be remarked, that if the supplies from England and abroad are continued on the same footing as at present, the Botanic Garden at Suharunpore and the Hill Garden at Mussooree will be stocked, up to the fullest capabilities of the establishments at both places for their cultivation.

In evidence of the amount of utility of the Botanic Garden in the dissemination of seeds and vegetable products, Dr. Falconer begs to refer to his "Abstracts of Distribution," comprising the period which has elapsed since the date of the new organization; if compared with the similar documents forwarded when the Superintendent had last the honor of reporting to the Government on the state of the Botanic Garden, it will be seen that the amount of distributions has nearly doubled under the new system.

Of the general operations which have been in progress since the new organization, the principal have been the preparatory measures for an extensive natural arrangement of plants, now in course of execution, the extension of the Agricultural and Horticultural departments on a scale which will add to the utility and ornament of the Botanic Garden; and some alterations on the old plan. Mauritius Sugar-cane has this year been grown of a quality equal to the value of about Rupees 300 per acre for the Raw Cane.

In compliance with the orders of Government dated the 29th February 1840, conveying the instructions of the Hon'ble the Court of Directors for a trial of Hemp cultivation in the Botanic Garden, an extensive experiment was immediately instituted during the hot weather and rains, and the produce is now in course of being worked up. The results when completed will form the subject of a separate communication.

In the Hill Garden at Mussooree a large addition has been made of species both ornamental and useful through the supplies forwarded from the Hon'ble the Court of Directors. In reference to the capabilities of the situation for producing excellent European fruits, notwithstanding certain disadvantages in the northern exposure and hill-embedded situation of the ground, it may be added that some European Apples closely allied to the Ribston Pippin, have been pro-

duced this year equal in size and flavor to the best English fruits of the same sort: some of the specimens having weighed 11 ounces. The fruit trees introduced from Cashmere in 1838, have not yet borne fruit. Among the more valuable productions which have been introduced and are cultivated, it may be remarked, that Asafœtida from the borders of Central Asia, and Ammoniacum, both valuable Gum-bearing plants, with the Prangos Pabularia, are thriving excellently, with numerous species of Rhubarb, and several Pines introduced from England. The Prangos Pabularia has completely established itself on this part of the Himalayas, but as supplementary to his former remarks on this plant in reference to the high estimation in which it was held by Mr. Moorcroft, Dr. Falconer adds, that Mr. Griffith during his late tour in Affghanistan, met with the Prangos frequently in that country, but no where found it prized as a valuable fodder or regarded as an agricultural object of any interest. Its value appears to have been greatly over estimated both in India and England. The Koot or Putchuk noticed in his former Report as having been introduced from Cashmere, has not been successful, but a renewed trial is in progress of being made.

Hop Plants raised by Captain Kirke of Deyrah, from seed introduced by His Lordship the Governor General in 1838, are growing freely in the Mussooree Garden, and Dr. Falconer is informed that they are still more luxuriant in Captain Kirke's Garden at Deyrah. But Dr. Falconer conceives, that there is little or no prospect of a good Hop crop being produced, in consequence of the periodical rains which will interfere with the flowering, or seed setting season, on which the crop entirely depends. It is well known that in England a rainy season is fatal to Hops, during the later stages of the plant's growth; and in illustration of the difficulties presented

by the rains in this part of India, an analogous case may be adduced in the vine, which both at Deyrah and Mussooree grows luxuriantly in the open air; the fruit sets and forms freely, but before it has time to ripen the rains come on and the grapes are destroyed. These circumstances apply in precisely the same way to the Hop, and oppose its successful cultivation. The only situations adapted to it in this part of the Himalayas are the Thibetian tracts beyond the influence of the periodical rains, such as Kemaon, where it might be grown in all probability in the utmost perfection; but the land carriage amounting to about 20 days' journey through the Hills before the article could be landed at any point in the plains, would press so heavily on the cost of the produce, as to make its cultivation a loss. The extensive scale upon which European Troops are now employed in Affghanistan makes it a matter of importance to determine whether Beer for the consumption of the Soldiers might not be produced in the neighbourhood of Caubul, and Dr. Falconer is of opinion that Hops could be grown of the best quality in many parts of Affghanistan; the conditions of soil and climate in regard to heat and rain are most favorably combined; and he regards an experimental trial as meriting the favorable consideration of the Government. The localities which, with limited information in regard to the country, Dr. Falconer would recommend as best adapted for the trial, are the immediate vicinity of Caubul, the steppe between Ghuzni and Mukooa, Pugwan, and the valleys of Kohistan. In anticipation of the probability of the subject being favorably entertained by the Government, Dr. Falconer has written to Dr. Royle for a large supply of seed by the overland route.

Dr. Falconer has put himself in communication with the Commissioner of Agra regarding the Public Gardens there, and extensive supplies of Trees, &c. have been sent from the Botanic Garden to Agra.

The circumstances connected with the Tea plantation in Gurhwal and Kumaon, will form, Dr. Falconer states, the subject of a separate communication.

The duplicate specimens of the Suharunpore Herbarium are in progress of elaboration for transmission to the Hon'ble the Court of Directors.

Increasing Value of Cotton Wool at Manchester.

A highly interesting letter from Mr. Boothman, Secretary to the Chamber of Commerce and Manufactures of Manchester, received by the last Overland Mail, was the next paper which was submitted. The letter is dated 30th March, 1841, and is as follows :—

DR. SPRY,

Agricultural and Horticultural Society of India, Calcutta.

SIR,—I have the honor to transmit to you, for the inspection of the Members of the Agricultural and Horticultural Society of India, a specimen of No. 50, Hank Twist, which has been lately spun from Cotton grown in the neighbourhood of Bombay, without the intermixture of any other kind. The Cotton in question is of beautiful color, and has been very carefully grown and cleaned ; but it is not free from the peculiar faults of Indian Cotton, being unequal in fineness and length of fibre; the cleanness alone, however, would bring one penny per lb. or upwards more in our market than the common sendings from India. The parcel however, from which these yarns have been spun was consigned to Messrs. Calrow and Branker of Bury near this town, with instructions to spin it as fine as the quality would permit manufacturing yarns to be spun, and these gentlemen have produced No. 50s. twist, and No. 56s. weft from that Cotton

alone. These are the finest in Count, and the best in quality which I have ever seen from unmixed Indian Cotton. I send you a sample of the 50s., that you with us may partake of the pleasure in seeing the advance which is being made in this most important question.

I have received several parcels of numbers of the proceedings of your valuable Society. I am directed to express the thanks of this Chamber for your kindness, and the fervent hope of the Board that you will continue to promote, under whatever temporary difficulties may present themselves, the great question which is fraught with nothing but blessings for both countries.

I have the honor to be, Sir, your most obdt. Servant,

THOS. BOOTHMAN, Junior, *Secy.*

With reference to the fineness of the hank twist referred to by Mr. Boothman, Junr. curiosity was expressed to know to what fineness Cotton Wool was spun at Fort Glo'ster works below Calcutta, and it was stated that there they can spin as high as No. 50s.

Assam Tea.

The Hon'ble the President desired to present to the Meeting an important letter which had been placed in his hands, bearing on the ultimate prospect of the Tea of Assam becoming an established Article of Commerce. The letter is addressed to W. Butterworth Bayley, Esq., Chairman of the Court of Directors, by Mr. Thompson, Tea Broker of Mincing Lane.

38, *Mincing Lane*, 10*th March*, 1841.

To W. B. BAYLEY, ESQ., *&c. &c. &c.*

SIR,—I beg to reply to your question as to the relative value of the Assam Tea as compared with China Tea, that the prices obtained at the Public Sale of the 25th ultimo, for that

by the *Andromeda*, were arbitrary and various according to the caprice of the dealers, many of whom seemed determined to possess themselves of some little of an article, the novelty of which had created an interest that, though lessened, has not subsided; and they were enabled to carry out their desire from the smallness of the packages, and each lot containing only one of them.

My consideration from the first has been drawn to the prices that might rule when quantities sufficient for general use should be brought into the market, and with this view, in my report to the East India Company, the 27th August, 1838, I classed the samples in relation to China Tea, thus:

A. 1-10 to 2*s*. per lb.
No. 3, 1-8 to 1-10.
D. 1-7.
B. 1-5.
C. 1-6.

No. 1, 1-3 this being then the lowest price for common Congou; and in my report of the 22nd January, 1840, upon three samples sent to me from the India House by Mr. Greene, my estimate was, for

The "Assam Souchong" 2*s*. 11*d*. per lb. it being equal to China Tea, that the Company used to give

22 to 24 Taels per pecul for,
"Assam Pahe" 3 3..... 30 to 32 Taels „ „
Tea from the China Plant, 3.. 26 to 28 do. „ „

The import by the *Andromeda* contains samples of Green Teas, a few of which, particularly the Young Hysons from the Kaheng Tract, and the small Gunpowder from the Ghiligan Tract, are well made and very good.

The Black Teas are coarser and stronger than the China Teas; this may arise from the as yet but partially cultivated state of the plant, and it may be that as improvement takes

place in this particular, there will be superior flavor with some abatement in strength.

We have now sufficient before us to warrant the conclusion that, with continued care in the manufactures, when the product shall be to such an extent as to become an article of commerce, this Tea will rank nearly equal with China Tea and its value rule accordingly; much is to be done however, before the finer and finest qualities of the latter are equalled.

I have the honor to remain, &c.

(Signed) WILLIAM JS. THOMPSON.

In reference to the foregoing letter, Dr. Wallich took occasion to remark, that at the late sale of about one hundred and thirty chests of Assam Tea, which has been held for the first time in Calcutta, the prices realized averaged for the whole consignment both of the Government and that of the Singpho Chief Ningroola, one rupee six annas and two and $\frac{3}{4}$ pies, equivalent to about 2*s*. 10*d*. sterling per lb. The bulk of this consignment, Dr. Wallich desired further to remark, consisted of Congo and Hyson which are the commonest classes of Tea.

Extraordinary Productiveness of Afghanistan Clover,—with a Memorandum on the Himalaya Pine Seeds and Lucerne Grass.

The Hon'ble the President next desired to call attention to a highly interesting document by Dr. Royle, which he had received, connected with some experiments made in England on the Himalaya Pines, Clover, and Lucerne Seed sent from Afghanistan.

Of the seeds sent from India those which have attracted the greatest attention, and which are considered of the highest value, are the different Himalaya Pines—with Afghan Clover and Candahar Lucerne.

The Himalaya Pines, especially the Deodar, have been frequently imported by sea, but few have vegetated. Those sent overland have vegetated every where both in Great Britain and Ireland, as far north as Tessa, and south in Cornwall. The plants have in many places withstood the severity of winter even when only seedlings. The older plants have been unaffected by the late severe winter, and as they also withstood the severe winter of 1837, there is no doubt now of the greater number of the Himalya Pines being well suited to the climate of those Islands, and the Deodar will form one of the most valuable Timber Trees.

The Lucerne Seed which was sent by Mr. Griffith from Candahar, is of the same species as that formerly introduced into Europe, but seeds removed to this country have retained a portion of that habit natural to those in Candahar. Some, both in the neighbourhood of London and in Ireland, grew most luxuriantly; so much so that Mr. Ogilby was induced to consider it a new species from the heaviness of the crop, which, it yielded. It has moreover another good quality, that of coming in as green food at a much earlier period than any thing else known here. Mr. Turner of Walworth writes on the 19th March, when he sent specimens six inches in height, "from its very early character I think it will become a most valuable addition, as besides growing rapidly it will produce a heavy crop."

The Clover has like the Lucerne been extensively distributed, but does not appear to have attracted equal attention every where. The Highland Society describe it as having a prostrate and trailing habit, and three or four feet in length. In Essex in the neighbourhood of London and in the North of Ireland, it has grown luxuriantly, having tall and thick, but soft and succulent stalks, which were rapidly cut down and again grew freely. It seems to have died in most places, but

at Walworth one of the plants has sprung up again and is now about six inches high;—accounts have not yet been received from all the other places, but it is most interesting and important on account of its larger yield and from being so much relished by cattle. Mr. Ogilby, Secretary of the Zoological Society—whose father is a landed proprietor in the North of Ireland, is the only one who seems to have paid it the attention it deserves, as he had the drills in which it was sown carefully measured and the space it covered calculated. Happening to be in Ireland in the summer he was struck by the great growth it had made, and found that it yielded at the rate of 37 tons per acre when cut—and this calculated from the first cutting only. Near London it was cut several times and sprung up again with great vigour and freedom, and a person who kept three horses and had only sown a single row of this Clover Seed, describes it as constantly springing up after it had been cut down. The quantity he could not estimate but it astonished him. Mr. Ogilby considers that it will prove the greatest boon to English agriculture, since the introduction of the Turnip. It would be advisable to ascertain, whether, when better known, the seed might not be exported from India to Europe as an article of commerce.

Formation of an Agricultural and Horticultural Society for the Western Provinces.

The gratifying intelligence was next communicated of a Public Meeting having been held at Allahabad on the 3rd ultimo for the purpose of taking into consideration the expediency of forming a Society for the advancement of Agriculture and Horticulture in the North Western Provinces. R. M. Bird, Esq. of the Sudder Board of Revenue, in the chair. A series of resolutions (a copy of which in English and the Vernacular

is forwarded) having for their object the organization of "the Allahabad Agricultural and Horticultural Society," was put and carried. A Committee for the present year was formed consisting of the following gentlemen—Mr. Montgomery, Mr. Saunders, Mr. Lang, Mr. Roberts, Capt. Lloyd, Mr. Erskine, Rev. J. C. Proby, Capt. Cumberlege, Mr. Lowther, Mr. R. M. Bird, Mr. Caird, and Mr. J. P. Ledlie.

Mr. Bird to be President, and Mr. Ledlie, Secretary.

The Committee on the part of the Society is desirous that a communication may be maintained between it and the Agricultural and Horticultural Society of India, with a view to mutual aid and co-operation in the prosecution of a common object, and that each may have an opportunity of deriving profit from the researches and experience of the other. In his private note Mr. Ledlie further mentions, that the propositions for the formation of the Society originated with Mr. Saunders, a public spirited Planter in the Allahabad district—that it was zealously taken up by Mr. Montgomery, the Collector, and has been warmly supported by nearly all the residents at the Station. The contributions amount to nearly *seventeen hundred rupees*, and the Society already numbers *thirty-one* Members. Mr. Ledlie further adds that they have not yet had an opportunity of enlisting the natives into their association, but that every hope is entertained that when the nature and object of the Society is explained to them, a considerable accession will be the result. The site of a garden has been fixed on, and the operation of levelling, digging wells, &c. commenced.

In reference to the above highly encouraging announcement the Hon'ble the President observed, that he felt assured that it was needless for him to say how glad the Agricultural and Horticultural Society of India would feel to co-operate in every way it was able towards meeting the wishes of the Alla-

habad Society and advancing the great cause for which it was established. A congratulatory communication accordingly was directed to be made.

Berhampore Horticultural Society.

The paper which next came before the Society was a Report from the Berhampore Branch Society of the result of the Horticultural Exhibition, which was held at the station at the house of the President, F. W. Russell, Esq., on the 20th January last. The prizes awarded consisted of three silver medals (two of which were the gift of the Parent Society) and one hundred (fifty of which was from the Parent Society) rupees.

Captain Strange, with Lieutenants Miller and Daniell were requested to form a Committee of adjudication. A regret is expressed in the report that the class cultivators who supply the bazars have not yet been induced to enter the lists against the malees of private gardens; as however several natives of rank now appear to take an interest in Horticulture, and the private malees evince no small degree of emulation, a hope is felt that their good example will ere long have the desired effect upon their countrymen. The Otaheite Sugar-cane is stated as having been peculiarly fine, while the Cauliflowers, Cabbages, and Knole Kole excited universal admiration.

Fruit Seeds from England.

With his letter forwarding the Cotton Seeds grown at Manchester, Dr. Royle gives cover to a note from Dr. Lindley of which the following is an extract:

Horticultural Society of London, 27th February, 1841.—

You will receive a collection of seeds of Fruit Trees, and I really cannot help thinking that it would be much better to send seeds rather than plants of such things to India. The former travel well and cheaply, the latter ill and at considerable expense.

For my own part I see no object in sending out plants of fruit trees. It is true that if they can be made to grow you will thus secure the identical varieties cultivated in England. But it is also true that if you sow the seeds of the best European fruits you will obtain varieties of excellent quality and just as good, for all useful purposes, as those from which the seeds are taken. The seeds I have from time to time sent you, have all been gathered with great attention, and can be relied upon for excellence.

Yours truly,

JOHN LINDLEY, *Vice Secretary.*

On the success which had attended the sowing of cold climate seeds in Bengal, Dr. Spry mentioned the fact, that in a garden at Calcutta, some raspberry seeds had been sown by a gentleman of his acquaintance, and that several had vegetated and young plants raised, one of which so far came to perfection, as to flower and produce one large red raspberry. At Serampore, he had been informed by Dr. Voigt, in a note dated 14th April, that the *chryseis crocea* of Lindley, a Californian annual, had just flowered in his garden after having lived three years without producing a single flower.

Information from various Gentlemen to whom Cotton Seeds have been despatched.

The Secretary desired to remark that he had several letters which he had received from different gentlemen to whom the late supply of Cotton Seeds received from Government had

been sent. Some of these furnished many useful and interesting items connected with the cultivation of Cotton in various parts of the empire, and he therefore had made extracts from them. It would appear that the season for Cotton sowing in Upper India, that is to say, all beyond Benares, is *at the commencement* of the periodical rains: while in Lower India or in parts of Behar, in Bengal, Orissa, and Arracan, *it is after* the periodical rains.

Mr. Hamilton Bell, dated Omeghur near Agra, April 24.—"Mr. Mercer's suggestion of the proper period of sowing may be suitable to the Mexican soil*. To that of this country, I imagine, it would not be at all applicable, as the plant will hardly stand the light frosts, and even when these do not prove destructive of the plants, the pods will not come to maturity but will burst during the cold season, so that supposing the plants to be of similar character, I should doubt the advantage of departing from the existing practice of sowing with the first showers of the approaching periodical rains. The breaking up of the heavy rains may here be taken at about the middle of September. Cotton then sown would assuredly require irrigation ere it reached maturity, and this it would not easily obtain when all the cattle and wells are engaged in watering the rubbee crops of wheat, barley, &c. I will, however, try both plans and report the result."

From Mr. Quintin at Gya, dated May 2nd.—"I have found the greatest difficulty in prevailing upon the cultivators about here to accept the seed you have been good enough to send me. I do not find that Cotton is very extensively cultivated in the vicinity of Gya, and the cultivation of it is

* Mr. Mercer's observation is, that he considers "the best time for sowing would be *after* the heavy rains of the South West Monsoons are passed."—H. H. S

entirely confined to the Opium Assamees, who are at present afraid to use the seed I have, from a fear of my laying claim to a share in the produce—notwithstanding my having fully explained to them, that the seed is a *free gift*, and that I will give a reward of twenty rupees to the individual, who will bring me the best sample of *one seer*, produced from this seed, to be tested from the produce of some I am carefully cultivating in my own garden. I have not noticed to the cultivators the rules laid down by Mr. Mercer, as I consider that it will be a grand step gained, if I can only prevail upon them to *use* this seed and sow it after their own fashion. The advantages of scientific cultivation I hope to prove to them by our success when we meet to compete for the prize. I shall have the pleasure to address you further on this subject hereafter. I take a sincere and deep interest in this matter, and indeed in the affairs generally of the Horticultural and Agricultural Society, and if my services can be made available at any time you will do me a favour in commanding them."

From Mr. Payter, Indigo Planter at Bogra, dated March 30th.—" As my agricultural control in this District is great, the quantity of seed you have favoured me with is inadequate to my wants. I therefore request you will do me the further favor to forward me as much as you possibly can at intervals free of expense.

My friend Mr. Cockburn intends distributing his amongst the villages around the station, which is mostly a hard red clay soil in which mulberry cultivation succeeds better than any other kind of soil in Bengal—my *locale* is the North-western part of the District, bordering on the Southern extremity of the Dinagepore District, and in quite a different soil to that which I have just alluded—and I hope I shall be able to report favorably upon the distribution of the Seeds, as a good deal of cotton is grown about my vicinity; but it is sown

in *September-October*, and the *crop* they are now reaping; I intend to send you down a package of it in a few days in order to have the opinion of experienced parties in that branch as to its quality compared with other Bengal or aboriginal cotton."

From Mr. Ewart, Magistrate and Collector at Pooree, dated April 6th.—"The season for sowing cotton seed is October. In the mean time I shall exert my influence to have the experiment made in as many different localities as possible. There are but few people in this district who can afford to devote their land entirely to cotton cultivation for a series of years. They usually get a crop of rice or some other produce from the land before the cotton season. This practice would necessarily prevent this cotton attaining any strength or value if my impression is correct, that it only does so after two or three years. I have translated Mr. Mercer's directions into Ooriah and shall distribute a copy of them with each parcel of seed. I will not fail to communicate each year the result of the experiments and to furnish specimens of the produce. If I can prevail upon a sufficient number of *capitalists* to devote land to the purpose I shall apply for an additional supply of seed."

From Mr. Shaw, Commissioner at Cuttack, dated 15th April.—"The best season for sowing Cotton in this Province is after the heavy rains, at which period some parties here are desirous of sowing, about ten Cuttack beegahs each of 60 yards square—which will allow space for 3600 plants per beegah—and each beegah will require about two seers.

"In due time, I hope to have the pleasure of reporting to you the result of the experiment. I may mention that I have offered two prizes of fifty rupees each to the two most successful cultivators. And all agree that they will send any required quantity, as samples for the inspection and approval of the Society."

From Lieutenant Munro, H. M. 39th Regiment at Kamptee-Nagpore, dated April 18th.—"I had the pleasure of receiving your letter dated the 24th ultimo, as well as the Cotton seed despatched with it. Within an hour of the receipt of your letter I forwarded it to Major Wilkinson, the resident at Nagpoor, as I have recently been on a tour with him, and have therefore become acquainted with the capability of the soil of the province of Chuteesgurh, a division quite unexplored, of the Nagpoor country. I had seen many places apparently well adapted for the successful cultivation of Cotton, some of which were under the superintendance of zemindars desirous of improving their property as much as possible. I therefore expressed my opinion that the present opportunity of obtaining good Cotton seed should not be lost. He immediately was good enough to forward the accompanying letter, to his Agent at Calcutta for more seed.

"The Cotton will be distributed immediately on its arrival with instructions how to cultivate it given to each person. There are five or six large gardens in the country I visited, very well watered, and I shall recommend the Cotton being cultivated in them, in order that greater pains may be taken with it. Vast quantities of Cotton pass through this place to Mirzapoor from the country to the westward of this, and particularly from the banks of the river Wardah. I do not feel myself equal at present to writing you the account of the interesting country I have lately travelled through, but hope to do so at some future time, as I think many of the particulars would be interesting, and some useful, more especially from a country marked in all maps as unexplored and which is literally intersected by fine rivers, not one of which is correctly laid down."

From Mr. H. Bonnevie, Indigo Planter at Rungpore, dated March 27th.—"I have no wish for a larger supply—having

great difficulty to prevail on these ignorant cultivators to plant it—owing to a superstitious belief that the vengeance of an evil spirit will befal them for introducing the cultivation of a new article. I have, however, succeeded in inducing a few individuals to sow some, and if it proves itself productive this year, I hope for better success the next. I shall not fail hereafter to send you a specimen and report my progress. Flax grows remarkably well here, and I have no doubt it would succeed well in this district, but unfortunately there are none amongst us Europeans that understand how to produce and clean it. I have sown some from seed obtained from imported Belgian seed, and it has grown as luxuriant as any I ever saw grown in my own country, Norway and the Baltic. I shall be most happy to receive the Society's proceedings—and more so if you will extend your favor so far as to send me two or three Bengali copies for distribution amongst the zemindars; for as these men now commence to show a inclination to improve agriculture in general, it might induce them to become members, and introduce foreign cane, tobacco, cotton, &c. &c. in this district*.

For all the foregoing presents and communications the thanks of the Society were accorded.

HENRY HARPUR SPRY, M. D., *Secretary.*

* With reference to this last request, Mr. Bonnevie has been supplied with twenty-four copies of the Bengali translation of the Transactions of the Society.—H. H. S.

PROCEEDINGS

OF THE

Agricultural & Horticultural Society

OF

INDIA.

JULY,

1841.

CALCUTTA:

PRINTED AT THE BAPTIST MISSION PRESS,

CIRCULAR ROAD.

1841.

AGRICULTURAL SOCIETY OF INDIA.

PROCEEDINGS.

JULY 14, 1841.

Agricultural Society of India.

A General Meeting was held at the Society's Room, Town Hall.
The Hon'ble Sir Edward Ryan, President, in the Chair.
(Twenty seven Members present.)

MEMBERS ELECTED.

The Gentlemen proposed at the last Meeting, were elected Members, viz:—

AS AN HONORARY MEMBER.

John Forbes Royle, Esq, M. D., F. R. S., &c.

AS ORDINARY MEMBERS.

Dr. Fredk. Mouat, Baboos Rajmohun Roy Chowdry and Gourypersaud Roy Chowdry, Major R. J. H. Birch, Messrs. J. O. B. Saunders, John W. Donaldson, and C. S. J. Montague.

FOR ELECTION.

The names of the following Gentlemen were submitted as candidates for election:

Ezra Thomas Downes, Esq., (Medical Service,) Assistant Assay Master, Calcutta Mint,—proposed by Dr. Spry, seconded by Dr. Wallich.

— Hall, Esq., Indigo Planter, Gorruckpore,—proposed by Dr. Spry, seconded by Dr. Strong.

The Hon'ble Edmund Drummond, (Civil service,) Gya,—proposed by Mr. Colquhoun, seconded by Dr. Spry.

F. Bell, Esq., Indigo Planter, Jessore,—proposed by Dr. Wallich, seconded by Dr. Spry.

George Plowden, Esq., Magistrate and Collector of Sylhet,—proposed by Dr. Spry, seconded by Dr. Wallich.

Lieutenant Henry Rigby, of the Engineers,—proposed by Major De Bude, seconded by Colonel Fiddes.

Baboo Callychunder Lahoree, Dewan to the Rajah of Cooch Behar,—proposed by Mr. Bonnevie, seconded by the Secretary.

Lieut. Robert Campbell, (47th Regt. N. I.) Adjutant 1st Assam Sebundy Corps,—proposed by Lieut. James Wemyss, seconded by the Secretary.

P. P. Carter, Esq., of Bojepore Factory, Shahabad,—proposed by Mr. Downing, seconded by the Secretary.

PRESENTATIONS TO THE SOCIETY.

LIBRARY.

1. Dr. Taylor's Topography and Statistics of Dacca.
Dr. Macleod's Sketch of the Medical Topography of Bissnath.
Dr. Murray on the Topography of Meerut.
Dr. Butter's Topography and Statistics of Southern Oude.
Dr. Martin's Notes on the Medical Topography of Calcutta.
Dr. Rankine on the Topography of Sarun.
Dr. Dollard's General and Medical Topography of Kalee Kemaoon.
Dr. Mc Cosh's Topography of Assam.

Presented by Government.

2. Proceedings of the American Philosophical Society. — (Nos. 12 and 13 of vol. 1.)—*Presented by the Society.*

3. Wrongs and Claims of Indian Commerce. (From the Edinburgh Review, No. 146.)—*Presented by Mr. Alexander Rogers.*

4. On Gypsum as a Fertilizer.—By Cuthbert W. Johnson. Esq.

5. The Farmer's Almanac and Calendar for 1841.—By C. W. Johnson and William Shaw.

The two foregoing brochures were presented by Mr. G. W. Johnson.

The Farmer's Almanac was particularly alluded to by the Secretary as containing, within a small compass, many valuable hints for the Farmer and Agriculturist, and also much useful information for the general reader

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MUSEUM.

1. Hair of a species of Goat, an inhabitant of the Hills bordering on the province of Chittagong.—*Presented by Mr. Archd. Sconce.*

2. Seed of the famous White Mulberry from Babawallee near Candahar, and a few other kinds of seeds from Affghanistan —*Presented by Col. Stacy.*

3. A small assortment of Medicinal and other Seeds collected in the Gilzee Country.—*Presented by Captain W. Anderson.*

4. Seed of the Turnip Cabbage.—*Presented by Mr. J. H. Barlow.*

Mr. Barlow mentions that the plants from which the above seed has been collected have not been raised from seed in the present season, but were sprouts of plants of a former season, and never having seen this kind of Cabbage in seed in Bengal,

he has been induced to send this small supply to the Society.

5. Specimen of Eri Silk wound at Gowhatti.—*Presented by Captain Jenkins.*

Captain Jenkins states that he has lately had several good specimens of this Silk sent to him from different and distant parts, and thinks that the difficulties that have hitherto existed for separating the thread from the Cocoon will shortly be overcome. *Referred to Silk Committee.*

6. Two specimens of Flax grown in the neighbourhood of Monghyr, by Messrs. Wallace and Co.—*Presented by Mr. J. Wallace.*

Mr. Wallace submits these samples to shew the improvement on last year's produce, (a sample of which was also presented to the Society at its Meeting in September 1840, and reported on at the following Meeting in November.) He states that they are the average samples of thirty-four bales, (nearly four tons) which have just been shipped by the *Mary Bannatyne*, for London. On the result of this shipment being made known to him, Mr. Wallace has promised to favor the Society with further details, adding in the meantime at the request of the Secretary, the following information on the culture and preparation of this Flax during the season 1840-41.

Sample No. I.—Grown from country seed on a strong black soil which had been inundated by the River, and retained its moisture through the season. The seed was sown on or about 10th November 1840. Twenty seers of clean seed to a beegah (the beegah is rather larger than that of Bengal)—the plant was allowed to ripen fully and the seed come to full maturity, which was all saved by rippling combs which separates it easily from the stalk; the soil received very little preparation, it was drilled with one plough, another plough following in the same track in which the seed was sown. The

plant was pulled about the 20th March and steeped for three days. The breaking or crushing of the plant was done by machinery, the scutching by the hand, a man could clean of this quality of plant five seers a day. The outturn per beegah was nine stone, such as the muster, and $3\frac{1}{2}$ maunds of seed.

Sample No. 2.—Grown from country seed on a light sandy soil, also inundated by the river, was sown about the 8th October, with the same sort of seed; the land was well prepared, having had three or four ploughings; the seed was sown broadcast 25 seers per beegah; it was allowed to ripen fully; it was pulled 28th February and steeped $4\frac{1}{2}$ days, the outturn of this about $1\frac{1}{2}$ stone per beegah, and one maund of seed; no rain having fallen from the time of sowing, seven-eighths of the crop was lost; the dressing of this was similar to the other; a man could not scutch more than $2\frac{1}{2}$ to 3 seers per day.

Mr. Wallace concludes by stating that the crop has been in a great measure a failure this year, and consequently only one-eighth the produce that a favorable season would yield has been realized.

The Secretary, in allusion to the highly interesting experiments which were now going on in Bengal for the establishment of the Flax culture as a staple article of commerce, observed, that the greatest difficulty in the preparation of the fibre was the want of experienced hands in the act of crushing and steeping. The natives do not know how properly to do it and there are no instructors to teach them. He also mentioned that by a letter received by the last Mail from Dr. Royle, he is informed that the flax sent home from Beugal last year was worth £45 per ton and none less than £40 per ton.

7. Specimen of the fibre, cloth and twine of the Hill Bhang Hemp, forwarded by Major Swetenham.—*Presented by the Supreme Government.*

8. Specimen of Canvas made in Ghurwall.—*Presented by Major Stuart Corbett.*

Major Corbett intimates that the sample submitted has been taken from one piece out of sixty made at different villages, some of which were coarser and varied somewhat in breadth. The piece in question is $7\frac{1}{4}$ yards long and $22\frac{1}{2}$ inches wide, the price one rupee; but were the demand for the Canvas increased it is not probable the villagers would supply it at that cost.

9. Specimens of Hemp grown in the Jubbulpore Garden from country seed sown at the end of June 1840, and cut in October, and of Canvas woven from the fibre in the School of Industry at Jubbulpore.—*Presented by Mr. D. F. McLeod.* [*The whole of the foregoing samples were referred to the Flax Committee.*]

10. A seed of the Borassus and a specimen of Oil extracted from the fruit of the same.—*Presented by Mr. Stephen Mornay.*

Mr. Mornay mentions that the Borassus grows in the fens of the Northern Provinces of Brazil; the fruit is very abundant and contains a large quantity of the oil. The method of obtaining the oil is simply by putting a quantity of the fruit into a cask, shaking the cask about for a few seconds and then pouring out the oil; it burns brilliantly, and is also esteemed by the colonists for its palatable qualities.

The specimen submitted is a compound of two kinds of oil; the one red, volatile and smelling strongly of violets: the other, greenish, yellow, fixed, and smelling something like linseed oil.

11. Two Water Melons grown from seed procured from France.—*Presented by Mr. Chew.*

This description of Melon, Mr. Chew states, is thought highly of by the French Confectioners; it has moreover the advantage of keeping fresh and hard for several months. February appears the best month for sowing the seed of this

Melon. This fruit, from the circumstance just mentioned, seems admirably adapted for the use of ships.

12. Candles from the Island of Chusan, made from the vegetable Tallow of the tree called Stillingea Sebifera. Also a specimen of coarse paper matting made of bamboos, and a paper of Chusan tobacco.—*Presented by the Secretary on behalf of Lieut. Sutherland.*

Nursery Report.

A Report from the Nursery Committee intimates the gratifying intelligence that the cane Cultivation is in a most luxuriant state, and bids fair to prove an exceedingly bountiful crop.

The Committee expresses its acknowledgment to Mr. Conway, who in company with Mr. Earle, visited the grounds and left a memorandum with the overseer touching the mode of planting in British Guiana.

The Artificial Grasses of Cabool.

The Honorable the President desired to lay before the Society a memorandum drawn up by Sir Alexander Burnes, with which he had been entrusted by the Right Honorable the Governor General.

There are three kinds of grasses cultivated in Cabool, "rishku," or lucerne, "shuftul," or a kind of trefoil, and "si barga," or clover. The first and the last continue to yield crops for some years, but the "trefoil" (shuftul) is an annual.

The lucerne (rishku) is sown in Spring, generally about the vernal equinox; for each jureeb, or about half an English acre*, two seers of Cabool, or about 28lbs.† English, are re

* i. e. 20089 jureebs are equal to one acre English.

† Sic in MS.—*Secretary.*

quired as seed. In forty days it comes to perfection and is cut down, and will yield four *full grown* crops ere winter sets in, but by early cutting 6 or 8 crops may be drawn,—the last may sometimes be inferior from premature cold. One jureeb, or half an English acre, yields on an average ten camel-loads of grass at each cutting; as a camel carries about 500lbs., this is a produce of 5000lbs. the jureeb, or 10,000lbs. the English acre; and for four fine crops 40,000lbs. English. The third crop is considered the best and from it the seed is preserved —of this the half acre sown with the two seers of Cabool will yield 40 seers or about 560lbs. This plant requires the best black soil, much manure and is watered five times each crop, in fact whenever it droops. It is sometimes sown along with barley, but in that case the grain by exhausting the soil injures the crop. The seed is never exported, but the grass is so plentiful, though all the cattle are fed on it, as much to exceed the consumption; it is therefore dried, and that produced at any distance from a market is generally stored in this manner and sold during winter. A camel-load of it or about 600lbs. English, whether green or dry, sells for one Cabool rupee—a coinage of which 115¼ are equal to 100 Company's rupees. Lucerne generally lasts for six years, but it will yield for ten years if manure be abundantly scattered over it. The seed is at present sold for a rupee a stone or 14lbs., but as it is not cultivated for exportation this is much dearer than it might otherwise be had, and its price has been almost doubled by the arrival of the British troops.

The trefoil or "shuftul" in cultivation, time of sowing, reaping and soil resemble lucerne, and the calculations of produce for the one will suffice for the other, only it is an annual plant. The seed too is dearer by one half than that of lucerne. The clover or "si burga" (i. e. three leaves) assimilates likewise to the lucerne and it lasts as long. I may however

observe that the climate of Cabool is much later than that of England, and, excepting the seed sown in Autumn, nothing is put in the ground here with advantage before the 1st of April, but in Europe these artificial grasses might no doubt be sooner brought to market.

(Signed,) ALEX. BURNES.

Cabool, 15th June, 1841.

Right of Discovery in the Tea Plant of Assam.

A subject of some interest connected with the right of discovery in the Tea plant of Assam next engaged the attention of the Meeting.

The Secretary stated that he had received from Captain Charlton, who had recently returned to India from Europe, a letter in which he solicits that the Society will determine and record on its Proceedings to whom is due the discovery of the Tea plant, as it has been ascribed to Mr. Bruce, and the Society of Arts in England have in consequence awarded to that gentleman one of their gold medals. The Secretary further stated that Captain Charlton had felt aggrieved that the merit of a discovery of so much importance had been given to another when he considered himself the rightful owner of it. As, however, frequent allusion was made in the letter of Captain Charlton to Dr. Wallich, who was unable to be present owing to severe indisposition, the Secretary begged to ask whether the subject should be allowed to stand over till the next Meeting.

The Hon'ble the President in reference to the propriety of the Society taking the matter into its consideration at all, observed that he thought it a question of great importance, since if entered on, a precedent would be established that might involve the Society in the necessity of adjudicating in

other cases and occupy time, which might be much more profitably expended. He thought it impossible that the Society could take up the question and decide to whom the merit of the discovery was due, but this much might be done, and he thought in justice to Captain Charlton it was proper to record the fact, that as the second volume of the Transactions of the Society contains a letter from Lieut. Charlton to the address of the late Dr. J. Tytler, under date the 21st of January, 1832, in which the announcement is made, that it should be republished. He would therefore beg to read it:—

"The Tea tree grows in the vicinity of Suddiya, the most remote of the British Possessions towards the East in Assam, and adjacent to the Burmah Territory. Some of the Natives of Suddiya are in the habit of drinking an infusion of the dried leaves, but they do not prepare them in any particular manner. Although the leaves are devoid of any fragrance in their green state, they acquire the smell and taste of Chinese Tea when dried. The tree bears a flower very like that of the wild white rose, but much smaller."

This communication, the Hon'ble the President further remarked, appeared to him (and he had gone over the several papers which had been placed in his hand, by Captain Charlton, who had called on him with them), to be the first in priority of date of any which had appeared; still as Dr. Wallich, who might be able at once to set the matter at rest by information that was not before the Meeting, was not then present, he thought it right to put it to the Meeting to decide whether the subject should be entered on then or not.

The Meeting was then addressed by Messrs. Corbyn, Grant and Johnson, after which it was determined that the matter should proceed.

The Secretary then read the letter of Captain Charlton, which states that he was residing in Upper Assam from May

1830 to October 1831, when he quitted the Province and brought away with him the Tea plant for presentation to the Agricultural and Horticultural Society of India at the hands of Dr. J. Tytler, and to which the extract of the communication above given refers. On his return to Assam in May 1834, Captain Charlton states, that in a letter to Captain Jenkins, who had then become Political Agent in Assam, he again brought the subject forward and transmitted specimens of leaves and fruit, which led to the plant of Assam being at last admitted to be the genuine Tea of commerce. In corroboration of this important fact Captain Charlton states that he received the thanks of the Tea Committee, who in the following letter, under date the 6th December, 1834, acknowledge the discovery "beyond all dispute" to be due to him:

From Dr. Wallich, Secretary of the Tea Committee, to the Chairman (James Pattle, Esq.) and Members of the Tea Committee.

"Gentlemen,—I have the honor to circulate a letter from Lieut. Charlton, dated Suddya, in Upper Assam, the 8th November, with a memorandum on it from Captain Jenkins, together with some leaves and ripe fruit of the Assam Tea shrub. These specimens arrived by banghy yesterday afternoon. I also add some leaves received from Captain Jenkins in September last, belonging to the same plant.

"The fruit is most unquestionably of the real Tea, and probably it is of that one and indivisible species which is known to yield all the varieties in commerce. My doubt as to the 'Assam Tea' being a Camellia could not possibly have been removed except by the production of the fruit, in which lies the whole distinction of the two genera (if indeed any exists except a commercial one), that only could decide the question, and the accompanying communication corroborates the assumption of the Camellia growing wild in Assam, which

was derived from a knowledge of its being found indigenous in other mountains on our North Eastern Frontiers.

"I humbly submit that a more interesting, a more valuable fact has never before been brought to light in Indian Agriculture, than has thus been established beyond all dispute by Lieut. Charlton. The Tea plant is a native of Hindustan, within the Hon'ble Company's dominions. It grows wild as a common shrub from Suddya all the way to the Chinese province of Yunnan, through an extent of one month's march, and there the identical shrub is reported to be extensively cultivated. Nothing therefore remains but to ascertain whether or not the product is convertible into potable tea, and it would be strange indeed, if this could not be effected by a proper management of the plant and a proper manipulation of the leaf. The Chinese cultivators, whom Mr. Gordon is endeavouring to send to us from China, will be invaluable in this respect.

"More than I can possibly express to you, gentlemen, do I feel the value of Lieutenant Charlton's and Captain Jenkins' communications; both those just received, and the former ones which, although they were circulated long ago by Mr. Gordon, I beg permission to annex for the sake of reference. I now beg most earnestly and anxiously to recommend the plan long ago suggested by Captain Jenkins in his report, that a botanist be forthwith deputed to Upper Assam in order to report to your Committee upon a number of points connected with the glorious discovery before you, a knowledge of which is indispensable to make that discovery complete. In case you should look upon this matter in the same light as I do, I cannot doubt that the Government will readily concur in any plan you may recommend, which it would be extremely desirable to carry into effect with the least practicable delay.

" In conclusion, I request leave to return the thanks of your Committee for the invaluable communication referred to in this letter.

I have, &c.

(True Copy) (Signed,) N. WALLICH,

Offg. Secy. to the Tea Committee.

Botanical Garden, Dec. 6, 1834."

Captain Charlton states that Her Majesty's Government called for all letters and documents relative to the discovery, but he desires to remark that this letter now given, has not appeared among those which have been printed in the Parliamentary Reports by order of the House of Commons.

In lieu of it is a letter No. 6, p. 32, (Reports) from the Members of the Tea Committee to the Secretary to Government of India in the Revenue Department, dated January 7th, 1835, of which the following is an extract:

" It is with feelings of the highest possible satisfaction that we are enabled to announce to His Lordship in Council, that the Tea Shrub is beyond all doubt indigenous in Upper Assam, being found there through an extent of country of one month's march within the Honorable Company's Territories from Suddya and Beesa, to the Chinese frontier province of Yunnan, where the shrub is cultivated for the sake of its leaf; we have no hesitation in declaring this discovery which is due to the indefatigable researches of Captain Jenkins and Lieutenant Charlton, to be by far the most important and valuable that has ever been made in matters connected with the Agricultural or Commercial Resources of this Empire."

Captain Charlton further observes that on the 15th of March, 1836, in a letter to the address of Captain Jenkins, Dr. Wallich writes, " It was Mr. Bruce and his late brother Major R. Bruce at Jorehath, who originally brought the

Assam Tea into public notice many years ago, when no one had the slightest idea of its existence, a fact to which the late Mr. David Scott has borne ample testimony."

Captain Charlton then compares these conflicting statements and asks the Society to determine and record to whom the discovery is due.

At the conclusion of the reading of this communication the Hon'ble the President remarked, that in his opinion all he thought that the Society could do would be to record what had then been submitted, and allow it to stand on the face of the Proceedings.

To this the Meeting unanimously assented.

Interesting Details connected with the Table Land of Omarkantak in Central India.

The Secretary desired to inform the Meeting that in addition to the interesting information which the Society was some time since favored with by Dr. Spilsbury relative to a march to the far-famed hill of Omarkantak, and which particulars were now in course of printing in the eighth volume of Transactions; he had been favored by Mr. McLeod, Political Officer at Jubbulpore, with some additional notes of a residence on this agreeable land, which he now had the pleasure to submit.

The communication it was thought would be a valuable contribution to the volume of Transactions, and it was therefore ordered to be made over to the Committee of Papers for that purpose.

Mr. McLeod mentions that he hopes in a year or two more to have a good high road from Chatteesgurh to the Province of Bundelkhund, between which part Mr. McLeod states the traffic is extensive, passing close to the vicinity of the Hill and rendering it therefore readily accessible, while it may be

made highly valuable to the station of Jubbulpore (from being only three nights' dawk) as a Sanatarium.

Mr. McLeod further adds that he hopes ere a much longer period has elapsed, to see a house erected on the Hill, and offers to look after any foreign seeds the Society may send him.

Information regarding the Timber Forests of India.

The Secretary next submitted three MS. Volumes of Reports and Proceedings, with two original Maps of the route taken in 1825, by Dr. Wallich and Captain Satchwell, in search of Sissoo Forests which had been placed with the Society by the Supreme Government "for information and deposit." These volumes contain the labors of a body of public officers, which under the denomination of "Plantation Committee," was originated during the administration of the Marquis of Hastings to enquire into and watch over the extensive timber cultivations of the Empire, which were found to be undergoing a most wasteful and rapid decay.

The Committee continued in existence six years, and the records of its proceedings as contained in the volumes submitted extend over 1070 pages of manuscript.

The Secretary was desired to undertake the examination of them, and favor the Society with a report on their contents.

Despatch of Seeds from England.

A letter from Dr. Royle as Agent of the Society in England, communicated the agreeable intelligence that Messrs. Noble and Sons had made over to him for shipment, a consignment of vegetable seeds to the amount of £50 sterling, in compensation of the heavy loss and disappointment which had been

experienced by the failure of last year's consignment. The Seeds were shipped on board the *Winchester*, which sailed from England on the 29th of April.

Notes on the cultivation of the Sugar Cane in Barbadoes.

A series of valuable notes on the cultivation of the Sugar Cane and soils in Barbadoes, one of the Windward Islands, Mr. Piddington has been so good as to place at the disposal of the Society. He states that he is indebted for them to the kindness of Mr. Stikeman, Secretary to the East India and China Association, and of Lord John Russell, who, upon Mr. Stikeman's application, ordered the information now communicated to be collected, in the same manner as he did on a former occasion, from that of St. Vincent, one of the Leeward Islands. Mr. Piddington adds, that when it cost him eight years of continued applications before he could obtain the American Cotton soils, which have thrown such curious light upon our Indian resources in that branch, he thinks the Society and the Indian public will duly appreciate all they owe to Mr. Stikeman and Lord John Russell in this matter. Mr. Stikeman in his note to Mr. Piddington, desires to correct an error into which he says Dr. Royle has fallen in his late publication by stating that it was the East India and China Association who applied to Lord John Russell, and that on being applied to the Court of Directors re-imbursed the parties for the expenses incurred, whereas it was Mr. Stikeman in his private capacity who applied and no expenses have been defrayed.

The notes were made over to the Committee of Papers for publication in the Transactions.

Information relative to the Satistical Details of the North Western Provinces.

A letter from the Government of India was next read, containing copy of one addressed by the Lieut. Governor of the North Western Provinces to the Sudder Board at Allahabad, in which the Board is informed that "if the returns of the nature in question have been already furnished and are immediately available, the Hon'ble the Lieutenant Governor sees no objection to their being forwarded to the Society, unless it be the intention of the Board themselves to prepare them for publication in connection with other matter elicited by the settlement operations now drawing to a close."

Introduction of the Thrashing Machine into Upper India.

The Secretary next desired to submit an interesting communication which he had received from Mr. Tonnochy, Deputy Collector at Boolundshahur, intimating that an opulent Zemindar of his District, Mahommed Ehadoollah Khan of Khanpoor, has requested him to procure him a Thrashing Machine from England and placed the necessary funds at his disposal. Mr. Tonnochy would wish to procure the Machine for the Khan Sahib through the agency of the Agricultural Society of Calcutta, and states that he will feel obliged by his request being submitted to the Society, and by being informed whether his desire could be complied with.

Mr. Tonnochy encloses copy of a specification or estimate of cost of constructing a three-horse-power Thrashing and Dighting Machine by Mr. James Milligan of Carlisle, and would wish to procure a similar Machine for the Khan Sahib*.

* The Secretary intimated that he had taken the necessary measures to procure a Machine of this construction from Carlisle.

Mr. Tonnochy alludes to Dr. Jamieson's Dictionary of Mechanical Science, Arts, Manufactures, &c., for particulars regarding Machines of different powers and the quantity of grain they are capable of thrashing within a given period of time; and thinks the quantity stated quite sufficient to render the Machine of the utmost value to the agricultural interest of this Country, for nothing, he says, bears more heavily on the Agriculturist and retards his progress in a greater degree, than the time, labor and expense attending the *treading* process, which, for the Rubbee harvest alone, occupies both men and cattle for no less a time than forty or fifty days, with ruin staring the farmer all this time in the face; it not unfrequently happening, that a heavy fall of rain, on the early setting in of the rainy season, either destroys his grain by a general flooding of the country, or so damages it, as to render it unfit for market, in either case disabling him from paying his rents. A remedy might perhaps be pointed out in the *stacking* system, but besides that the Native Agriculturist and Farmer is too poor to allow his grain to remain in hand, and rents must be paid immediately after the crops are reaped, he must of necessity thrash the principal or Rubbee harvest at the season in which it is done at present: for ever after he is eternally employed in ploughing for both the Rubbee and Khureef harvests; in manuring, sowing, weeding and irrigating, and in getting in the produce of the Khureef, and in the same processes for a neutral harvest, including Sugar Cane, which rich lands combining other advantages do yield. Such being the case, it may easily be seen of what importance the Thrashing Machine must prove. Mr. Tonnochy adds, he can speak for that part of the country (Boolundshahur); that its successful operation (that is if it affords the results indicated in Dr. Jamieson's table) at any one place, would be the means of its general introduction on the estates of the great Landholders, and that it could not

fail in due course to spread far and wide. Who can doubt this, continues Mr. Tonnochy, witnessing the revolution caused in the Agriculture of England and Scotland, since the invention and subsequent perfection of the Thrashing Machine. That this instrument has not been introduced into India, can be no matter of surprise, Mr. Tonnochy observes—seeing the neglect, with which, till lately, the question of vital importance to India—its Agriculture—on which the existence of her moral and political condition depends, has been treated by the Government. And what, Mr. Tonnochy asks, has been done even of late (beyond the laudable anxiety evinced by the Agricultural Society) in the shape of an outlay of capital, comparatively with the income derived from Agriculture directly and no indirectly—further than the proffer of seed and advice towards the culture and improvement of this, that and the other article. Advice—which the poverty of the people wholly incapacitates them from attending to.

Produce of the Cotton Experiment at Saugor, Central India.

A statement was next submitted by the Secretary, with which he had been favored by Mr. Ommaney, Political Officer at Saugor, furnishing the following details connected with the experiment now going on at Saugor on the productive qualities of Foreign and Native Cottons.

	Quantity of land.	Quantity sown.	Produce of Cotton.	Seeds.	Cotton cleaned.
	acre.	lbs.	lbs.	lbs.	lbs.
Tinnevelly, ...	$1\frac{1}{2}$	unknown.	$186\frac{1}{2}$	142	46
Upland Georgia, ..	4 bisnas*	7	44	30	14
Chunderi, sown very late and had not a fair chance,	11 bisnas	6	24	18	6
Nankeen, ...	not stated.	unknown	$9\frac{1}{2}$	7	$2\frac{1}{4}$

By this statement the superiority in the productive qualities of the Upland Georgian in the Saugor soils, Mr. Ommaney considers to be clearly established.

Mr. Ommaney further mentions that 2750 were the number of Otaheite Canes grown in the public garden during the last season—of these 300 were distributed and the rest sold.

The Climate and Horticultural Calendar of Candahar from January to middle of August 1840.

A highly interesting series of observations, which had been received from Coloned Stacy, appertaining to the Climate and Horticulture of Candahar, was next laid before the Meeting. These valuable memoranda were ordered to be made over to the Committee of Papers, for the purpose of publication in the forthcoming volume of Transactions.

The Secretary with reference to a letter which he had received from Colonel Stacy, desired to bring to the notice of the Meeting, the unfortunate intelligence that five boxes of

* How many bisnas constitute an acre is not mentioned.—*Secy.*

seeds which the Colonel had been at the trouble and expense of collecting during a period of two years throughout the valley of Shawl and elsewhere, had been lost to the Society, owing to Lieutenant Ogilvy, the Post Master at Quetta, having refused to forward the cases on, although Colonel Stacy states, that they were within Bhangy weight, and directed to the Society under care of the Secretary of Government, General Department.

Introduction of the Black Bean and Foreign Cotton Seed into the Bhutty States.

Lieutenant Robinson, in charge of the Bhutty States, conveys the gratifying intelligence, that the American Cotton seed has been much sought after by the villagers in the valle of the Nhpé, and that he has also great expectation of its success in his own District. Lieutenant Robinson further states, that the Pois Noir has succeeded well. It is found when sown under the thorn fences round the villages, to interweave and form so dense a mass as to be impenetrable; while the green appearance is much admired by the people. Lieutenant Robinson also favors the Society with a sketch of the Hesbon Wheat, alluded to by a recent writer as being so superior to ordinary Wheats, and asks if the Society could obtain some through the Consul at Egypt.

For all the foregoing communications and presents the thanks of the Society were accorded.

HENRY H. SPRY, M. D.,
Secretary.

PROCEEDINGS

OF THE

Agricultural & Horticultural Society

OF

INDIA.

AUGUST,

1841.

CALCUTTA:

PRINTED AT THE BAPTIST MISSION PRESS,

CIRCULAR ROAD.

1841.

AGRICULTURAL SOCIETY OF INDIA.

PROCEEDINGS.

AUGUST 11, 1841.

Agricultural Society of India.

A General Meeting was held at the Society's Room, Town Hall.

The Hon'ble Sir Edward Ryan, President, in the Chair.

(Twenty-six Members and two Visitors present.)

MEMBERS ELECTED.

The Gentlemen proposed at the July Meeting, were elected Members, viz :—

Dr. E. T. Downes, The Hon'ble Edmund Drummond, Messrs. M. Hall, T. J. Bell, Geo. Plowden and P. P. Carter, Lieut. Henry Righy, Baboo Callychunder Lahoree, and Lieut. Robert Campbell.

FOR ELECTION.

The names of the following Gentlemen were submitted as candidates for election :

C. R. Tulloh, Esq. of the Civil Service, Azimghur,—proposed by Dr. J. A. Dunbar, seconded by the Secretary.

E. Draper, Esq. of Jhingergotallie Factory, Jessore,—proposed by Mr. G. F. Speed, seconded by the Secretary.

Captain Brown, Marine Assistant to the Commissioner of Arracan,—proposed by Dr. Spry, seconded by Dr. Wallich.

J. W. Roberts, Esq. Merchant, Calcutta,—proposed by Mr. John Cowie, seconded by Dr. Spry.

Professor W. B. O'Shaughnessy,—proposed by Sir Edward Ryan, and seconded by Dr. Spry.

PRESENTATIONS TO THE SOCIETY.

LIBRARY.

Madras Journal of Literature and Science (No. 29).—*Presented by the Madras Literary Society.*

MUSEUM.

1.—Four specimens of country grown Flax, prepared in Calcutta.—*Presented by Mr. H. Woollaston on behalf of the "London Flax Experimental Society."*

No. 1.—Is a sample of Flax of last year's growth, from English seed, *not acclimated.* Six hundred lbs. of this quality, Mr. Woollaston mentions, were forwarded to London by the "Bucephalus," and by the last mail Mr. Rogers advises that it was valued at £50 per ton.

No. 2.—Is a sample from *acclimated* English seed, grown in Entally. The seed was sown last November, and the plant gathered in February, having been in the ground 85 or 90 days.

Mr. Woollaston states that this sample is considered much *superior* to No. 1, and that Mr. Deneef attributes its superiority, to the seed being acclimated, which renders the separation of the under-bark much easier, and leaves the Flax finer and softer. Mr. Deneef estimates its value compared with No. 1 at £56 per ton.

No. 3.—Is a sample from the same seed and growth as No. 2—but consists of *picked* portions of plant, so as to furnish a specimen of the degree of fineness, that it is possible to produce. This sample is superior even to No. 2, and nearly equal to the best produced in Belgium ; much surpassing the Belgian ordinary qualities. Mr. Deneef estimates its value at £60 the ton.

No. 4.—Is a sample of Flax from *country* seed grown and prepared at Bowsing Factory, District of Burdwan ;—estimated in London at £40 to £45 the ton.

Mr. Woollaston, in his communication which accompanied the samples, states that No. 2 and No. 3 have, through the liberal permission of Lord Auckland, been forwarded to Mr. Rogers.

The object of the " Flax Experimental Society" at present is not, Mr. Woollaston further states, to produce a large quantity, but to ascertain how good a quality can be readily obtained, the growth of India, and such as shall readily compete with the Russian and Belgian Flax in the Home Market. This object has been already attained to a considerable extent. These samples far surpass the Russian Flax, and establish in a *political* point of view a fact of the utmost importance. Much regret is then expressed, for the sake of the experiment, and its incalculable commercial consequences, that the Government of India have not responded to the recommendation of the Horticultural Society, in granting a Bonus to the Experimental Society of 10,000 Rupees to further the objects of the Society : especially as no part of this sum was desired by the Trustees of the Society for their private advantage, but was guaranteed to be employed in the repayment of advances made and in applying the balance, to the further extension of the experiment. It is still hoped, that a liberal Government will lend its influence and its means to foster and cherish an

enterprise hitherto supported by the funds of a few private gentlemen, well-wishers to India, and who have voluntarily borne all the expenses hitherto incurred, and have given much of their own time and attention to the carrying out the project. Much exertion has been employed by them, in also inducing their agents and friends in India, to aid in promoting the feasibility of the enterprise; all of whom have not only willingly assisted in furthering the object, but have done so gratuitously.

The seed received from England, Mr. Woollaston further remarks, has been distributed freely to all applicants who were desirous of trying the cultivation. The models of implements were sent out from Belgium, and fac-similes made for any persons requiring them at the bonâ fide cost of the materials. Private profit or gain has never been allowed to interfere. Every kind of information, as far as possessed, has been freely imparted to all enquirers, and every endeavor made to excite an interest in the experiment.

Its importance in a national point of view is incalculable. Both as developing the resources of India, in enabling England to supply herself from her own possessions in a most important raw material, and in no longer making her dependent for what may well be considered necessaries, upon a foreign and rival power. These observations, Mr. Woollaston considers, will apply in a great measure to Hemp also, in the cultivation and manufacture of which, the Experimental Society are deeply interested. The successful introduction of these two staples into England, from this country, will not only prove a blessing of the largest degree to *India* generally, but be a severer blow to Russian aggrandizement and encroachment than the destruction of her fleets, or the annihilation of her armies..

The Secretary begged to remind the Members that at the

last Meeting he had mentioned that Dr. Royle had written out to say that none of the samples of Flax which reached London from Bengal had been valued at less than £40 a ton.

2. A few fresh stalks of Hemp raised from Russian seed received last year from Dr. Royle, and corresponding specimens of the indigenous Hemp plant of Bengal.—*Presented by Mr. Deneef.* The superiority of the former in texture was very apparent.

3. Thirty-two varieties of Wheat (16 British and 16 Continental.)—*Presented by Dr. Royle, and received by the last mail in excellent order.*

The Secretary stated that he should take immediate steps to dispose of this acceptable presentation in the best manner he could devise.

4. A few Apple Plants raised from the seeds of American Apples sent out to Calcutta in the Ice ships.—*Presented by Dr. Strong.*

5. Apples from Nepaul.—*Presented by Mr. B. H. Hodgson.*

Mr. Hodgson mentions that the Apple crop in the Nepaul valley has been a favorable one this year ; and that the specimens submitted are nearly all well adapted for the kitchen and table. Mr. Hodgson adds that the English Garden seeds which he received from the Society in November—being a portion of the supply which Dr. Royle transmitted by the overland mail—have produced excellent vegetables, and that a few more such supplies would enable him to return an ample assortment of seeds to the Society for distribution.

6. Ten seers of American Maize, acclimated at Allahabad. —*Presented by Mr. R. Montgomery.*

7. A large assortment of Fruit seeds from Affghanistan collected during 1839-40, consisting of Grapes, Apricots and Melons of several varieties, of Mulberry, Peach, Nectarine, Plum and Cherry.—*Presented by Colonel Stacy.*

Colonel Stacy mentions that he has forwarded assortments similar to the above for the Saharunpore Botanic Garden, for the Agricultural Society of Bombay, and for the Branch Societies at Meerut and Agra. This consignment constitutes the dispatch to which allusion was made at the last Meeting as having been detained by the Post Master at Quetta.

The Government' Consideration of the Flax Question.

The first communication which was submitted was a letter from Government asking for the assistance of the Society in determining on the measures proper to be adopted for improving the cultivation of Flax in Hindustan. The following is a copy :—

To H. H. Spry, Esq.,

Secy. to the Agricultural and Horticultural Society.

Revenue Dept. Sir,—In consequence of a communication lately received from the Hon'ble Court of Directors, I am directed by the Right Hon'ble the Governor General in Council to request that the Agri-Horticultural Society, in order to assist the Government in determining on the measures proper to be adopted for improving the cultivation of Flax, will supply such accurate detailed information as they may possess, or as they may be able to obtain regarding the present state and prospects of Flax cultivation in the Provinces under the Bengal and Agra'Governments, together with such suggestions as may occur to the Society as proper to be laid before the Government at the time of considering the information thus to be furnished.

I have, &c.

(Signed) T. H. Maddock,

Secretary to the Government of India.

Council Chamber, the 12th July, 1841.

The Hon'ble the President said, this communication was of an important kind, as it would appear from it that the Government was disposed to re-open the consideration of the Flax question, which it would be in the recollection of the Meeting was reported on once by the Society, and a recommendation offered, which was not, however, favorably received. It would be desirable, in order to meet the wishes of Government to the fullest extent, to refer this letter to the Standing Flax Committee, with a request that all the information which the Society possessed, should be arranged and forwarded.

On the motion of the Hon'ble the President, seconded by the Secretary, the names of Mr. Hodgkinson and Mr. Woollaston were added to the Flax Committee.

Right of Discovery and Publication, in the Tea Plant of Assam.

The subject which next engaged the attention of the Meeting, was a reply, with which the Society had been favored by Dr. Wallich, to the communication that was submitted at the previous Monthly Meeting on the part of Captain Charlton, relative to the right of discovery and publication in the Assam Tea plant.

Botanical Garden, Aug. 11th, 1841.

My dear Spry,—Do me the favor to submit the accompanying observations before the Meeting of the Agricultural Society this morning and oblige

Yours sincerely,

N. Wallich.

Statement by Dr. Wallich.

The Agricultural Society having declined to enter into the question submitted by Captain Charlton at their Meeting of last month, relative to the proceeding of a

late Committee, nominated by and acting under the sole authority of the Supreme Government, I am happy to find it compatible with my duties as a Government servant, to lay before the Society some remarks upon Captain Charlton's statement relating to the procedure of the Committee in question, with whom I was officially connected, both as a Member and as Officiating Secretary.

If the following narrative and references should appear tediously prolix and the style faulty, I trust I shall be excused on account of the state of my health, which is still infirm. At the very time when Captain Charlton's communication was before the last Meeting of the Society, I was labouring under a most severe attack of cholera; and it was not until the middle of last week, that I could venture up to Calcutta, on purpose to consult the Tea Committee's records, at the Office of the Revenue Department, where every one of them had been deposited about a year ago, by order of Government.

Before I proceed further I wish to observe, that Captain Charlton has laid his case before the public, first, in Mr. Corbyn's India Review, published on the 15th of June last; he next referred it to the Agricultural Society on the 14th ultimo, and lastly he addressed me officially on the 23rd ultimo, with enclosures of copies of his previous communications to the Society, dated the 12th, and of the Secretary's reply to him, dated the 19th ultimo. Of this letter to me I have simply to remark that, owing to the course which Captain Charlton had adopted in the affair, I declined having any communication with him on the subject.

From the letter addressed by Captain Charlton to the Society, I observe that he imputes to me, first, an injustice done him, from the circumstance of my circular letter of the 6th December 1834, not being published with the other

papers, printed by order of Parliament, relative to the discovery and cultivation of Tea in India; and next, that in subsequent correspondence on the subject, I have deprived him of, and unjustly attributed to others, the merit he is entitled to for his exertions in establishing the fact, of the genuine Tea plant growing in Assam.

In justice to myself I wish here to declare, that had Captain Charlton in the first instance addressed himself to me, I would most willingly have afforded him every explanation in my power. I am not aware that I have in any manner prejudiced any claims he may have for his services in Tea matters. The following remarks will, I trust, fully bear me out in this assertion.

If I am rightly informed, Captain Charlton submitted his case in the first instance to the Honorable Court of Directors of the East India Company, while he was in England; if so, it must have been subsequently to the 1st of January 1839, on which date he wrote me a very friendly letter from London, without the slightest allusion to any matter of the kind; and I understand he has also very recently addressed the Government on the subject under discussion.

The Tea Committee was formed by orders of the Government of India in February 1834, and I became acquainted with Captain Charlton through Captain Jenkins, very shortly before the date of my circular letter to the Chairman and Members of the 6th December 1834, copy of which is recorded in last month's proceedings of the Society. I add (enclosure No. 1) an extract from the letter of thanks which was addressed to Captain Charlton on the 10th of the same month, on the occasion of his sending the capsules of the Tea plant to the Committee. A letter of thanks to the same purport, was at the same time addressed to Captain Jenkins.

On the same date I sent another circular to the Committee, suggesting that a Meeting might be convened to deliberate on the question of the Assam Tea (see enclosure No. 2.) A Meeting took place accordingly on the 13th, when I was ordered to embody the Resolutions in a letter for the approval and signature of the Committee, which letter was finally sent to Government on the 24th December (erroneously referred to in last month's proceedings under date 7th January 1835.) I add (enclosure No. 3) extract of the proceedings of the Committee on that occasion.

The Committee's letter was published in the Journal of the Asiatic Society of Calcutta for January 1835, page 42, and in Loudon's Gardener's Magazine for August the same year, page 429; so that it appeared in print full four years before the papers received at the India House, relating to the cultivation of Tea within the British possessions in India, were printed by orders of the House of Commons, among which the letter will be found at page 32.

Of this letter a sufficient extract has not been recorded in the Society's proceedings of last month. I am therefore under the necessity of supplying one in enclosure No. 4. And here I beg to point out the mistake under which Captain Charlton evidently labors in supposing, that the necessary deliberations of a Board, or Committee, or that circulars, or memorandums addressed to them by their Secretary, are ever handed up to Government by such bodies in the ordinary routine of business, or are in any way acted upon, except in the very manner adopted on the occasion alluded to.

To this observation it is only necessary for me to add, that my circular letter to the Chairman and Members of the Committee of the 6th December 1834, was written for their consideration. A Meeting of the Committee was held, the subject of the letter was considered and deliberated upon

among other business, and the proceedings of the day were embodied into the Committee's letter to Government, (signed by the Chairman and all the Members, myself included) referred to above, (enclosure No. 4.) But the circular itself, having thus been under this Committee's consideration in the usual routine of business, remained among the records of the Committee, where it will be found both in original and duly entered. I beg leave further to say, that I sent a copy of this letter to Captain Charlton, which I should not have done, had I not, besides officiating as Secretary, been also a Member of the Committee.

The preceding explanations will sufficiently account for the often mentioned circular letter not appearing among the papers printed by order of Parliament, and must vindicate me from the charge of its suppression.

To prove that Captain Charlton, at the time I speak of, did not consider himself as the original discoverer, but as instrumental only in establishing the fact of the existence of Tea in Upper Assam, I annex extracts from his own letters to Captain Jenkins and myself, dated the 3rd and 10th January and 10th March 1835, (enclosures Nos. 5, 6 and 7,) in the last of which Captain Charlton says—" I claim no credit for discovering the Tea, for in fact it was discovered long and long ago."

Further, that I, individually, looked upon Captain Charlton not as the original discoverer of the Assam shrub, but as the person who had established a fact, about which conclusive evidence had during many years been wanting, at least to my mind, namely, by the production of ripe capsules, the only part of the Tea plant, by which it can be distinguished from the Camellia, I appeal to my circular letter of the 6th December 1834.

It was under this impression that I wrote that letter, in which I expressed myself certainly with extreme gratification,

in these words, that "a more interesting, a more valuable fact had never before been brought to light in Indian agriculture, than had thus been established beyond all dispute by Lieutenant Charlton;" and that he had moreover on that score my feeble services when he thought them of use, I leave the Society to judge from the accompanying extracts of his note to me dated Calcutta, the 8th February 1838, in which he requests me to write to head-quarters in his behalf; —of my letter to the Private Secretary to the Governor General (then in the Western Provinces), dated the 15th of February; of Captain Charlton's note of acknowledgment, dated the following day, of a note dated 21st of March, requesting me to furnish him with the documents connected with Tea affairs that concerned him; finally of his note from on board the *Sesostris* of the 6th of April, acknowledging the receipt of all those documents (enclosures Nos. 8, 9, 10, 11, and 12.)

Adverting to the communication to the late John Tytler, Esquire, upon the subject of the Tea plant in Assam, dated Calcutta, the 21st of January 1832, and inserted at page 153 of the second Volume of the Agricultural Society's Transactions (published in 1836), under the title of "Remarks on the Gum Copal, Caoutchouc, and Tea Trees, by Lieutenant Charlton," and again recorded in last month's proceedings of the Society, I have to observe, that I went to Europe in 1828, and did not return until March 1833, and could therefore have no knowledge of the circumstance, especially, since Captain Charlton has never mentioned it in his public or private communications to myself, or to the late Committee; and even if he had, I possessed no means of judging, whether the plant was really Tea, or not. Captain Charlton mentions in last month's proceedings, that he gave the Tea plant which he had brought away from Upper Assam, to Mr. Tytler, for

presentation to the Society; but nothing of this appears on the face of the above paper, or anywhere else in the volume. Whereas it will be seen from a letter from him to Captain Jenkins, dated the 17th of May 1834, enclosed in a private letter from the latter to Mr. Gordon, dated the 19th of that month, that he had obtained from the vicinity of Beesa about three years previously, three or four young Tea trees, which he gave to Mr. John Tytler in Calcutta, with a view of their being planted in the Government Botanic Gardens, and that he had since understood they decayed soon after. See Parliamentary Papers, page 35, (enclosure No. 13.) No Tea plants were ever received in the Botanic Gardens from Captain Charlton.

In an official letter from Captain Jenkins to the Secretary to the Tea Committee, dated Gowahatty, the 7th May 1834, notice is taken of the Assam plant, without entering into any history of its discovery, (enclosure No. 14) and Parliamentary Papers, page 33.

Thus far as to the tenor of the late Committee's, and my own conduct, towards Captain Charlton. I confidently hope to have proved, that if full justice had not been done to that gentleman by either party, it was quite unintentional, and could have arisen from no sinister motives. It appears to me, therefore, that the most straightforward course would have been, for Captain Charlton to have addressed himself, in the first instance, on his return from England, either to some Member of the late Committee, or to myself, when he could not but have been certain of meeting with every courtesy and attention.

But not only has no manner of injustice been done to Captain Charlton by myself individually, or by the late Committee collectively, but I conceive that he has received at their hands the fullest meed of credit for his valuable exertions, and it is

very far from being my wish, to detract in the smallest degree from Captain Charlton's merits; on the contrary I wish that they may be amply rewarded.

I will now show that the late Mr. David Scott had his attention directed to Assam Tea a good many years before Captain Charlton came to the Province.

I strongly suspect that even while stationed at Cooch Behar, Mr. Scott was in possession of some information upon the subject, as he expressed already then an anxiety to receive Chinese Tea plants and seeds from this Garden, and in a letter to me of the 7th February 1819, from thence, he asks for the seeds expressly for the purpose of trying them on the Hills to the eastward of the Berhampooter.

In a postscript to a letter to me filed in the Agricultural Society's office, dated Goalpara, the 30th November 1823, he expresses his regret, that the Tea plants sent from this Garden had died on their passage up. Again, in a note, dated Singamarree, the 6th January 1824, he sends for some Tea plants, which I had promised him; and he alludes to them again in a letter, dated Goalpara, the 2nd August, of that year, (enclosures Nos. 15, 16 and 17.) It was not, however, until the following year, namely 1825, that Mr. Scott wrote to me in express terms upon the indigenous Tea of Assam, sending me at the same time some leaves and seeds of it, and mentioning that the plant is very abundant on the small hills, and also in the plains, at the foot of them, east of Rungpore, (in Assam.) This letter dated from Dikko Mook, the 2nd June 1825, in the immediate vicinity of the Tea tracts, which only reached me on the 16th August, on returning from an official inspection of forests in the North Western Provinces, is so interesting, and bears so much the stamp, of that excellent man's zeal and talents, that I shall make no apology for adding an entire copy of it (enclosure No. 18.) I also add an extract (enclosure No. 19) of a

second letter filed in the Society's office, addressed to me from Gowahatty, on the 26th July 1827, accompanied by Tea seeds lately received from a Chief, residing on the borders of Yunnan, and referring to the other despatch of seeds mentioned above.

The late lamented Lieutenant Colonel A. White, who had been many years in command in Upper Assam, and was unfortunately assassinated in 1839, during a night incursion of the Mishmees and Kamptees in Suddeya, informed me in a letter dated Jorhaut, the 24th December, 1835, (in speaking of the Tea plant of Gubroo Parbut, and suggesting that a Nursery should be established there,) that "Mr. Scott got a boat-load of plants from this place (Jorhaut) early in 1826, and sent them down to Goalpara, and Singamaree; part went to Mr. Swinton."

From an entry in the books of the Botanical Garden, under date the 30th May 1827, during my absence in the Burma countries, it appears that two boxes were received from Mr. Scott, for the Countess of Amherst, containing Mishmee Teeta and two Tea plants, with the following memorandum annexed, "Mishmee Teeta grows on the lower and middle ranges of hills from 800 to 3000 feet elevation, N. Lat. 28° 30′, E. Long. 96° 50′. Must be kept carefully shaded from the sun. Tea plants from Chinese (?) Shawn, N. Lat. 28°, E. Long. 99°; grows on plains below mountains at a mean temperature of about 75°." I have reason to believe that these plants, at least the Mishmee Teeta, had been procured by Major Wilcox, then on a tour from Suddeya towards the Irrawaddy.

I come now to the connexions of Messrs. Bruce, with the discovery of the Tea in Assam, and I fearlessly appeal to the officers who were in the Province during the Burmese War, if it was not the late Major R. Bruce, and his brother the present Mr. C. Bruce, who furnished Mr. Scott, and other

gentlemen with Tea plants and seeds long before any one else did? This, at least, was the information I received on all hands, while I was in Assam, and it was on that ground, I so expressed myself, to Captain Jenkins, in my official letter, dated Bissenath in Upper Assam, the 15th March 1836, of which I annex a more full extract than that recorded at the last Meeting, together with an extract of the Tea Committee's letter to Government, dated May, 1836, approving and recommending the employment of Mr. Bruce, on the claims, I had advanced in his behalf (enclosures, Nos. 20 and 21.) Both letters will be found in the Parliamentary Papers, pp. 64 and 66. But there are other records among the late Committee's Office Papers, which attest the fact of Mr. Bruce, and his brother's labors in bringing the Tea plant of Assam to notice many years ago. In a communication of the 17th March, Captain Jenkins forwarded to me a letter addressed to him by Mr. Bruce, dated 6th of the same month, which was circulated in the Committee on the 4th April, and duly entered upon record. In it Mr. Bruce claims for himself and his late brother, the first knowledge of the Tea plant in Assam, (enclosure No. 22.)

On the requisition of Mr. Gordon, then Secretary to the Committee, dated the 22nd November, 1836, Captain Jenkins forwarded in a letter, dated the 27th February following, a letter to him from Mr. Bruce, dated Suddeya, the 20th December 1836, in which that gentleman gives a full account of himself, and of his late brother's labors in Tea matters. Of this last letter I add a copy (enclosure No. 23.) Both may be found among the Parliamentary Papers, pp. 90 and 91.

In August or September 1833, (several months before the formation of the Tea Committee) Captain Jenkins, Agent to the Governor General on the North East Frontier of Bengal, sent in to the Political Secretary to Government a Report from Mr. Bruce, dated the 26th March of that year. I have

this information in a letter from Captain Jenkins, dated the 8th April, 1835, in which he further states that he thinks this communication was about the first official intelligence of the existence of Tea in Assam; adding that if I could get hold of those reports I would find much information about the country beyond Suddeya. I have made these inquiries last week, but as yet without success, notwithstanding the courteous and ready endeavours of several of the Government Secretaries.

That Mr. Bruce's late brother was well acquainted with the plant is evident from the fact of his mentioning it in an article in the 3rd volume of the Society's Transactions, of 1837, entitled "The Gentleman Farmer's Guide for Bengal and Assam, by the late Major Robert Bruce," which I presented at the Society's Meeting of the 17th May of that year. The following is the passage I allude to; it occurs in page 69: "Collect Tea plants and seeds in this month (September) and October."

Lastly, I beg to say that Major Wilcox in his Memoir of a "Survey of Assam and the neighbouring Countries, executed in 1825, 6, 7 and 8," published in 1832, in the 17th volume of the Asiatic Researches, mentions at page 448, that a Tea plant was brought to him during his stay in Manche, a Kampti province, near the head of the Irrawaddy, to the east of Suddeya; and in a memorandum which that gentleman politely furnished me with in February 1835, he mentions that the nearest place to Suddeya, where he had heard of the Tea, was in the vicinity of Beesa, some 50 miles to the south-east.

In conclusion I have to offer my apologies for taking up so much of the Society's valuable time. I have done it reluctantly.

N. WALLICH, M. D.

Botanic Garden, 10th August, 1841.

No. 1.

Extract of a Letter from Dr. Wallich, Officiating Secretary to the Tea Committee, to Lieutenant A. Charlton, dated 10th December 1834.

I have already addressed you on the subject of the important discovery which has been made chiefly through your and Captain Jenkins's zeal and research. I have likewise forwarded to Captain Jenkins, with a request, that he would transmit to you, a Copy of the Circular which as Officiating Secretary to the Tea Committee, I sent round among the members, together with the sample of the fruit and leaves of the Assam Tea shrub, and the documents relating thereto.

It has now become a most gratifying duty to me, to return you, by order of the Committee, their warmest and best thanks on the occasion alluded to. They look upon the fact which you have brought to light, as one of the highest interest and national importance, placing the objects of their investigation on quite a novel footing, of almost inevitable success in their result.

No. 2.

Extract of a Circular Letter from the Officiating Secretary to the Tea Committee, dated 10th December 1834.

Permit me to suggest, that it would be very desirable that a meeting of your Committee should be speedily convened. A more important subject than that which has recently been brought to your notice, I may venture to say, will never again come to light, or one more deservedly claiming your gravest consideration. Hitherto the business of your Committee, since Mr. Gordon's departure, has been carried on, I humbly trust, not quite unsatisfactorily to yourselves by means of Circulars. On the present occasion I most respectfully and anx-

iously solicit that a Meeting may take place as early as possible, in order to deliberate on the question of the Assam Tea, and other matters intimately connected with it.

No. 3.

Extract from the Proceedings of a Meeting of the Tea Committee, held on the 13th December 1834.

Resolved that taking all the preceding circumstances into consideration, the Committee feel no hesitation in looking upon the fact of the genuine Tea shrub being a native of the Honorable Company's territories in Upper Assam as incontrovertibly proved, and in pronouncing the discovery, which is entirely due to the indefatigable zeal and research of Captain Jenkins and Lieutenant Charlton, as the most important and valuable that has ever been made in matters relating to the agricultural or commercial resources of this Empire, promising results of incalculable benefit to the country, and amounting almost to a demonstration of the object of the Committee's investigation being before long completely attained.

No. 4.

Extract of a Letter from the Chairman and Members of the Tea Committee to W. H. Macnaghten, Esq., Secretary to the Government of India in the Revenue Department, dated the 24th December 1834.

1. "We request that you will have the goodness to submit to the Right Honorable the Governor General in Council, the enclosed copies of the Reports which we have received from Captain Jenkins, dated the 7th and 19th May, and from Lieutenant Charlton, dated the 17th May; also a subsequent communication from Lieutenant Charlton, dated the 5th

of last month, together with the samples of the fruit and leaves of the Tea plant of Upper Assam, which accompanied it, and some specimens of the leaves previously received.

2. It is with feelings of the highest possible satisfaction that we are enabled to announce to his Lordship in Council, that the Tea shrub is beyond all doubt indigenous in Upper Assam, being found there through an extent of country of one month's march within the Honourable Company's territories, from Suddya and Beesa, to the Chinese frontier province of Yunnam, where the shrub is cultivated for the sake of its leaf. We have no hesitation in declaring this discovery, which is due to the indefatigable researches of Captain Jenkins and Lieutenant Charlton, to be by far the most important and valuable that has ever been made in matters connected with the agricultural or commercial resources of this empire. We are perfectly confident that the tea plant which has been brought to light, will be found capable, under proper management, of being cultivated with complete success for commercial purposes, and that consequently the object of our labours may be before long fully realized.

3. It is proper to observe, that we were not altogether unprepared for this highly interesting event. We were acquainted with the fact, that so far back as 1826, the late ingenious Mr. David Scott sent down from Munipore specimens of the leaves of a shrub, which he insisted upon was a real Tea ; and it will be seen from the enclosed reports from the Agent to the Governor General on the North-eastern frontier, and his assistant, that a similar assertion was strongly urged in regard to the existence of the Tea in Upper Assam. Still we felt ourselves bound to suspend our decision on the subject until we should be in possession of the fruit of the reputed shrub, the only test which ought to guide us. We knew that several species of Camellia were natives of the moun-

tains of Hindustan, and that two of these were indigenous in our North-eastern frontier provinces ; and taking into consideration the close affinity between the two genera, we were disposed to expect, that the alleged Tea would prove nothing else but some sort of Camellia. We have at length obtained the fruit of the Suddya plant from Lieutenant Charlton, and we are now enabled to state, with certainty, that not only is it a genuine Tea, but that no doubt can be entertained of its being the identical Tea of China, which is the exclusive source of all the varieties and shades of the Tea of commerce. With the view of exhibiting the peculiarities in the structure of the fruit, on which depends entirely the difference between the Tea and Camellia, we have desired our Officiating Secretary to annex to this letter a sketch of the fruit of both, with explanatory remarks.

No. 5.

Extract of a Letter from Captain Charlton to Captain Jenkins, dated Suddeya, 3rd January 1835.

I was very glad indeed to find from your letter of the 15th ultimo, that our exertions in the Tea department have at last been crowned with complete success. Dr. Wallich's letter to the Tea Committee is, as you say, a very handsome one. I received a very enthusiastic epistle from him myself in which he says " I will not deny—never—on the contrary, I will proclaim loudly that I have been sceptical as to the solution of the question, " Is the Upper-Assam shrub, a Camellia or a real Thea or Tea ;" but that we could not venture to decide the question until we had seen the seeds.

No. 6.

Extracts of a Letter from Captain Charlton to Dr. Wallich, dated Suddeya, 10th January, 1835.

I was very glad indeed to receive your kind letter of the 7th ultimo regarding the discovery of the Tea tree of Assam, for which you have given me, I am afraid, more credit than I deserve.

Pray accept my best thanks for the very handsome letter to the President of the Tea Committee, a copy of which Captain Jenkins sent me.

No. 7.

Extract of a Letter from Captain Charlton to Dr. Wallich, dated Suddeya, 10th March, 1835.

I am much obliged to you for recommending Mr. Bruce to the notice of the Committee as Overseer of the Tea plantations, at the time I suggested his being appointed through the medium of Captain Jenkins. I fully expected he would have been prepared to give up trade, which he is extensively engaged in here, and devote his whole attention to the Tea cultivation; however, he seems averse to do so from an idea, that the salary allowed him is not sufficient to counterbalance the pecuniary loss he would sustain by giving up his trade. I have represented this to Captain Jenkins; the consequence would be that all the trouble would devolve on me, as indeed it has, by far the greatest part, already; I wish you would kindly bring the circumstance to the notice of the Committee. I should be happy to take the whole charge upon myself, but I trust the Committee will recommend to Government my being remunerated for the trouble—Mr. Traill's superintendence of the nurseries in Kanaoon, which you allude to in your last, is no doubt

gratuitous on his part altogether ; but to a person in his situation with as many thousands, nearly, as I have hundreds, the case is very different, particularly in a country so unhealthy as Assam. I therefore hope the Committee will not think me unreasonable in requesting a salary of 300 Rs. a month, or indeed whatever they may consider a fair remuneration. I claim no credit for discovering the Tea, for in fact it was discovered long and long ago ; but of this I am very sure, that had I not come here and exerted myself to the utmost to prove its being Tea, the question might have remained in oblivion for ever.

No. 8.

Extract of a Note from Captain Charlton to Dr. Wallich, dated Calcutta, 8th February 1838.

I am just about writing to Lord Auckland's Military Secretary Captain Osborne. The accompanying is a copy of a memorandum I sent to Mr. Ross, who desired me to write to Lord Auckland, as he had not the means of seeing me himself. I shall send a copy of it to Lord Auckland. If you write to Mr. Macnaghten, as you kindly promised, pray let it appear that I am altogether ignorant of the circumstance ; and I think it would be better that you merely adverted to my having been useful in the Tea and Botanical line. Lord Auckland, I am told, is of a scientific turn of mind himself, and your reminding him or Mr. Macnaghten of my services, I have not a doubt would be advantageous to me.

No. 9.

Extract of a Letter from Dr. Wallich to J. R. Colvin, Esq. Private Secretary to the Governor General, dated Botanic Garden, 15th February 1838.

Permit me to avail myself of this opportunity for soliciting that you will have the goodness to bring to the notice of his

Lordship the subject of the following lines. I intended to have taken the liberty to address Mr. Macnaghten on the occasion, as he is, I believe, personally acquainted through Mr. Trevelyan (who certainly was,) with the gentleman about whom I wish to say a few words; but thinking it more proper to submit the case through your kindness, I have ventured to trespass on your time, anxiously hoping, that I shall be generously pardoned for the liberty I am taking.

Captain Charlton, who, you may recollect, was severely wounded in one of the rencounters with the Duffa Gaum, at Beesa, about three years ago, has recently returned from the Cape of Good Hope, I grieve to say, in a condition which must for ever incapacitate him from resuming the active duties of his profession. There was no Medical Officer with the little detachment which Captain Charlton commanded in the affair I have alluded to; and the lapse of time and the difficulties of conveyance which were experienced before he could be placed under regular surgical treatment at Bissenath, combined to render it indispensably necessary that he should proceed to Calcutta, where he arrived towards the end of 1835, in a very dangerous and alarming state, so much so as to exclude even the alternative of amputating the limb (the left leg.) He was immediately sent to sea; and the result has been the distressing predicament in which that most worthy and excellent officer is now placed. From being long acquainted with him, first by correspondence while he was stationed at Suddea, during the time when the existence of Tea was first brought to light; and afterwards personally, I am warranted in speaking of the excellence of his character, as well as of his extensive acquirements. His Lordship may perhaps recollect that it was Captain Charlton and Captain Jenkins, who first brought the Assam Tea effectually to the notice of the Government. The Tea Committee in their first Report speak to this effect—"We

have no hesitation in declaring this discovery, which is due to the indefatigable researches of Captain Jenkins and Lieutenant Charlton, to be by far the most valuable that has ever been made in matters connected with the agricultural or commercial resources of this empire." After adverting to the circumstance of the late Mr. David Scott having long since insisted on the existence of the shrub in Upper Assam, they proceed to say,— "We have at length obtained the fruit of the Suddea plant from Lieutenant Charlton, and we are now able to state with certainty, that not only is it the genuine Tea, but that no doubt can be entertained of its being the identical Tea of China, which is the exclusive source of all the shades and varieties of the Tea of commerce."

Captain Charlton has had the honor of addressing the Deputy Governor and also the Right Hon'ble the Governor General through the prescribed channels; and if I take a very great, perhaps too great, a liberty in venturing to submit these lines also to the favorable consideration of the Supreme Head of Government—may I indulge a hope, that I shall be pardoned, in consideration of the high respect I entertain for Captain Charlton, derived especially from my connexion with the Assam Tea matters, and of the often-repeated and important assistance I have experienced from his researches and inquiries in regard to them. It is a matter of greatest moment to him to be indulged with an appointment which is unattended with bodily fatigue, and I feel no hesitation in predicting, that he will do the highest credit to any situation of that nature, which my Lord Auckland may generously condescend to confer upon him. He is an highly accomplished gentleman and a great scholar.

Permit me, in conclusion, to observe, that had Mr. Trevelyan not left India, he would undoubtedly have felt pride in pleading the case which has now unfortunately fallen into so feeble and

inadequate hands as mine are. I know for a certainty, that he had a high regard for Captain Charlton.

No. 10.

Extract of a Note from Captain Charlton to Dr. Wallich, dated Calcutta, 16th February 1838.

I can never sufficiently thank you for the extreme kindness you have shewn me, and particularly for the obliging manner in which you have writen to Mr. Colvin in my behalf. I have not a doubt that what you have said will be of advantage to me.

No. 11.

Extract of a Note from Captain Charlton to Dr. Wallich, dated Calcutta, 21st March 1838.

May I take the liberty of requesting you will not forget to send me the documents connected with Tea affairs that concern me, and a small sample of Assam Tea, I really think they may be of advantage to me if I present them to the Court of Directors.

No. 12.

Extract of a Note from Captain Charlton to Dr. Wallich, dated "Sesostris," near Saugor, 6th April 1838.

I had the pleasure of receiving your very kind letter of the 26th ultimo this morning from Kedgeree, with its enclosures, which, to tell you the truth, I almost despaired of receiving. I suspected they had been mislaid, and that you could not spare time from your numerous avocations to hunt them out and send me copies.

No. 13.

Extract of Copy of a Letter from Lieutenant Charlton to Captain Jenkins, dated 17th May 1834, enclosed in a Private Letter from the latter to Mr. Gordon, dated 19th May 1834.

With regard to the circular from the Tea Committee which you showed me at Gowahatty, I have much pleasure in communicating the little I know of the Tea plant of Assam. I was informed about three years ago of its being found growing wild in the vicinity of Beesa, at the foot of a low range of hills, and in the subjacent plain, from whence I obtained three or four young trees, which I gave to Dr. John Tytler, in Calcutta, with a view of their being planted in the Government Botanical Garden. I have since understood they decayed soon after.

No. 14.

Extract of a Letter from Captain Jenkins, Agent to the Governor General on the North East Frontier of Bengal to the Secretary of the Tea Committee, dated Gowahatty, the 7th May 1834.

I regret the delay that has occurred in acknowledging your circular, dated the 3rd March, to my address; it has been occasioned by unavoidable circumstances, which I have further to regret will prevent my replying to your communication to the length I could wish, or the subject deserves.

Camellias are found in every part of this hill country, and within our jurisdiction in the Singpho district of Beesa, a coarse variety of the Tea plant is, as I am informed, undoubtedly indigenous. A plant was given to me at Suddeya, which I have reason to suppose was a genuine Tea tree and I intended to have brought it to Calcutta for examination, but

I received it in a sickly state, and from the prevalence of great heat I was unable to succeed in taking it to the Presidency. I shall endeavour to procure another plant or two for the satisfaction of the Committee. However, having no doubt myself of the fact of the Tea shrub being found wild in the eastern parts of Assam, I would beg to recommend the expediency of some well-qualified person being at once sent up for the identification of the plants beyond any objection, for the examination of the soil in which it grows, as reported, and an inspection of the tract of mountains between Cachar and Assam.

No. 15.

Copy of Postscript to a Letter from D. Scott, Esq. to Dr. Wallich, dated Gowalpara, the 30th November 1823.

P. S. I regret exceedingly to say that both the Tea plants arrived dead. Had I been previously aware of the valuable present you were going to make me, I would have sent a malee down on purpose to take care of them, which I fancy the peon could not or would not do.

No. 16.

Extract of a Note from the late D. Scott, Esq. to Dr. Wallich, dated Singeemaree, 6th January 1824.

The bearer will receive charge of the Tea plants you were so good as to promise me, but I should wish only half to be sent at present.

No. 17.

Extract of a Letter from D. Scott, Esq. to Dr. Wallich, dated Gowalpara, 2nd August 1824.

I return you many thanks for your most acceptable and liberal present of plants, but I regret to state that my unavoidable absence at the time of their arrival, has led to the loss of the greater part of them, and I am still uncertain whether or not the Tea plants are among the survivors. To enable me to ascertain this I will be obliged to you, to send me up a leaf in a letter.

No. 18.

Copy of a Letter from David Scott, Esq. to Dr. Wallich, dated Dehkow Mookh, 2nd June 1835.

My Dear Sir,—I have the pleasure to forward some leaves and seeds of a plant which the Burmese and Chinese at this place concur in stating to be wild Tea. I had a much more perfect seed than any of those sent, but cannot now find it. It was of this shape  agreeing with the plate in the Encyclopædia. I have got a number of the plants, some of which I will forward to you by the first opportunity. Pray let me know what you consider it to be. I regret that we could not find any flowers. The plant is very abundant on the small hills and also in the plain at the foot of them east of Rungpore. The upper part of this country presents a most interesting field for inquiry in almost every department, but I am sorry to say that a very scanty harvest is likely to be reaped from it, there not being a single person in the country acquainted with botany, natural history or mineralogy. An expedition must

be set on foot next year to explore the sources of the river, and it will be little to our credit if it return with a dry journal of the windings of its course and impediments to the progress of the party, which I fear, however, is all that we are likely to learn, unless some friend of science at head-quarters has sufficient influence to revive the scheme, first entertained, of having a scientific survey made of the tracts we might be led through by the progress of events. The question relative to the identity of this river with the San Po, is by no means settled; but if they be the same, the longer branch called Debang not the Burhampooter, will most probably prove to be it. This river joins the Burhampooter from the north-west, and is laid down in the old maps as if it had been ascertained to have risen on his side of Lhassa, but upon what grounds I know not. I have a pretty extensive collection of geological specimens now, of which I propose sending a set to Mr. Colebrooke, as soon as I have leisure to arrange them. I have met with little, except the Sylhet limestone, at all differing from the formations of my old jurisdiction. In the absence of any better arrangement, could you not send up one of your Assistants from the Garden, to select such plants as are not yet known. There is so little difference between the climate of the plain of Assam and that of Bengal, that many new plants are not to be looked for there; but great facilities for such researches are presented by the proximity of the snowy peaks to the navigable part of the river in the neighbourhood of Suddeya.

Your's very sincerely,

(Signed) D. Scott.

Dr. N. Wallich, &c. &c. &c.

Botanical Garden, Calcutta.

P. S. I have found the triangular seed and forward it with the others in a tin box.

(Signed) D. S.

No. 19.

Extract of a Letter from D. Scott, Esq. to Dr. Wallich, dated Gowahatty, 26th July, 1827.

I have the pleasure to forward by this day's dâk a small box containing seeds, said to be those of the Tea plant, and which have lately been received from a Chief residing on the borders of Yunnan. About a year ago, I had the pleasure of addressing you on the subject of the Assamee Tea plant, and at the same time forwarded some seeds preserved *for inspection.* You will probably have met with the same plant in Ava territory, where I understand it is in great abundance and known by the name of Lip p'hip pin.

No. 20.

Extract of Para. 10*th of a Letter from Dr. Wallich to Captain Jenkins, dated Bissonath, in Upper Assam, the* 15*th March* 1836.

It is of the utmost importance that a trust-worthy and properly qualified person should be nominated for the charge of the forests, and for carrying into effect the above provisional and subsequent steps; and whose duty it should be to visit the forests frequently and in succession, and to report upon their progressive condition. Believing it to be impossible to find a man equally qualified with Mr. C. Bruce, in point of experience, zeal, and bodily constitution, it is my intention to recommend that gentleman, in the strongest manner I can, to the Tea Committee, for the charge of the Assam forests: the more so, as I have every reason to believe that you agree with me entirely in this matter. It was Mr. Bruce, and his late brother, Major R. Bruce, at Jorehath, who originally brought the Assam Tea into public notice, many years ago, when no one

had the slightest idea of its existence; a fact to which the late Mr. David Scott has borne ample testimony.

No. 21.

Extract of a Letter from the Tea Committee to W. H. Macnaghten, Esq., Secretary to the Government of India in the Revenue Department, dated Calcutta, May 1836.

Para. 5. As it will be necessary to employ a competent person for the superintendence of the operations above recommended, we deem it fortunate that the services of one so eminently qualified for that duty, as the gentleman named in the 10th paragraph of Dr. Wallich's letter, can be obtained on the spot. We understand that Mr. Bruce, the gentleman alluded to, would resign the charge of the gun-boats which he now holds, as well as his private business, and devote the whole of his time and labour to the care of the nurseries, and the proposed experiment on the indigenous Tea plant, for a salary of 500 Rupees a month, and this allowance we would propose to have a retrospective effect from the 10th of January last, when Mr. Bruce first gave his assistance to the deputation headed by Dr. Wallich.

No. 22.

Extract of a Letter from Mr. C. Bruce to Captain Jenkins, dated Suddeya, the 6th March 1835.

As the Tea Committee have done me the honor to appoint me a Superintendent of their Tea plantations, perhaps an account of a trip to the Tea plants will be acceptable. The salary of 150 Rs. per month is no great sum

truly, considering the country, which is not altogether a paradise, and the object so great and boundless. I am only induced to accept of such a trifle, that by my zeal for the promotion of so desired an object and my knowlege of the customs and manners of this place, may lead to something soon, worthy of the Honorable Committee.

I am the oldest resident at this place and in Assam too, therefore I cannot learn any thing connected with Tea from any person in this country (Assam), for I have seen more of them and was acquainted with them long before any one now in Assam came into it; and I am aware the whole of the trouble will devolve on me; this I hope the Committee will bear in mind.

My brother was the first person that ever thought of the Tea plants in these parts. Before the Burmah war, when he was at Rungpore, Assam, he offered a musical snuff box for two plants to the Beesa Gaum. In the course of the war I was at Suddeya. I begged and got from the same man a canoe full of the plants and seeds. Since that Mr. Scott, and Capt. Neufville, and every one in Assam have been in possession of them; not a year has passed since I have been here but the plants and seeds have been sent to any one that asked for them. You know that when you were here in January or February 1833, I both told you privately and wrote you publicly that the Tea plants were growing wild all over the country. If after all this it was not sufficient to bring it into notice it was no fault of mine. All this I would wish the Committee know to prove that I have had my eye on the Tea for many years.

No. 23.

Copy of a Letter from Mr. C. Bruce to Captain Jenkins, dated Suddeya, the 20th December 1836.

SIR,—I have the honour to acknowledge the receipt of your letter of the 20th instant, and its enclosures, referring to my services under Government and my age.

2. I left England in 1809, as midshipman, on board the H. C. Ship Windham, Captain Stewart, and was twice captured by the French on my way out, after two hard-fought actions; was marched across the Isle of France at the end of the bayonet, and kept prisoner on board of a ship until that island was taken by the British; thus I suffered much, and twice lost all I possessed, and was never remunerated in any way. I afterwards went as an officer of a troop ship against Java, and was at the taking of that place.

3. At the breaking out of the Burmah war, I offered my services to Mr. Scott, then Agent to the Governor General, and was appointed to command gun-boats. As my command was at Suddeya, I was the first who introduced the Tea seeds and plants, and sent them to Mr. Scott, and other officers below. My late brother, who was in Assam before the breaking out of the war, had previously informed me of their existence; and it was I who verbally informed you of it, and officially brought the subject to your notice in 1833, giving a description of the method of making the tea by the natives. I was the first European who ever penetrated the forests, and visited the Tea tracts in British Suddeya, and brought away specimens of earth, fruit, and flowers, and the first who discovered numerous other tracts.

4. It was my good fortune last year to go against the Duffa Gaum, and his followers, who threatened to overrun our frontier, and it was my good fortune to expel him twice

with my gun-boat from two strong positions; for this little service I was honoured with the thanks of the Governor General in Council.

5. I was born on the 10th January 1793. I have eight persons to support, including myself and my late brother's children.

I have, &c.

(Signed) C. A. Bruce,
Superintendent of Tea.

Suddeya, 20th Dec. 1836.

(True Copies and Extracts.)

N. Wallich, M. D.

At the conclusion of the reading of this statement with its appended enclosures, the Secretary desired to submit a letter which he had received a few days since from Major Wilcox at Lucknow, having reference to the subject.

To H. H. Spry, Esq.,
Secretary to the Agricultural and Horticultural Society.

Lucknow, 22d July 1841.

Dear Sir,—Observing that the question of priority of discovery of the Tea plant in Assam has lately been agitated, I venture to trouble you with a few lines on the subject, as I conceive that the little information which I can contribute will not be considered by the Agricultural and Horticultural Society as devoid of interest.

That Mr. Scott was aware of the existence of the Tea plant in the neighbourhood in 1825, when I first met with him, I perfectly recollect; and during his short visit to Suddeya in 1826, I well recollect his making particular inquiries regarding it of the Singfoh Chiefs who were assembled to meet him, and who professed to be well acquainted with the plant which they assured us was to be found in abundance at the foot of the first range of hills. The Beesa Gam promised to

produce it, and accordingly, on his return home he immediately sent in five or six plants which remained some time in a thriving condition in Lieutenant Bedingfield's and my garden, but what became of them I do not know, though it is not improbable that we sent some or all of them down to Mr. Scott.

Mr. Bruce was then with us at Suddeya, and I see no reason to doubt his statement that he sent down plants and seeds. The existence of the plant in our neighbourhood was in fact at that time quite notorious, but I question whether any one then ventured to entertain a hope that the tough-leaved plant of the jungles might be prepared to resemble Chinese Tea, and certainly a sample of the dried leaf preserved in their own fashion and presented to me by the Kamptis, in 1827, was far from being palatable or promising.

You will perceive that my statement merely settles the question that the existence of the Tea plant was known to Mr. Scott, to Mr. Bruce, and to myself and others in 1826, and in no wise detracts from the merit of those gentlemen who turned the discovery to valuable account or made it a second time.

I am, dear Sir,

Your's very faithfully,

R. Wilcox.

Messrs. Corbyn, Grant, Wallich, Johnson, Major Carter, O'Hanlon, Piddington, and Robison severally addressed the Meeting.

Mr. Corbyn concluded by placing the following notice of motion on the table for discussion at the next Meeting.

"That Captain Charlton, being the first to establish to the satisfaction of the Tea Committee and its Secretary, that the Tea-tree was indigenous in Assam, which fact this Society brought forward in its proceedings published in the *Government Gazettee*, in 1832, that a gold medal be awarded to that officer in acknowledgment of the same."

The Hon'ble the President said that it was not his desire to offer any remarks should any Member present still wish to address the Meeting, but if there were no other observations to be made he was anxious to mention to the Members present that he felt called on to offer one or two words by way of explanation, as an impression would appear to have gone abroad that he had at the last Meeting definitively pronounced, individually, on the original discoverer of the Assam Tea plant. This he felt assured need only to be mentioned by him to prove its absurdity, as no one could undertake to say, but that fresh claimants, with earlier rights, might not yet be found to the exclusion of those now before the public. He had (he said) endeavoured to be most guarded in what he did say on the occasion alluded to, and stated particularly that it was only in reference to the documents, at the time before the Meeting that he ventured to offer any opinion at all.

It would have been most presumptuous in him to state who was the actual discoverer, having no knowledge of the fact but from the papers before him, and with reference to them and them only could he say that Captain Charlton's notice appeared to be the first that was in print.

The Society, at the last Meeting, had, much against his wish, entertained the subject of Captain Charlton's letter, and it was only proper that the rejoinder of Dr. Wallich, so amply exculpatory as it was of the reproach which had been conveyed against him (Dr. Wallich) should be attended to.

It is true that Dr. Corbyn, and Dr. Grant, disclaimed all intention of imputing wilful suppression of any of the facts or correspondence relating to the case, but let what might be said, that was the impression that had gone abroad, and that too in his, the Hon'ble President's opinion, was the impression left on the mind after reading Captain Charlton's letter.

He thought no one could have heard the statement and its enclosures which had just been read, and not at once acquit

Dr. Wallich of every notion of suppression or concealment. More honorable testimony or more anxious solicitude towards any man could not have been evinced than appears on the face of these documents to have been borne by Dr. Wallich to Captain Charlton.

The Hon'ble the President further remarked, that he had attended the Meeting with some degree of reluctance, for he had a great dislike to be present at controversies of this kind, and he hoped that the Society would never again be called on to entertain such subjects. Much valuable business had to be put aside to allow of the discussion coming on, and this must now stand over to the next Meeting.

With regard to the proposition made by Dr. Corbyn, to grant the gold medal to Captain Charlton, the Hon'ble the President expressed himself opposed to the motion.

He remarked that he might not be present at the next Meeting as he would rather avoid being concerned at any further discussion on the subject; that if present he should certainly oppose the grant of a gold medal to Captain Charlton as proposed by Dr. Corbyn, for that it was now established beyond all doubt that Captain Charlton was not the original discoverer of the Tea plant, that its existence was known in 1825 to several persons—to Mr. Scott, Major Bruce, Mr. Bruce, Captain (now Major) Wilcox, and, for any thing that he knew, others might, in a little time, lay claim to the discovery: that the medal ought not to be lightly given away, and that he considered the publication of the notice in the *Government Gazette*, as Dr. Corbyn stated, in 1832, or in the transactions of the Society in 1836, did not entitle Captain Charlton to such a mark of distinction from the Society.

For all the foregoing presentations and communications the thanks of the Society were accorded.

HENRY H. SPRY, M. D.,
Secretary.

PROCEEDINGS

OF THE

Agricultural & Horticultural Society

OF

INDIA.

MAY,

1842.

CALCUTTA:

PRINTED AT THE BAPTIST MISSION PRESS,
CIRCULAR ROAD.

1842.

AGRICULTURAL SOCIETY OF INDIA.

PROCEEDINGS.

MAY 11, 1842.

Agricultural Society of India.

A General Meeting was held at the Society's Room, Town Hall.

The Hon'ble Sir John Grant, President, in the Chair.

[*Nineteen Members Present.*]

The proceedings of the last Meeting were confirmed.

MEMBERS ELECTED.

The gentlemen proposed at the last Meeting were elected Members:

Messrs. B. J. Colvin and George Gillanders, Dr. John Dempster, and Dr. George Playfair.

FOR ELECTION.

The names of the following gentlemen were submitted as candidates for election:—

Lewis Balfour, Esq., (Firm of Smith, Huffnagle and Balfour,) Calcutta,—proposed by Mr. A. F. Smith, seconded by Dr. Spry.

Murray Gladstone, Esq., (Firm of Gillanders, Arbuthnot and Co.) Calcutta,—proposed by Dr. Spry, seconded by Mr. Vaughan.

The Hon'ble P. Anstruther, Secretary to the Government of Ceylon, and President of the Agricultural Society of Ceylon,—proposed by Dr. Spry, seconded by Dr. Wallich.

Alexander Gibson, Esq., M. D., Superintendent of the Botanic Garden at Dapooree,—proposed by Dr. Spry, seconded by Dr. Wallich.

Baboo Kalee Chunder Roy Chowdry, Zemindar, Rangpore, —proposed by Mr. H. Bonnevie, seconded by Dr. Spry.

Thomas Wise, Esq., M. D., Acting Superintendent of the Eye Infirmary,—proposed by Dr. Spry, seconded by Baboo Ramcomul Sen.

E. B. Ryan, Esq., Attorney, Calcutta,—proposed by Dr. Downes, seconded by Dr. Spry.

PRESENTATIONS TO THE SOCIETY.

LIBRARY.

1. Remarks and Observations on the Cotton of Guzerat, by John Vaupell.—*Presented by the Asiatic Society of Bengal.*

2. The Calcutta Literary Gleaner, No. 3, Vol. I.—*Presented by the Proprietor.*

3. Report on the Settlement of the District of Saharunpore, completed by Edward Thornton, Esq.—*Presented by the Agra Government.*

MUSEUM.

1. A valuable assortment of the Seeds of delicious Fruits from Upper Scinde, consisting of Melons of various kinds, of Plums, Cherries, Apples, Apricots, Grapes, and Wild Currants.—*Presented by Col. Stacy.*

The seeds are ready for distribution to Members.

2. A small quantity of Egyptian Cotton Seed acclimated at Cawnpore, also Lucerne Seed, from Cawnpore.—*Presented by Brigadier Frith.*

Ready for distribution to Members.

3. A further sample of Mangrole Cotton and Seed from Moreton Bay, and a few Seeds of a very superior description of Musk Melon from Sydney.—*Presented by Dr. J. V. Thompson, Deputy Inspector General of Hospitals at Sydney.*

Ready for distribution to Members.

4. Two more samples of Arrow Root, the produce of his cultivation at Beerbhoom.—*Presented by Baboo Sumboochunder Ghose.*

These samples have been more carefully prepared than the previous samples, and were considered superior in every respect.

5. A skein of Thread manufactured from the Chunderee Cotton.—*Presented by Major Sleeman.*

6. A varied assortment of Seeds of Pasture Grasses, consisting of different species of agrostis, alopecurus, avena, anthoxanthum odoratum, festuca, lolium, melitotus officinalis, poa, &c. with some pulses and field turnips most esteemed in Scotland, obtained from the Highland Society of Scotland and forwarded by Dr. Royle by the April Overland Mail from the India House.

This valuable assortment of seeds is ready for distribution to Members.

7. A small assortment of English Flower Seeds.—*Presented by Dr. Dempster.*

These were immediately distributed.

8. A quantity of Bhilsa Tobacco Seed, the produce of seed presented by Dr. R. H. Irvine.—*Received from the Society's Nursery Garden.*

Ready for distribution.

9. A large basket of Tenasserim seed Yams (sucknaloo) from his garden at Allipore.—*Presented by Mr. Richard Vaughan.*

Ready for distribution.

10. Two delicious Musk Melons, grown in Calcutta, the produce of Cauboul seed received from Col. Stacy.—*Presented by Mr. R W. Chew.*

Nursery, the new Mulberry Distribution.

The Secretary desired to call the attention of the Members and the Public at large, to the fact that the Morus Multicaulis cultivation was now so extended and flourishing as to admit of a portion of the cuttings being distributed, and that any one desirous of obtaining a plant of this superior species of Mulberry for feeding silk worms might have the same on application.

Agricultural Improvements in Behar.

The minutes of the Agricultural Committee, to whom was referred Mr. Ravenshaw's important suggestions as to the best mode of contributing to the amelioration of the agricultural condition of the province of Behar, was next submitted. Generally the members warmly coincided in support of the excellent propositions of Mr. Ravenshaw, as published in full in the February proceedings of the Society.

Mr. Johnson considered the tables furnished as very valuable ones and which ought to be printed as an appendix to the work (Suggestions for extending the useful and ornamental plants in India), already arranged and condensed by Dr. Spry, and that Government in like case should be applied to for the same liberality in defraying the expense—at the same time suggesting that certain portions of the Society's own Transactions

relative to the cultivation of Cotton, Tobacco, Sugar-cane, &c., should be recommended for translation into Oordoo, as proposed by Mr. Ravenshaw. Mr. Johnson further recommended that the Zemindars should be asked by the Collectors of Revenue, what seeds and plants would be most acceptable to them so as to avoid waste.

Mr. William Storm was of opinion that the establishment of Committees of European and Native gentlemen in the Mofussil would tend much to the improvement of the country. It should be a part of their business to ascertain what soils were best adapted to the growth of the different agricultural articles and the supplies regulated accordingly.

Dr. Wallich entirely subscribed to the opinion of Mr. Johnson, and thinks that the Government would readily grant the pecuniary aid required. He is further of opinion, that the suggestion of Mr. Storm will be found very difficult of execution. Local societies in the Mofussil are what is wanted, and such would be able to furnish information of the description alluded to by Mr. Storm. He highly approved of the principle, all he feared was the execution.

Dr. Downes considered that any information the Society possessed as regards the cultivation of Sugar-cane, Cotton, and Tobacco, might be collected and published for the benefit of the natives of such pergunnahs as are stated by Mr. Ravenshaw to be so favorable for the cultivation of those products. The distribution of seed among the Zemindars, Dr. Downes feels assured, would be attended with the best effect. Very recently the perseverance and industry of a native cultivator had been brought to the notice of the Society with reference to the cultivation of Arrow Root in the Beerbhoom district. Dr. Downes feels satisfied that the proposition of Mr. Storm, having reference to the establishment of Local Committees, composed of active and enterprising Members, is

worthy the attention of the Society: most valuable information would be derived from them, and such Committees would be in a situation to supply Native cultivators with practical hints and through these sources the seeds could be distributed. The very valuable tables forwarded by Mr. Ravenshaw ought certainly to be published, and he thinks Government would give its assistance.

Dr. Spry considered that the translation into the vernacular of the useful papers had better be conducted in the place where the information was wanted, as, apart from the difficulty of making the work intelligible, the various languages of the country would require as many translations. For instance if the translation be made in Oordoo, which, he might mention, is a spoken but not a written language, it would be unintelligible to the Bengallee farmer, and if made in Bengallee it would be equally so to the Behar cultivator. With reference to the remarks of two of his colleagues touching the establishment of local committees, he begged to observe that a machinery was now in course of establishment throughout the country which would seem at once to be admirably calculated to forward the philanthropic views of Mr. Ravenshaw, and, as would be seen by a letter which would be presented to the Society, a similar idea had some time ago occurred to a gentleman at Futtehpore. He alluded to the recently established Ferry Fund Committees. If the Members of these Committees, and many of them were already Members of the Society, would kindly aid in forwarding the good work and impose on themselves the trouble of receiving and distributing useful seeds and plants of all kinds, then the supposed difficulty of finding efficient Local Committees would at once be got over. The Society however had already incurred considerable outlay in the purchase of Cereal Grains from England, and its finances did not at present admit of a further disburse-

ment: The Government being the great landlords of the country was the party to look to for the expense in the purchase of superior corn and other seeds for distribution. The considerate offer of Mr. Ravenshaw to apply to the Sudder Board of Revenue, if supported by the Society, should be strongly recommended.

On these minutes having been read some discussion ensued, when the Honorable the President moved, and it was unanimously resolved, "that the minutes now read be approved, and that Mr. Ravenshaw be informed that the Society very much approve of his suggestions—especially the application for pecuniary assistance from the Board of Revenue; that this Society will be happy to contribute its assistance in receiving and forwarding seed, &c., but that its funds will not admit of its incurring any expense."

The despatch of the Hon'ble the Court of Directors of the East India Company to the Supreme Government, under date the 24th July, 1839, wherein the Court state "that they propose from time to time to print and publish such information as may come before them, calculated either to extend the knowledge of the productions of India, to increase their amount, improve their quality, or give a stimulus to the demand for them, and desiring that the Governor-General in Council will cause similar measures to be taken for effecting the same objects throughout India," was brought to the notice of the Society by Mr. Piddington as furnishing grounds of support for any application that might be made for pecuniary aid in furthering translations or publications above referred to.

Application of the Ferry and One per Cent. Funds.

The Secretary desired to submit a letter, which he had been favored some time since from Mr. Griffith, lately Civil Surgeon

at Futtehpore, calling the attention of the Society to the fact of the Committee of the Ferry and One per Cent. Fund for that district, having associated some respectable Natives with them for the purpose of assisting in conducting the work of improving the roads, &c. of the district, and suggesting that the assemblage and official connexion with these Native gentlemen could be made the means of promoting the improvement of the agriculture of the district by the distribution of Grain or Sugarcane of a superior description amongst the ryuts through the medium and agency of these Native gentlemen in Committee, provided the Agricultural and Horticultural Society of India could assist by furnishing Grain, &c., and that the transport of the same could be effected without cost. Mr. Griffith states, that no expense can be afforded by the Committee in procuring supplies as they wish to reserve the scanty funds, which at present are likely to be raised, for distribution as premiums amongst the cultivators for the best produce raised in the district. It was hoped, however, should the plan in contemplation succeed, that the Committee in turn would be able to offer its mite of contribution to the funds of the Society.

Mr. Griffith further mentions, that as similar associations to theirs are being established by the orders of Government in every district, forming a species of municipal body for all improvements, that if the Society were to open a correspondence with a few of the principal ones it might largely aid in carrying out the views of the Society.

Mr. Griffith then alludes to the great advantage likely to accrue to the country by the abundant introduction of the Coco tree, which, judging from its hardihood in Columbia and Brazil, would be likely to thrive well on the alluvial soils of the Ganges, and become an object of commerce as well as a pleasing object to the eye. The Vanilla Bean also, Mr. Griffith alludes to, as a valuable article of commerce, and as well cal-

culated for the same localities as the foregoing. All that is required in this climate is the careful drying of the Bean under cover to preserve its delicious aroma. Guatamala being celebrated for its Indigo, Mr. Griffith suggests that some seed be obtained thence.

It was stated by the Secretary, on the conclusion of the reading of the letter of Mr. Griffith, that an application had been made some months ago to the Hon'ble the Court of Directors of the East India Company for pecuniary assistance to enable the Society to purchase agricultural seeds for general distribution, and that as a speedy reply might now be looked for the Society would be enabled soon to state whether the people of the country could be assisted by the Society in the manner now pointed out by Mr. Griffith and Mr. Ravenshaw. Among the useful plants suggested to the Government for introduction into India, Vanilla had been enumerated by Mr. Nimmo. It is however already flourishing in the Botanic Garden at Calcutta and Dr. Wallich had kindly offered to supply any applicant.

Publication of a Monthly Journal under the Auspices of the Society.

The proposition by Dr. Spry to bring out a monthly journal provided the Society would assist him by taking a certain number of copies at a fixed rate, and allow him to publish the papers that might be presented to the Society, underwent further discussion on the report of the Finance Committee. It was, on the motion of the Hon'ble the President, seconded by Dr. Wallich, "referred back to the Finance Committee to investigate and report whether any and what means may be suggested for carrying into effect the desired object of the Society to obtain the publication proposed, with a due con-

sideration of the state of the funds of the Society and their application."

Retirement of Members to Europe.

The Secretary desired to bring to the notice of the Society the circumstance that, as the rules of the institution now stood, any member quitting India for Europe ceased to become a paying member and forfeited all advantages accruing from his membership. It had been mentioned to him of late that as the intercommunication between the two countries was now becoming so rapid, many members might desire still to continue on the effective list, and keep themselves acquainted with the progress of the institution and the country by the receipt of the Society's publications or the possession of Indian seeds; under these circumstances he had to propose that any member, on leaving authority to that effect with any agent in Calcutta for the due payment of subscriptions, should be kept supplied with whatever the Society distributed in the same manner as if he were in India. This was agreed to.

In future any member leaving India will be requested to signify his wishes.

The first Successful Despatch of English Fruit Grafts to Upper India.

The Secretary next desired to submit a very gratifying letter from Dr. Falconer, Superintendent of the Botanic Gardens in the North Western Provinces, announcing the pleasing intelligence of the safe arrival at Seharunpore of the case of fruit-tree grafts brought to India by Captain Nesbit of the *Windsor*, and presented to the Society. Dr. Falconer says, that ten of the plants were in excellent order, most of them being in a

most vigorous state of growth. Dr. Falconer immediately forwarded them on to the Mussooree garden. The following were the names—Early Admirable Peach, Moutabon ditto, (Stock alive,)Red Roman Nectarine, Brussels Apricot, Turkey Apricot, Orange Apricot, Francis Pippin Apple, Hawthornden Apple, Ribston Pippin Apple, Josephine Apple, and one Black Currant Bush. This has been undoubtedly, Dr. Falconer says, the most successful despatch of fruit trees from England that has yet reached Upper India ; numerous consignments have reached him before, but hardly one of them ever reached alive, and in case of any further importations from England it would, Dr. Falconer thinks, be well to ascertain the points of management of the late despatch for guidance in future. Some of the glass got broke on the voyage up the river and had to be replaced at Allahabad, otherwise a still greater number of the plants would have survived. Judging from this successful attempt, Dr. Falconer considers August would be the best month for despatching from England any plants intended for the N. W. Provinces.

Dr. Spry explained that Captain Nesbit had kindly made over the box of plants to him in January. That on receiving it he had opened the case in a trifling degree, late in the evening, to prevent too rapid evaporation at first, and allowed the night air to come in contact with the plants, after which he opened the case more fully and examined the contents. Finding a large portion in good order, he had the box closed, and in consultation with the Hon'ble the President applied for permission to forward it on board the Government steamer, with special instructions, which was considerately sanctioned. During the voyage out Captain Nesbit had told him the case was not opened.

The Bundlekund Cotton Farms—Report from England on the Samples of Cotton—Use of Mules in India.

A letter from Mr. Finnie, in charge of the Doab Government Cotton Farm, was next submitted, in which the attention of the Society is called to the great necessity which exists for improving the breed of the cattle or teams of the country. Mr. Finnie says, bullocks answer admirably for breaking up the land of the Cotton Farms, but being compelled to use two at a time, the destruction of the plants is immense. Unless the rows are very wide, one bullock or the other is frequently and unavoidably walking on the Cotton.

The advantages likely to accrue from the introduction of a superior breed of Mules for draft, Mr. Finnie thinks, would be incalculable. The people, he considers, could soon begin to rear them, and they would answer the treble purpose of *plough*, pack, and saddle. Mr. Finnie is anxious to commence rearing them for his own use at the expiration of his engagement with the Government, and if the Society would assist him by sending to the Cape or to Malta for two large male Asses he will pay half the expense.

Mr. Finnie instances the circumstance that when he first began to plough, the coolies insisted the work could not be done without three men to each plough. Mr. Finnie only allowed two—one to drive and one to plough. Mr. Finnie subsequently got the bullocks broken in, and now only one man is necessary, and he does the work as well as any person could, and much better, Mr. Finnie says, than the generality of the Negroes in America.

With reference to his former communication on the prospect of the Cotton Farm, Mr. Finnie states, he is now (Feby. 3,) more than ever convinced that all he promised can be done with ease, and with efficient assistants he offers to double it.

No orders had reached regarding the buildings, and the little Cotton collected is filled with trash in consequence of its being kept so much exposed.

Mr. Finnie kindly offers to prepare and send the Society some suggestions for planting Cotton, as he has been applied to from different sources for information.

Mr. Finnie says, if a visit could be paid to him, he would endeavour to make the heart glad by the sight of extensive fields of as fine Cotton as the world can produce, and nothing would delight him more than for a deputation of inspection to be sent from the Society to examine what is going on.

The Secretary stated to the meeting, that in communication with the Hon'ble the President he had written to inform Mr. Finnie, that he would very probably meet with some good Mules from the Punjaub; but that the Society could not apportion any part of its funds for the purchase of animals.

From Captain Bayles, some interesting papers were next submitted under date 2d April. He expresses thanks for the trouble the Society has been at in procuring the plough-shares for him. By the late Overland Mail he had received reports, which he forwards, on the two samples of Cotton sent by him in November last to the India House. Captain Bayles considers the experiment as barely commenced, but some do not sufficiently keep in mind that something more is required than placing him with the American Planters on the banks of the Jumna. In America a planter thinks himself lucky if in three years his plantation makes a fair return, but in this country with nothing like the same outlay of capital, a return is expected in six months. Every thing, Captain Bayles states, is now in fair training, and by April next year, some opinion may be formed as to future prospects. To furnish some idea of what it would cost in America to establish such a plantation as *each* of the American Planters under his charge has, he encloses an estimate sent him from Liverpool.

EXTRACT OF A LETTER FROM MR. T. B. BOURNE, DATED LIVERPOOL, 27TH JANUARY, 1842.

At your request I have carefully examined the two samples of East India Cotton, and I now give you my opinion of the respective qualities and value of each.

The sample which you state to be the production of Native Seed resembles the great bulk of the Imports of the East Indies in its properties, as it regards the shortness, coarseness, and weakness of staple (except that it is rather evener,) but in point of cleanness it much surpasses what comes forward, and the color is also much better. I value this description to-day at 5*d.* per lb.

The sample you exhibit as the production of American seed differs very materially from the Cotton grown from the Native, being greatly superior in staple, it is rather fine and tolerable even, much longer and stronger than the staple of the above Cotton, and its appearance excellent, being remarkably clean and good in color. I value this cotton at 6*d.* per lb.* The first class of cotton I have valued is more adapted for export than home consumption, as the Continental buyers require cleanness and color, and for their use they will give ¾*d.* per lb. more to obtain it.

The Cotton from the American seed, in addition to the preference it will always obtain with Foreign buyers, will command a very ready sale with the trade of this country, and to judge from the specimen shown, it fully bears out the opinion which becomes more and more popular, that India can produce Cotton equal to the average class we receive from the United States.

* The sample sent to the Agricultural and Horticultural Society of India, was valued at from 4½ to 5*d.* per lb.—H. H. S.

EXTRACT OF A LETTER FROM MESSRS. PAULET AND CO., DATED LIVERPOOL, 29TH JANUARY, 1842.

We the undersigned have inspected the two samples of East India Cotton, which we think will meet with a ready sale, especially for export, where cleanness is of greater importance than the length of staple, and that such a quality would easily fetch $\frac{1}{4}d.$ to $\frac{3}{4}d.$ more than a common fair quality of East India.

EXTRACT OF A LETTER FROM MR. GEO. GRANT, DATED LIVERPOOL, 31ST JANUARY, 1842.

I thank you very much for sending me the samples of Cotton grown in Bengal, from *American* and *Country* seed respectively, which exhibit great improvement in quality, and it will be very important if the result of these experiments shall lead to the extension of the *American* system in the Cotton districts, so as to give us large supplies of such Cotton as this. Every well-wisher of his country, and her dependencies, will hail the success of your exertions to improve the quality of East India Cotton.

Several brokers have reported on the value of these samples.

No. 1 is considered worth $5\frac{1}{2}d.$ to $5\frac{3}{4}d.$, and would be taken in large quantities for *weft*. It is shorter in staple than *Uplands*, and would not answer so well for *warp*.

No. 2 is valued at $4\frac{3}{4}d.$ to $4\frac{7}{8}d.$, but would not be so saleable as No. 1.

Both samples are of course very superior to the general run of Bengal Cotton.

EXTRACT OF A LETTER FROM MR. HARDWAR EARLE, DATED EXCHANGE BUILDINGS, LIVERPOOL, JANUARY 31, 1842.

I am sorry that it was not in my power to reply to your note on Saturday, but I hope the delay will not have put you to any inconvenience.

When I first inspected the sample of East India Cotton, shewn to me by Mr. Greaves, I examined it under the impression that it was Surat growth, and I was struck with the remarkably deficient staple, and did not hesitate to ascribe the defect to the new process of ginning, which I understand it has been subjected to. Having been informed by you afterwards, that the Cotton was the produce of Bengal, my opinion became somewhat modified as it is difficult to conceive anything in the shape of Cotton much shorter than what comes from that presidency.

I still however think that the *quality* of the staple, if not the *length* is deteriorated; it is not only very fuzzy and much mixed with short curly bits (a large portion of which would be lost, I imagine, in spinning,) but it appears to me uncommonly tender, the reverse of which is the characteristic of Bengal Cotton.

How far these imperfections may be compensated for by the perfect cleanness and beautiful color of the Cotton, I am not sufficiently conversant with the mode of managing it, to speak with any confidence, but from the small supply of Bengal Cotton which finds its way to our market, and the difficulty there is of disposing of it when here, except for exportation, I conclude that it is not liked or wanted.

Viewing the sample as one of Surat, I do not hesitate to say, that it has been greatly deteriorated by the process of ginning, since I never remember to have examined any so extremely deficient either in point of length or strength of staple, and I do not consider it *intrinsically* worth more than 8¼*d.* per lb.* though its *appearance* would justify a valuation of more than 1*d.* per lb. above that price.

* The sample sent the Society by Mr. Finnie was valued by the Cotton Committee at from 3*d.* to 3½*d.* per lb.—H. H. S.

EXTRACT OF A LETTER FROM MR. R. TETLY, DATED LIVERPOOL, 1ST FEBRUARY, 1842.

I have examined two samples of Cotton you gave me and report as follows: viz.

The one grown from American seed is a useful class of Cotton, and would if *quantity* could be depended upon, rank and sell with Upland Cotton, ranging under the classification of "fair to good fair," the price of which is this day 5⅝*d.* per lb. In placing this apparently high value upon East India Cotton, I do it from its perfect cleanness, good colour, and fair length of staple, which makes it in my estimation equal to the best Surats, when gone through the process of cleaning by a spinner in this country.

The other sample has nothing to recommend it but its cleanness and good colour, the staple is so much cut by ginning, that it would be difficult to find any consumers that would use it, its cleanness and good colour might possibly make it worth 3½*d.* to 4*d.* per lb.

EXTRACT OF A LETTER FROM W. LAIRD, ESQ. JUNR. OF LIVERPOOL, DATED 29TH JANUARY, 1842.

I have received from Mr. Greene two samples of Cotton raised by you: opinions are much divided here about them. Among the brokers some won't look at it, others and mostly the East India Brokers think well of it. The value of that grown from American seed is 5½*d.* that from Native seed 5*d.* The country seed sample is very massy and much cut, the American not much cut. Mr. Barley, the spinner of Manchester, values the country seed at 5*d.* the American at 5½*d.* and would take any quantity of either—he says it is the most beautifully got up sample he ever saw. The Country seed would, I think, be more used for export than home use from its cleanness and colour,—with exporters staple is not so

great an object—colour and substance being the chief properties wanted; and for Cotton got up as your's is they would pay ½*d.* per lb. higher than for Cotton cleaned on the ordinary mode. I think, therefore, taking into account the unfavourable circumstances under which this Cotton has been raised, that you may materially improve it next year, and by paying great attention to the ginning may better adapt the gins to clean it, either by altering the bars or saws.

(True Extracts)

T. BAYLES, *Capt.*

Supt. Cotton Plantations.

Great Success of the Cotton Experiment in Southern India.

An interesting communication from Dr. Wight, at present superintending the Government Cotton Farm at Coimbatore, dated April 26th, to the address of Dr. Wallich, was submitted through the kindness of the latter. Dr. Wallich feels assured that Dr. Wight will fully sanction the publication of his valuable information.

"I certainly enjoy one satisfaction, and that not a trifling one, as a set-off for my temporary privation of these most agreeable botanical pursuits, which this duty (the Cotton operations) has caused, the conviction, namely, that the experiment entrusted to our care has, so far perfectly succeeded in our hands. Our farms here, which contain altogether 100 acres of land, shall, when the crop is all gathered, have yielded upwards of 20,000 lbs. of Seed Cotton, though part is quite empty through the total failure of the seed, and upwards of 20 acres are not half stocked with plants from the same cause: thus giving us on the remainder an average return of nearly 300 lbs. per acre. This is the more satisfactory, as it is evident from the total failure of so much, that the whole of our seed

must have been more or less deteriorated and the chance of even a very moderate crop, by so much diminished. For this large share of success we are mainly indebted to some late rains which fell in January and February and had the effect of completely renovating, re-animating and restoring to health our plants, which previously looked most unpromising. So far as I can learn, the Natives in this district consider their crop good when it yields 200 lbs. of Seed Cotton to the acre from the best land, and when sown at the most favourable season, which none of our's was. I expect next season, when our crops shall have had the advantage of both good seed and suitable season for sowing, that our American Cotton will yield from 600 to 700 lbs. the acre.

"The very unexpectedly large return this season, gratifying as it is in every point of view, I yet look upon as a matter of secondary consideration compared to the undisputable establishment of the fact, that the New Orleans or Mexican Cotton plant is, constitutionally, as hardy and bears our hot climate as well, I had almost said better, than the indigenous one. It certainly at the present moment looks greener and healthier than that species as grown under Native management. Besides, it seems only to require liberal pruning to make it yield a second crop perhaps better than the first, as almost every stem is budding and throwing out fresh shoots. We shall keep some of it by way of trial, but only a little.

"I have not heard the out-turn from the Bundlekund farms generally, but learn from a letter received here, from one of the planters there, that his farm of 200 acres only yielded about 2,000 pounds = 10 to acre. This seems a very small average, and if the others are in the same proportion, scarcely justifies Mr. Finnie's very confident predictions of such unbounded success as he anticipates, but yet judging from what we have accomplished, I fully expect to see them realized.

"We this year vastly enlarged the scale of our operations, each planter is to have a farm of 300 acres in place of 50, which will, we hope, if the season prove but moderately favourable, give us 700 lbs. per acre. It may, and probably will be less, we can scarcely expect more, even though our lands are nearly all of the best description. At this rate on a moderately large farm, say 500 acres, Cotton should prove a very remuneratihg crop, as 1000 acres yield 17,500 pounds of marketable Cotton, which, at only two annas the pound, is 2,187 rupees, always supposing the establishment nicely adjusted to the work to be done and conducted on the most economical, though at the same time an efficient scale. At three annas the pound the profit would be very handsome."

Discovery of Fossil Plants at Kamptee.

The Secretary next desired to submit the following extract of a letter, from Lieut. Munro, H. M. 39th, announcing the intelligence of his discovery of some Fossil Plants at Kamptee, Nagpore :—

"My attention has recently been attracted to ancient rather than recent vegetables, for I have discovered a very large quantity of fossil ones in most excellent order and in great beauty, some of the leaves are very nearly entire, and as much as eight inches in length, in shape resembling the modern Pothos, the fruits are very numerous and I have found one good specimen of wood. The Fossils are found in the secondary sandstone at a depth varying from 10 to 30 feet below the surface. I am no geologist, so cannot with certainty name the layers which are more recent than the sand-stone ; but I think, the uppermost one is clink-stone. I should be happy to send a set or sets of specimens to Calcutta, if I knew how.

"The Mignionette in my garden has been as fine both in appearance and scent as any I ever saw even in England; I have saved several ounces of seed, and shall be most happy to send it to you if it would be valued in Calcutta."

Introduction of the Vanilla Plant and Useful Trees.

A letter from Mr. Spiers, judge at Cawnpore, was next submitted, in which that Gentleman applies for some seeds of useful trees, and calls the attention of the Society to the great probable success which would attend the introduction and spread of the Vanilla Creeper so highly prized throughout Europe for its aromatic pod in perfuming chocolate, &c.

Mr. Spiers alludes to the many valuable particulars in *Humboldt's New Spain* which will be found relative to the Vanilla. The plant would grow he thinks in Bengal, to the east, or, perhaps, in various places to the south in the Madras Presidency. Mr. Spiers offers in any way he may be able to assist the Society in having the seeds of trees tried in the Cawnpore District.

Early Expectation of an Arrival of New Orleans Cotton Seed.

The Secretary desired to announce the receipt of a letter, dated February 4th, from Messrs. Grindlay and Co., the Agents of the Society in London, informing him of the arrival, off Liverpool, of 48 barrels of Cotton Seeds for the purchase of which the Society had voted 500 rupees. They were to be forwarded with all possible despatch. These seeds are stated to have been procured with the greatest care from the Para Gulph and may be expected in about a month.

Any person wishing for a supply is requested to make his wants known to the Secretary without loss of time. The seeds will be given to the public gratuitously.

Value of Carolina Rice in India.

Four most important announcements touching the great value attached to the importation of Carolina Rice into India, was next brought to the attention of the Meeting. The first was from Mr. Payter, Indigo Planter at Bograh.

That gentleman writes :—

" I regret that absence from home has prevented my seeing the proceedings of the Society, or I should have been an early applicant for Carolina Rice seed. I only learnt a few days ago from my friend ———, that he had got some up, and has sown his first supply. I am afraid it is now almost too late ; however I should feel obliged by your sending me by the dak banghee 2 seer packages every *other* day, to admit of them coming on regularly without being jumbled together at the cross dak stages.

" Many years ago I got several maunds of some which I supposed was Carolina, from my friend Hurry, from acclimated *dhan* that he had grown somewhere near Calcutta : whether it was the real Carolina or not I cannot tell ; but this I know, that it proved amazingly productive and the ryots kept up the seed-stock for several years ; but after I left this part of the district with their usual apathy they somehow lost it ! This is a rice-country all round the station, or rather to the west, south and north of it ; and the rice grown is of a superior sort ; indeed, it is the only thing grown in the Purgunnah of Silburrus, and if we could only introduce the Carolina pretty extensively, I make no doubt, in the course of four or five years that it would be the only sort cultivated, and become the staple export of the district. Could you obtain for me about 200 maunds direct from America by the end of next May. I should of course be willing to pay for it, provided the damages are within moderate bounds.

The three others were from Captain Bogle, Commissioner of the Arracan Province. In the first he says—

"The Carolina Rice you sent me last year has turned out admirably well. I wish you would send me much more, if you have it to spare. Should it arrive by next trip of the *Amherst*, it will be in time, but not later. I am in great hopes that it may be possible to reap two crops per annum of it, which would be doubling our agricultural riches. The natives admire it exceedingly and find it far more productive than their own coarse grain."

Again,—

"I am sorry you cannot send me any Carolina Rice seed; but I hope you will do me the favor to have not less than 20 maunds available for me next April. I will pay any thing it may cost, but I am so perfectly satisfied of the great importance of introducing this grain into Arracan, and of the ease with which it may be accomplished, that if I had the power I would throw *one hundred maunds* of seed into the Province *every* year, for the next *five*, which in addition to the produce of the seed, which should be kept for seed, would create a great change."

And again,—

"I wish you would send me down a very large supply of Carolina Rice, when I say a large supply I mean several tons, or say 100 maunds!! If I could have it here by 1st May, or in all that month, it would be a grand thing. The people here approve of it highly, and it would, I am sure, in a few years supersede the coarse and inferior grain of this province; for, besides being esteemed by consumers, it yields exceedingly plentiful returns. I do not know that we can do any thing better in Arracan at present than devote attention to the improvement of Rice, which is the great staple of the country. Good Hemp seed will also be esteemed if sent in May, and Tobacco seed in September."

The Secretary informed the Meeting that he had not failed to bring the importance of the calls here made to the notice of Dr. Royle at the India House, with the urgent request he would do his best to influence the grant of a large supply of this most valuable grain to India. At the same time he had the pleasing duty of stating that he had been in communication with Mr. Haworth of the Cossipore Mills, and that that gentleman had informed him, he was expecting out a pretty large supply in June, when a portion should be placed at the disposal of the Society.

Mr. Haworth who was present at the Meeting stated, he fully expected the vessel next month, and he considered he should be able to spare the Society as much as a ton.

Success of the American Plough in India—Chinese Agricultural Implements.

Two letters from Mr. Hall, Indigo Planter, Goruckpore, and one letter from Mr. Wray, Sugar Planter, Goruckpore, were next submitted conveying a most favorable report on the Government Ploughs supplied to them by the Society. Mr. Hall writes,—"The Plough you were so good as to give me is very admirably adapted for general use *here*. I wish I had a couple of hundred of them. The addition, however, of a guding-wheel and coulter would not be amiss, as the Natives, both men and bullocks, have yet to learn that a straight line is the nearest way from one point to another." Again, "I hasten to return you my best thanks for your offer of three more Ploughs. You may wish perhaps, to have an account of the result of the trial I have made with the first you gave me.

"In lightness it nearly approaches those in general use among the natives.

"By having only one stilt or handle in a line uniform with the beam, like the Suffolk Swing-plough, it would still more closely resemble them, and the ploughman would thus continue to have one hand at liberty for driving and guiding the bullocks. This I consider important, the native prejudices being almost insurmountable.

"The addition of a coulter is adviseable. The mouldboard is set out a trifle too much, occasioning the furrow-slice to be too broad in proportion to its depth.

"An improvement is suggested in having a bridle attached to the end of the beam for the purpose of adjusting the line of draught, the Plough having either been made to work from the shoulder with collars, as in England, or for a much smaller breed of bullocks than we rear in this district*. This defect we have now to remedy by setting the beam at a more elevated angle. The use of reins in this country being quite unknown, the bullocks must be yoked within reach of the ploughman's staff, so that a greater curve is required to the beam. All these defects seem to me to be so very readily remediable, without in the smallest degree interfering with the general structure of the Plough, which is admirable, that I think it may be worth while to make the suggestions, that, in case of any future munificent donations from Government of a similar kind, their present may be more suited to the ignorance of the native ryuts."

Mr. Wray states,—"The small Plough you kindly gave me, I had slightly altered and afterwards used it, for ploughing trenches for the native cane, my plan was as follows: two bullocks and a driver on each side, a ploughman, and eight men to carry and plant canes after the plough. I went twice through each trench, that is, once down and once up, the planters being stationed at distances along the line. As the

* A diagram is given by Mr. Hall.—H. H. S.

Plough passed up, they put in the cane pieces and covered them over directly, whilst the ground was moist, and before the sun and wind had time to affect it. In this manner I, day after day, ploughed and planted upwards of two English acres, using only two pair of bullocks, one pair in the morning and the other in the afternoon; an old man holds the Plough much to my satisfaction, and does not feel any extraordinary fatigue from it. The cattle draw it easily, and altogether I think it a most useful Plough for cane cultivation. I am having four more made like it. By-the-way, I must mention that even the natives approve much of its utility. I forgot to say that, by altering it, I meant, placing an *upright* in the shaft so as to elevate the point of draft to correspond with the height of the bullocks, *before* or rather in its original state, it was by far *too low* for *any* cattle."

This information relative to the American Plough elicited some remarks on the value of the Chinese Plough and other agricultural implements, and notice of motion to the following effect was given by Mr. Piddington:—

"Moved by Mr. Piddington and seconded by Dr. Wallich, that the Secretary be requested to use his best endeavours to procure a set of Chinese Ploughs of light and heavy draft, and of other agricultural implements, but principally ploughs from China."

The Hon'ble the President was pleased to say he would undertake to procure some if possible, and it was felt that if models could be obtained, the facilities now being so great, of all the various agricultural implements found in use by the Chinese cultivators, they would be exceedingly acceptable for the Museum.

For all the foregoing presents and communications the thanks of the Society were accorded.

HENRY HARPUR SPRY, M. D.,
Secretary.