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Proceedings of the Madras Government, Revenue Department,
27th August 1873.

No. 226. Read the following Endorsement of the Secretary to Government, Public Works Department, dated 12th August 1873 :—

Read the following Memorandum from the Deputy-Secretary to the Government of India, Public Works Department, (Buildings and Roads—Miscellaneous,) to Colonel G. W. WALKER, R.E., Secretary to the Government of Madras, in the Public Works Department, dated Simla, 1st August 1873, No. 317 B-C.

THE undersigned is directed to forward, for information, copy of a report on orchards and plantations in Raneekhet by Mr. Craw, Superintendent of Nurseries and Plantations.

(Signed) W. CROMMELIN, Colonel, R.E.,
Deputy-Secretary to the Government of India.

From the Government of the North-Western Provinces, Public Works Department, dated Nynee Tal, 23rd of May 1873. No. 98 F.

ORCHARD AND NURSERIES AT RANEEKHET.

READ—

Letter, No. 108, dated 22nd ultimo, from the Conservator of Forests, North-Western Provinces, covering a report by Mr. Craw.

OBSERVATIONS.—The Lieutenant-Governor has read this report with much interest, and having himself inspected the nurseries and plantations at Raneekhet in October last, is in a position to express his satisfaction with the progress of the work, and to offer his thanks to Mr. Craw for the zealous and careful discharge of his duties.

2. The prospects of the fruit trees as well as of the forest and fuel-timber are highly encouraging. There can be no doubt that the Australian Gum and Acacia species have found a congenial soil at Raneekhet, and will hereafter form a valuable and continuous supply of firewood. The nurseries of fruit-trees will prove of real service to the troops as well as to the community at large ; and Mr. Craw should, in communication with the Commissioner of Kumaon and the local authorities, arrange for supplies of these being available at Nynee Tal, Almorah, and generally to any parties, European or Native, in the hills, who are likely to foster their cultivation.

3. A formal application should be made for the seed of the Crab-stock on which to graft the Apple, required by Mr. Craw, as stated in the 5th paragraph of his report, when an indent will be sent to the Secretary of State.

4. The attention of the Government of India will be drawn to the non-receipt of the Mediterranean species as mentioned by the Superintendent in his 7th paragraph.

5. The suggestion made in the 13th, 14th, and 15th paragraphs for planting out various kinds of umbrageous trees in supersession of the common fir (which affords no shade, and is dangerous from being combustible) will be recommended to the Imperial Branch, Department Public Works.

6. The Willow is described as binding the ground by its roots ; it might, therefore, be found useful for the landslip at Nynee Tal and other places where it is an object to bind and consolidate a loose soil.

The wild Pear-stock answers perfectly for all purposes, but the Apple one is not strong enough for working trees to be committed to the experienced hands of villagers generally. The stock required for this is the wild English Crab-apple, and I would respectfully ask your permission to procure a supply of the seeds of this tree next Autumn. The paradise and wild stock will serve for working trees for station gardens and the more carefully tended village ones.

6. *Building Timber-trees.*—The list comprises two varieties only :—

1.	Cedrus deodara	2,01,580
2.	Pinus excelsa	4,672
	Total ...	2,06,252

Among building timber-trees in the hills no one is so valuable for all local purposes as the Deodar, and it has, therefore, received considerable attention in all nursery and planting schemes for Raneekhet. In addition to the two lakhs of seedlings in the nursery, about seventy acres of old abandoned tea gardens on the Kroup Estate were in the Winter of 1871-72 ploughed and sown with Deodar seed. The situation has all the necessary requirements for a successful Deodar plantation, viz., depth of good soil, elevation, and aspect. Outside the tea-cultivation there is a considerable extent of cleared land, which it is proposed to plant with Deodar when the seedlings in the nursery have been properly prepared by transplanting a second time. They received the first transplanting when a few inches high last year, and will be again removed during the ensuing rains. I may here remark that the transplanting of young forest trees from seed-beds to nursery lines prior to finally planting them in the forest is a most important operation, and one that should under very exceptional circumstances only be omitted. In the home-nurseries these repeated transplantings regulate the value of the plants, and justly so ; for a tree several times removed and with a mass of roots, the result of judicious transplanting, will bear carriage and exposure on planting better than one which has been drawn up in a seed-bed, and whose root, like its top, is branchless. Some trees are at an early period of their existence provided with immovable rootlets, and may be removed any time without much risk. The Willow and Rhododendron are types of this kind ; but others like the Chesnut and Walnut should first be transplanted into nursery lines, and then left one or two years. In the case of Deodar and such like trees, a second transplanting in the nursery should take place, and it is best not to defer the final planting in the forest beyond two years from this second planting, or four years from the seed. Experience shows that ever-green trees are most successfully transplanted during the rainy season, and that deciduous trees are as safely removed during the Winter months.

7. In connection with the subject of building timber-trees, I will here allude to letter, No. 115, dated Simla, 4th September 1872, from the Inspector-General of Forests, informing me that the British Consul at Algiers had been asked to send for Raneekhet a parcel of seeds of—

1. Cedrus Atlantica.
2. Abies Bobo-ccenses.
3. Pistacea Atlantica.

The parcel has not arrived, and the season for sowing these seeds is rapidly passing away.

8. *Fuel-trees.*—The trees under this head are—

1. Australian.
2. Local.

The Australian trees are—

1.	Gums	15,517
2.	Acacias	9,695
		25,212

Local trees—

1.	Walnuts	14,196
2.	Chesnuts	12,550
3.	Rhododendron	2,000
4.	Alder	1,600
		30,346
	Total	55,658

This number will be largely increased this year, as 36 lbs. of Acacia, 4 lbs. of Gum, 3 lbs. of Rhododendron, and 16 lbs. of Alder seed, together with 20,000 Walnuts, and a large quantity of Acorrus and Horse Chesnuts have been sown since last Autumn.

9. The growth of Acacias and Gums over two years may be accepted as evidence that the climate of Raneekhet is conquered to them. The following measurements of a few of the largest were taken this month :—

		Height in Feet.	Circumference.	
1.	Acacia, July 1870	23	1·4	Garden soil.
2.	,, February 1871	12	0·5	Jungle.
3.	Gum, August 1870	20	1·3	Garden soil.
4.	,, ,, ...	9	1·2	Good jungle soil.
5.	,, ,, ...	18	1·0	,,
6.	,, ,, ,, ...	18	0·9	,,
7.	,, ,,	17	1·1	,,
8.	,, ,, ,, ...	17	0·11	,,
9.	,, ,, ,, ...	16	0·10	,,
10.	,, ,, ,, ...	15	0·9	,,
11.	,, ,, ,, ...	15	0·10	,,
12.	,, ,, 1869	9	2·1	Garden.

No. 12 is growing in Major Bird's garden in cantonments, and was broken at a height of 12 feet by snow in January 1872. Last year's growth, therefore, measures the extraordinary height of 18 feet.

10. The local trees intended for fuel plantations are still in the nursery, and call for no special remarks beyond the several considerations taken into account on their selection, viz., rapidity of growth combined with the necessary closeness of tissue constituting good fuel, adaptation to thrive in all soils and situations it may be necessary to plant, and facility in procuring in expensively annual supplies of seeds. Seeds of the Acacias and Gums from Australia are found to succeed best when committed to the ground early in Spring.

11. The young plants thereby attain a few inches' height before the rains set in, and are not liable to rot in the seed-beds or in transplanting, which they do when from any cause the sowing has been unseasonably deferred.

12. *Ornamental Trees.*—Under this head, apart from the trees enumerated in preceding list, the nursery does not contain a large or varied assortment :—

1.	Willows	5,300
2.	Picea Webbiana	150
	Total, ...	5,450

To these, for planting in cantonments, may be added the wild Cherry and the several fuel and building timber-trees already enumerated. The Willow is perhaps the most valuable tree that can be planted on steep slopes of loose earth along road sides and near buildings. Being a narrow-leaved tree, the wind has little power to overturn it, and its roots produced in great masses near the surface, offer much resistance to "washing" during heavy rains. With this view and for planting at Raneekhet the tree is being extensively propagated. Already several hundreds have been given to house-holders in the station and planted in their compounds.

13. The prevailing tree at Raneekhet is the common fir (*Pinus longifolia*) and, though for useful building purposes, affords little or no shade during the dry hot months preceding the rains. Its species, too, falling at this season are an ever-ready agent for the spread of fire from any stray spark, and are, therefore, a constant source or anxiety to the inhabitants. I would suggest that as clearances are made by the Department Public Works, the trees mentioned above be planted and carefully fenced.

7. The expectation that the climate as well as the appearance and shade of Ranee khet will be improved by the propagation of the various classes of forest and ornamental trees, mentioned by Mr. Craw in the 14th paragraph is well founded; and there is reasonable ground for hopes that the soil (especially the micaceous surface of the Koompere Hill) when shaded from the scorching heat of the sun, and receiving additional rain and moisture through the new foliage, will become more propitious to the springs.

(By order, &c.,)
(Signed) E. DAVIDSON, Lieut.-Colonel, R.E.,
Officiating Secretary.

No. 99 $\frac{F}{C}$.

ORDER.—Ordered that a copy of the foregoing letter and enclosure from the Secretary to the Government of India, Department, with copy of Mr. Craw's report, be forwarded to the Secretary to the Government of India, Department of Agriculture, Revenue, and Commerce, in continuation of G. O., No. 126F., dated 4th April 1873, and for the action desired in paragraph 4.

No. 100 $\frac{F}{C}$.

Ordered that a copy of the same correspondence be forwarded to the Secretary to the Government of India, Public Works Department, with reference to paragraph 5 of Resolution.

No. 101 $\frac{F}{C}$.

Ordered, also, that a copy be forwarded to the Conservator of Forests, North-Western Provinces, with reference to his No. 108, dated 22nd ultimo.

No. 102 $\frac{F}{C}$.

Ordered, also, that a copy be forwarded to the Commissioner of Kumaon for information.

No. 103 $\frac{F}{C}$.

Ordered, finally, that this Resolution, with Mr. Craw's report, be printed in the Supplement to the Government Gazette, North-Western Provinces.

(Signed) F. D. M. BROWN, Captain,
Assistant Secretary.

ENCLOSURE No. 2.

From W. CRAW, Esq., Superintendent of Nurseries and Plantations, Raneekhet, to the Conservator of Forests, North-Western Provinces, dated Raneekhet, 26th March 1873.

REFERRING to your No. 1[illegible] of the 13th instant, I have the honour to submit, for your information, a report on the orchard, nursery, and plantations at Raneekhet.

2. The accompanying list shows the number of trees at present in the nursery and small plantations in cantonments, and for convenience of reference is divided into the following heads, viz:—

1. Fruit-trees.
2. Building timber-trees.
3. Fuel-trees.
4. Ornamental trees.

3. *Fruit-trees.*—During the rains of 1871 and Winter of 1871-72 the following imported English fruit-trees were removed from the little walled nursery in cantonments to the new nursery on the Troup Estate, for which 45 acres of land were granted by Government:—

1.	Apple trees	112
2.	Pear ,, ...	38
3.	Plum ,, ...	31
4.	Apricot ,, ...	30
5.	Cherry ,, ...	13
6.	Gooseberry ,, ...	31
7.	Currant ,, ...	40
	Total	295

Of these two Apple, one Pear, four Plum, twenty-nine Gooseberry, and eight Currant, total forty-four trees, have since died. It will be observed that nearly three-quarters of the total failures occurred among the Gooseberries alone, and this is attributed to misapprehension of orders on the part of the Malee who removed the bushes before the wood was perfectly ripe, until which it is not safe to remove Gooseberry bushes. It is doubtful whether English Gooseberries will succeed in the hills. Observations with these and a few other bushes in private gardens incline me to view the experiment as one beset with difficulties. The other fruit-trees are all safely established in their permanent quarters on the Orchard. A few of the Apples bore fruit of good size and quality last year; but as all endeavours have been to produce young healthy wood for propagation rather than the production of fruit, the size and quality of fruit last year cannot be held conclusive. The growth of the trees is perfectly satisfactory: many of the Apple ones are now five feet high and proportionally bushy, and this after the Winter, is promising. The other kinds are not quite so high, being fewer they have been more severely cut for buds and grafts.

4. The following is a list of the trees propagated from the imported ones:—

1.	Apple	823
2.	Pear	[illegible]
3.	Plum	44
4.	Apricot	70
5.	Cherry	72
	Total ...	1,875

Of these thirty Pears and twenty Apples were made over to the Commissioner for distribution in the province, and a like number of each kind was sent to the Government Garden in Gurhwal. In allotting the trees to villagers the Commissioner very properly consigned them to the care of owners of good gardens, rather than indiscriminately to people who have as yet a very imperfect knowledge of the value of English fruit. It may appear from the above numbers that the propagation of the Plum, Apricot, and Cherry, has not been so successful as that of the Apple and Pear. It is in appearance only, for while stocks for the latter kinds could be procured from the jungle, those for the former had to be raised from seed, and two years are required to grow them sufficiently strong for working.

5. The following is a list of the several kinds of stocks:—

1.	Apple, wild stocks	2,86[illegible]
2.	Do., paradise ,, ...	90
3.	Pear cuttings ,, ...	870
4.	Do., wild ,, ...	4,988
5.	Cherry seedling ,, ...	9,920
6.	Apricot ,, ,, ...	3,300
7.	Plum ,, ,, ...	1,900
	Total ...	23,928

14. These trees growing up quickly would change the appearance of the station, and, what is of greater importance, contribute immensely to the comfort and health of the whole community by their superior shade, and the probably increased, but certainly more uniform, discharge of water from the springs on the hill which the shade would produce.

15. The Forest Department could at all times supply the necessary trees from their nursery, and for that matter plant them, or its officers superintend the planting; but as the department would not reap any return from the trees, their fencing and preservation might be undertaken by the Cantonment Committee.

LIST OF TREES IN THE NURSERIES AND PLANTATIONS AT RANEEKHET.

	Fruit-Trees.		
1.	Apple of kinds		
2.	Pear ,,	932	
3.	Plum ,,	903	
4.	Apricot ,,	71	
5.	Cherry ,,	100	
6.	Gooseberry ,,	85	
7.	Currant ,,	2	
		32	
			2,126
	Fruit-Tree Stocks.		
8.	Apple, wild stocks	2,860	
9.	,, paradise, ,,	90	
10.	Pear cuttings, ,,	870	
11.	,, wild, ,,	4,988	
12.	Cherry seedlings	9,920	
13.	Apricot ,,	3,300	
14.	Plum ,,	1,900	
			23,928
	Building Timber-Trees.		
15.	Cedrus deodara	2,01,580	
16.	Pinus excelsa	4,672	
			2,06,252
	Fuel-Trees.		
17.	Acacias of kinds	9,795	
18.	Gums	15,517	
19.	Walnuts ,,	14,196	
20.	Chesnuts ,,	12,550	
21.	Rhododendron	2,000	
22.	Alder ,,	1,600	
			55,658
	Ornamental Trees.		
23.	Willow		
24.	Picea Webbiana	5,300	
		150	
			5,450
	Total ..		2,93,414

Kumaon, 26th March 1873.

(Signed) W. CRA[illegible]
Supt. of Nurseries and Plantations, Raneekhet.

TRANSFERRED to the Revenue Department.

(Signed) J. STURROCK,
Acting Under-Secretary,
For *Secretary to Government, P.W.D.*

No. 227. ORDER THEREON, 27th August 1873, No. 912.

Forests, No. 10.

COMMUNICATED to the Board of Revenue, to the Inspector of Forests, and to the Commissioner of the Nilgiri Hills.

(True Extract.)

(Signed) R. A. DALYELL,
Acting Secretary to Government.

To the Board of Revenue.
,, the Inspector of Forests.
,, the Commissioner of the Nilgiris.

Exd. F. R. Bantleman.

~~P.W.~~ 1873 Department
Revenue No. 2546
~~No. 4418.~~

Transferred to the Revenue Dept.

H. Merivale
Ag: Under Secy.
for Secy. to Govt.
P.W.D.

12th August/73

Ex: 226-227

Form
The Govt of India
Public Works

Dated 18 August/73
Rec'd 20 " 21 "

Enc: 1. No. 317 B. 6.

Forwarding copy of a Report by Mr. Crawford on Orchards and Plantations in Ranee Khet.

SO-27 Aug/73 No. 912

Transferred.

No. 912
To The Commissioner & the Board of Revenue, & the Superintendent of Police, and the Commr of Mr. Kutchery Hills

By Rail
Fm Secretary to Govt
Communicated
Sept 10-9/73

27 Aug 73

Copied in Letter Book August/73 Ch. 18