

REPORT

OF THE

BOMBAY FOREST COMMISSION.

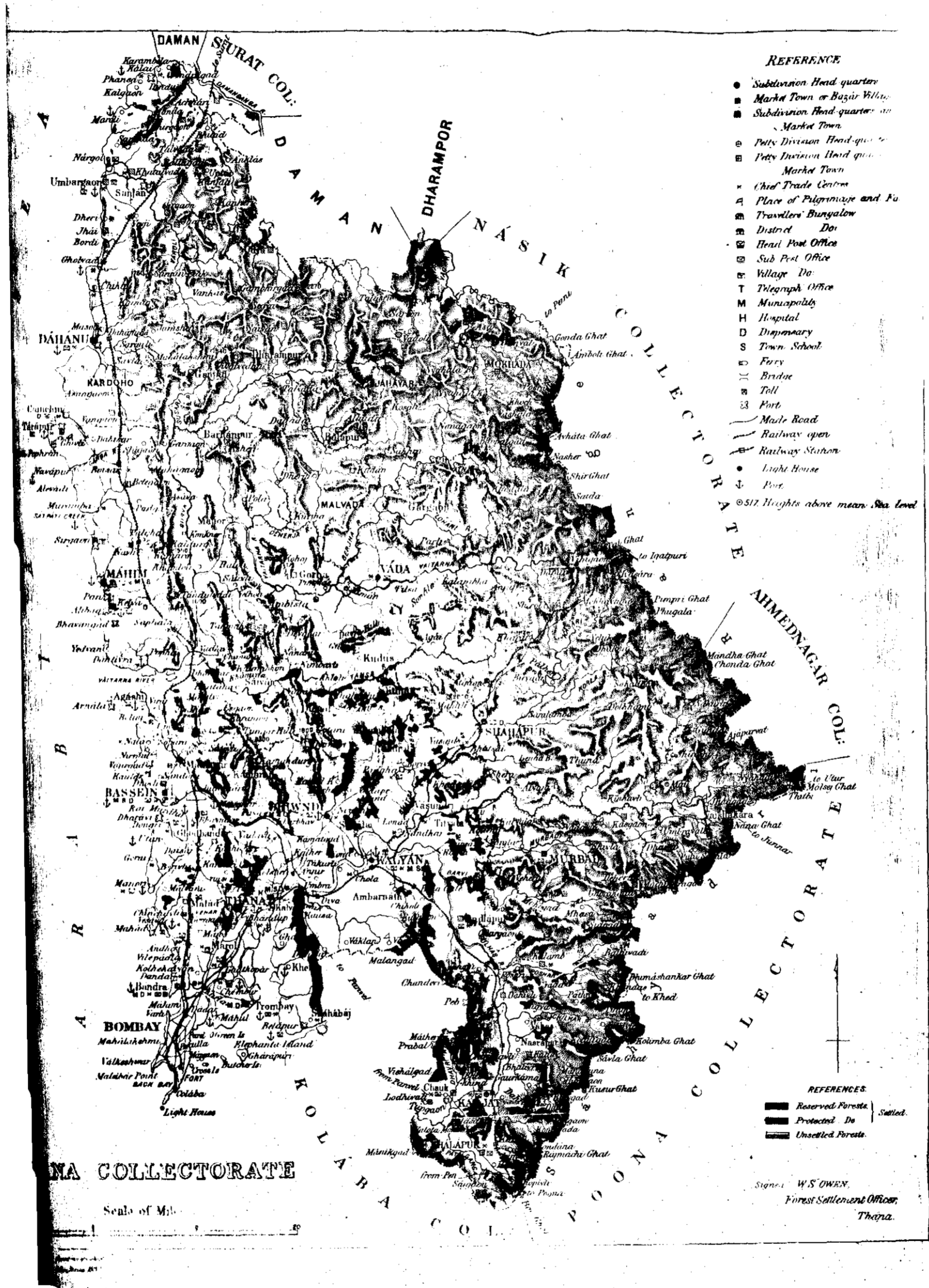
VOLUME I.

**PROCEDURE—REVIEW OF EVIDENCE—
RECOMMENDATIONS.**

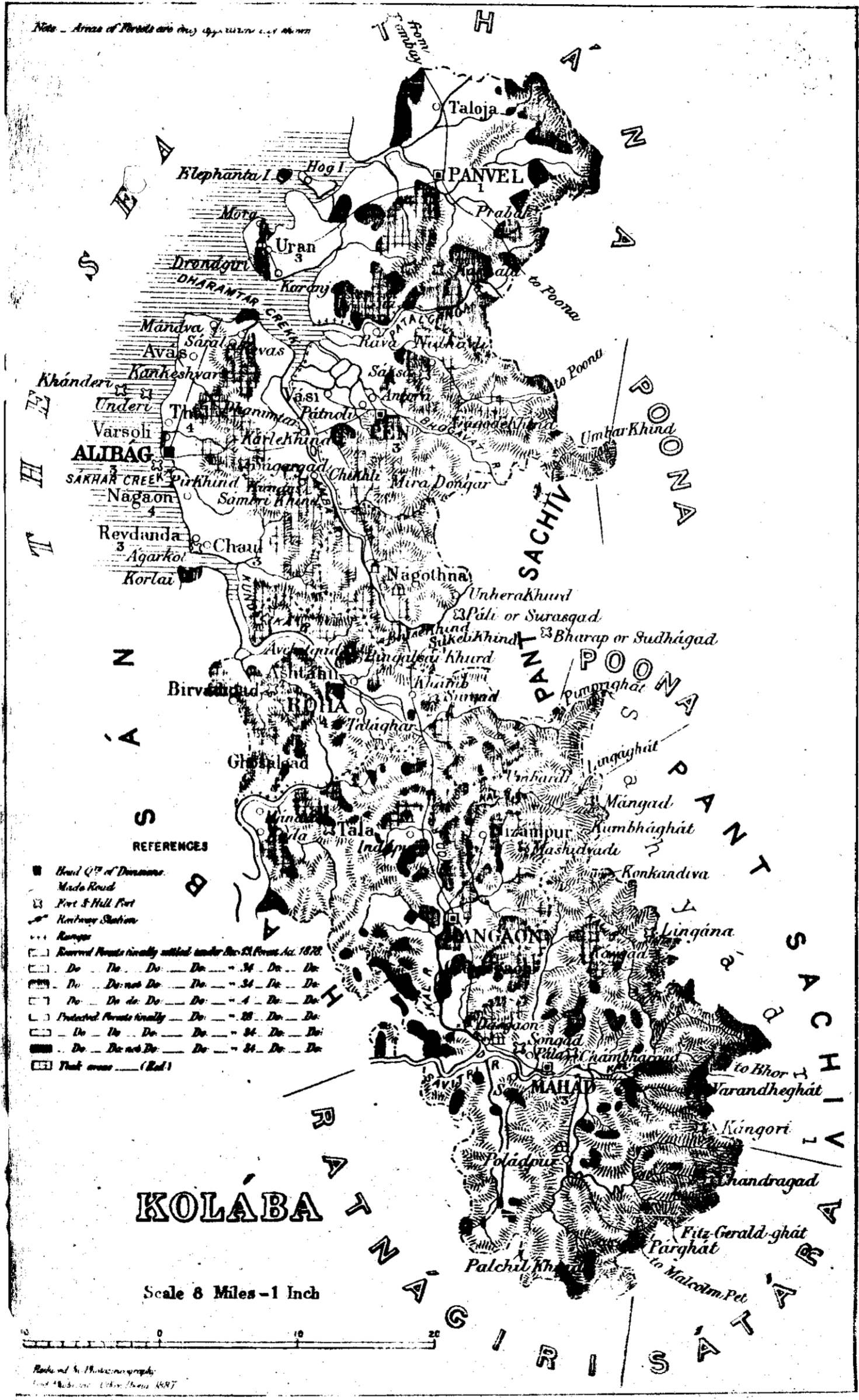
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1887.



Note - Areas of Forests are (red) 1877-1878-1879-1880-1881



KOLABA

Scale 6 Miles - 1 Inch

Made and by the Government of India
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 1887

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APPENDIX A.

NOTE.

Visited ráb plots with the Commissioner, N. D., Mr. Stewart, and the President, Forest Commission, Mr. Vidal.

The seedlings in field No. 8 had mostly been transplanted but the duplicate plots in No. 20 were all standing just ready for transplantation. Messrs. Stewart and Vidal placed the plots in order of merit, judging by the colour and size of the seedlings, without previous knowledge of the character of the ráb in each plot, thus:—

Order of merit—

1st.—No. 9, Cowdung ráb with layer of grass and earth.

2nd.—No. 4, Fángal ráb with do.

3rd.—No. 2, Nána bonda ráb with do.

4th.—No. 3, Uksi, dháiti ráb with do.

There was little in their opinion to choose between these four plots, in which the seedlings were thick, luxuriant and of a healthy green.

5th.—No. 1, Aia ráb with layer of grass and earth. Mr. Stewart thought that the slight inferiority of this plot was possibly due to the position.

6th.—No. 6, Leaf and grass ráb.

7th.—No. 5, Grass ráb, 3 layers of grass separated by layers of earth and covered with a top layer of earth.

8th.—No. 8, Cowdung ráb without upper layer of grass or earth but with $1\frac{1}{2}$ times the amount of dung put on No. 9.

These three plots were inferior to those already noticed but still were good. The rest were very inferior.

9th.—No. 12, Seed-bed unrábbed and unmanured but carefully cultivated and levelled before sowing.

In one-half of this bed the seedlings were large and green, but those in the other half were inferior in growth and colour. Seedlings very patchy.

10th.—No. 7, Seed-bed manured with karanz oil-cake. Seedlings yellow and poor in size. Part of the seedlings damaged by crabs.

11th.—No. 11, Seed-bed unmanured, unrábbed and uncultivated.

12th.—No. 10, Seed-bed manured with cowdung, quantity as in No. 9 plot but not burnt.

This plot was worst of all. The manure appears to have had no effect. The seedlings are thin and yellow and very short. Those of No. 11 are slightly better.

2. The ohikal and korad-ute plots were also examined. The seedlings in the former have only begun to come above the water which overlies the plots.

The korad ute plots are divided into two portions. One plot is manured with sheep dung and the other half with Professor S. Cooke's patent manure, and half with karanz oil-cake. If anything the latter half is better than the former. There is little difference between this plot and the sheep-dunged one. But the korad ute plots show up very poorly as compared with the plots in rábbed seed-beds.

3. The weeds taken from each plot in the fields Nos. 3 and 20 of seed-beds were examined. The most noteworthy fact was the large amount of weeds collected from plot No. 7 in field No. 20 (karanz oil-cake) and the still larger amount from the corresponding plot in field No. 3 manured with Cooke's artificial manure. The seedlings in the plot had been transplanted before the visit made on the 4th July.

(Signed) E. C. OZANNE.

No. 1449 of 1886.

6th July 1886.

This note is forwarded with compliments to Mr. T. H. Stewart and Mr. G. W. Vidal in turn, with a request that they will favour the undersigned with an expression of their opinion as to the correctness of the above statements regarding the appearance of the various plots and with any other impressions which the inspection may have caused on the comparative values of the varieties of ráb and ráb substitutes under experiment.

(Signed) E. C. OZANNE,

Director of Agriculture.

Poona, 10th July 1886.

Forwarded as requested to the Commissioner, N. D.

I fully concur with Mr. Ozanne's remarks as to the appearance of the seedlings in the different beds. I am glad to have had the opportunity of seeing a complete set of these ráb plots, in their most interesting, and, as I think, their most instructive stage, when the seedlings are ready for transplantation. The harvest derived from each batch of transplanted seedlings may not of course fully fulfil the promise of the seedlings before transplantation, but the condition of the crops as we saw them is, I believe, a very good test of the comparative value of the different systems tried. The first inference which can be fairly drawn from these experiments is that the preference shown by most of the Thána cultivators for the ain tree for ráb purposes over all other kinds of trees and shrubs is a fanciful one, not based on any real superiority. There is practically very little to choose between the seedlings raised with loppings of (1) ain, (2) nána and bonda mixed, (3) ukshi and daiti mixed, and (4) fángal or pángla (*Pogostemon purpuricaulis*), though it was easy to decide as regards these particular plots that the 'fángal' seedlings were rather better than the rest and that the 'ain' seedlings were rather worse than the others. Different materials for táhál ráb are used in different localities according to local preference, convenience and available supply. Where 'ain' is the favourite material, shrubs like 'ukshi,' 'dháiti' and 'fángal' are despised. One reason probably is that ain loppings are easier to collect and that the leaves are more firmly attached to the twigs than those of most other táhál yielding trees and shrubs, and another reason for the preference for 'ain' over 'ukshi,' 'dháiti,' &c., may be that the lopping supplies firewood as well as 'táhál' to the cultivator. However this may be it is very satisfactory to know, that fast growing shrubs like 'fángal' 'ukshi' and 'dháiti' which have no value as timber, yield quite as good results to the rice cultivator as the more expensive materials got at the sacrifice of much valuable timber from 'ain' 'nána,' 'bonda' and other similar trees. The comparative results obtained in plots 8, 9 and 10 are also very instructive and confirm strikingly the opinion Mr. Ozanne has previously stated, that the *manurial* element in ráb cultivation is of very minor importance as compared with the *burning* of the soil.

We have here two adjacent plots. In one of these (No. 9) 400 lbs. of cowdung have been burnt with grass in layers in the ordinary way; in the other (No. 10) the same quantity of cowdung has been used as manure without burning. As was to be expected the seedlings in No. 9 are excellent in every way. In No. 10, the unburnt plot, the seedlings are worse even than those in plot 11 which has not been burnt, manured or cultivated. This result will perhaps surprise many of those who are now studying the ráb question.

Again in plot 8 the results show how important it is that the soil should—in ráb cultivation—be thoroughly burnt, and that the materials used should be such as to ensure proper combustion. In this plot 600 lbs. of cowdung were spread on the ground and burnt. But no grass being used combustion must evidently have been less complete than in plot 9. As a result the seedlings in plot 8 are markedly inferior to those in plot 9, although one and a half times as much cowdung was consumed in preparing the seed-bed.

The results obtained in plots 5 and 6 are also interesting. In No. 5 grass alone has been used, but to prevent too rapid combustion the grass has been spread in 3 layers with earth between each. In No. 6 grass and leaves combined have been burnt. The seedlings in both these plots are very fair, though not quite as good as those reared in the beds where loppings have been burnt. Their condition shows at any rate that grass alone, or grass and leaves together form a very good substitute for loppings. The only drawback seems to be that, where grass and leaves are used without cowdung or loppings, the quantity of material necessary is comparatively very large and it is doubtful whether the supply of grass and leaves within reasonable distances of rice fields would be sufficient in most localities to admit of their superseding loppings of trees and shrubs as ráb material to any appreciable extent.

I may note in conclusion that the plots selected by Mr. Ozanne for the different seed-beds appeared, when I saw them at the end of May before sowing operations had commenced, to be very equal as regards soil, drainage and other conditions. Absolute uniformity, where so many plots have to be marked off, is perhaps impossible, but I feel sure that no one seed-bed has obtained any material advantage over any other in these respects.

(Signed) G. W. VIDAL.

The expressions are much the same as those recorded by Mr. Vidal. I consider the experiments to have been very fairly conducted and I would not wish too much stress to be laid upon my remark regarding the position of the seed-bed with 'ain' loppings.

There was certainly an inferiority in the seedlings grown on the 'ain' plot compared with those grown on the plot 'rábed' with cowdung, and the experiment so far as it goes, shows that there is no good reason for the preference shown by the rice cultivators for 'ain' as 'táhál' for ráb. What appear to be prejudices, however, in the minds of local cultivators in this country have so often turned out to be really sound ideas that I should like to see a similar experiment made next season. Of course the experiment up

to the present is only partial : the result of the harvesting may yet show that the seedlings raised with 'ain' ráb have more vitality and productiveness than those from the quick-growing and comparatively useless jungle shrubs.

The most remarkable and most instructive contrast is shown in the cases of the plots manured with cowdung in the ordinary way and that on which cowdung had been burnt with the usual ráb process. The seedlings in the one case were poor and yellow in colour, in the other case they were finely grown and of a deep green colour. It is clear that the roasting of the soil is a very valuable process and that without it in this locality and on these soils, rice cultivation could not be carried on profitably. The use of the richest manurial substances in the ordinary way is shown by these experiments to be of no more, but even less value in stimulating production than the use of the commonest jungle shrubs in the ráb fashion. I venture to predict that the final result of these experiments will be to prove that the Thána rayat in using ráb as he does is adopting the only ready means by which he can cultivate his rice with profit. The experiments will be particularly useful in every sense if they can be used to induce the rayat to content himself with 'fungal', 'ukahi' 'dháiti' and other similar growth and leave the 'ain' and the 'nána' and other really forest trees for firewood and other uses.

(Signed) T. H. STEWART.

No. 3185 of 1886.

FROM

THE ACTING COLLECTOR.

THÁNA ;

TO

THE DIRECTOR OF AGRICULTURE,

BOMBAY.

Thána Collector's Office, 9th July 1886.

SIR,

In reply to your No. 1437 of the 6th instant, I have the honour to state that as I knew the extreme care with which your own notes of the various ráb-plots at Karjat are taken I did not write any detailed statement of the conditions I saw.

2. I may, however, say generally that my conclusions were :—

- (1) That the plot with cowdung ráb had apparently the best yield of plants.
- (2) That the táhál ráb plots came next but at no great interval.
- (3) That (contrary to what I had expected from the general fondness of the people for ain loppings) there was apparently little or nothing to choose between the plot No. 1 with ain ráb and Nos. 2 and 3 with the loppings of nána, bonda, uksi and dháiti.

(4) That the difference between the foregoing and these plots, where no burnt ráb had been used, was exceedingly marked both as regards the size of the plants and their number, and

(5) That the yield on the seed-bed unrábed and unmanured was miserable when compared to the luxuriant growth on the beds which had burnt cowdung and burnt loppings.

3. I also saw the beds mentioned in your second para. manured with artificial manure and sheep droppings. These did not appear to be by any means a success.

4. It remains to be seen whether the final state of the transplanted seedlings when the crops are ripe for cutting will show the same marked superiority of burnt ráb over other methods of cultivation.

I regret that I did not particularly notice the state of the plots treated with grass and leaves as compared with those which had loppings. This is perhaps the most important point in so far as concerns the destruction of forest growth for ráb purposes. Doubtless you have made a careful note of this point. My attention was so occupied with the great difference between the burnt and unburnt plots that I forgot to note the differences of the burnt plots *inter se*.

I have, &c.

(Signed) F. L. CHARLES,
Acting Collector.

APPENDIX B.

Results of Experiments at Karjat in 1886 compared inter se and with results obtained at Karjat in 1885.

Variety of Rab.	PROPORTION OF SEED-BED IN AN ACRE OF RICE.						OUTPUT PER ACRE OF RICE IN HUSK CALCULATED ON THE YIELD OF MEASURED PLOTS.						Comparative outputs per acre. Cowdung = 100	
	Area planted from seed-bed taken as half gunthá.			Area of seed-bed for an acre of rice.	Comparative proportion of seed-bed, that of cowdung being taken as 100 gunthá.		Good soil.		Poor soil.		Average.			
	Duplicate plots.		Average.				Grain.	Straw.	Grain.	Straw.	Grain.	Straw.		
	Gunthás.	Gunthás.	Gunthás.	Gunthás.	1886 Standard = 6.15 gunthás.	1885 Standard = 5.30 gunthás.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.		
<i>Burnt (= pakka) ráb.</i>														
1. Cowdung ...	3.36	3.15	3.25	6.15	1.00	1.00	3,107	7,200	2,665	3,600	2,886	5,400	100.0	100.0
2. Ain ...	3.47	3.06	3.26	6.13	.99	1.43	2,960	7,200	1,990	4,200	2,475	5,700	85.7	94.9
3. Nána, banda ...	3.68	3.31	3.49	5.73	.93	...	4,135	8,800	2,040	3,840	3,087	6,320	106.9	...
4. Uksi, dháiti ...	4.27	3.36	3.82	5.23	.85	...	3,057	7,520	2,362	4,600	2,709	6,060	93.8	...
5. Fángala ...	3.24	3.37	3.30	6.06	.98	1.40	3,300	6,840	2,005	4,920	2,652	5,860	91.9	76.7
6. Cowdung without grass ...	3.20	2.40	2.80	7.14	1.16	...	2,364	5,040	1,698	3,640	2,031	4,340	70.3	...
7. Leaf with grass ...	2.36	3.29	2.82	7.09	1.15	1.48	2,231	5,080	1,952	4,040	2,091	4,560	72.4	42.2
8. Grass ...	3.09	3.38	3.23	6.19	1.01	...	2,887	6,880	1,710	3,800	2,298	5,440	79.6	...
<i>Unburnt (= kachcha) ráb.</i>														
9. Cowdung as manure ...	2.29	1.77	2.03	9.85	1.60	...	1,623	6,800	1,315	3,160	1,469	4,980	50.9	...
10. Cooke's artificial manure ...	1.82	...	1.82	10.99	1.79	...	2,555	5,800	...	...	2,026	4,660	70.2	...
11. Karans Oil-cake ...	1.64	...	1.64	12.19	1.98	...	...	...	1,498	3,520	...	...	...	...
12. No ráb nor manure ...	2.09	1.61	1.85	10.81	1.76	4.03	2,917	7,400	1,329	3,680	2,123	5,540	73.5	28.3
13. Do., but seed-bed cultivated ...	1.82	2.53	2.17	9.22	1.49	...	2,420	7,280	1,065	3,280	1,743	5,280	60.3	...
14. Korad ute (sheep folded) ...	1.49	...	1.49	13.42	2.18	...	2,290	4,630	1,589	3,500	1,939	4,060	67.1	...
15. Do., (Cooke's artificial manure) ...	1.14	...	1.14	17.54	2.85	...	...	...	1,663	4,550	...	...	...	...
16. Do., (karans Oil-cake) ...	1.64	...	1.64	12.19	1.98	...	2,286	4,830	...	...	1,974	4,690	67.3	...
17. Chikhal ute (sheep folded) ...	0.90	...	0.90	22.22	3.61	...	2,600	6,220	1,267	4,450	1,934	5,030	66.6	...
18. Do., (Cooke's artificial manure) ...	1.10	...	1.10	18.18	2.95	...	...	...	1,400	4,370	...	...	...	...
19. Do., (karans oil-cake) ...	1.14	...	1.14	17.54	1.49	...	1,443	3,370	...	...	1,422	3,870	48.2	...

E. C. OZANNE,
Director of Agriculture.

GLOSSARY OF TERMS USED IN THE I T.

A.—CROPS.

1. **Khura'sni**—*Verbesina sativa*,—an oil-seed, generally grown as the last crop before the fallow in the *varkas* rotation.
2. **Na'gali** or **Na'chani**—*Eleusine coracana*,—a cereal called elsewhere than in the Konkan *râge*, *bâvto*, *marua*.
3. **Vari**—*Panicum miliaceum*,—a cereal.

B.—LANDS.

1. **Ba'ga'yat**.—Garden land, *i.e.*, land growing crops and fruit trees irrigated artificially from wells, channels, &c.
2. **Bhetta** or **Betta**.—The dry-crop land producing leaves and twigs required for the cultivation of spice gardens in Kânara. A necessary adjunct to such gardens, as *shindidi* lands are to rice and cropped *varkas*.
3. **Ga'ira'n** (Deccan) and **Gurcharan** (Konkan).—Land set apart for the free grazing of the village cattle.
4. **Ga'obha'g**.—The portion of the forest area within the limits of any village set apart before the passing of the Forest Act to supply the local wants of the villagers, as distinguished from the Imperial reserves.
5. **Kha'jan**.—Salt-marsh land; mangrove swamps; land on the sea-shore or near tidal creeks, too largely impregnated with salt to permit of cultivation.
6. **Khap**.—That portion of *varkas* which is kept to produce grass for *râb*.
7. **Kharif**.—Land growing rice. Is in the Konkan practically equivalent to rice land. It is not used to denote the early harvest, as in the Deccan, or a crop belonging to the early harvest.
8. **Kuran**.—Grass meadow, yielding grass for fodder, unassessed and unoccupied but sold by yearly auction for grass and grazing, or reserved for fodder by Government.
9. **Ma'ki Number**.—Means literally any survey number in which the occupant has proprietary rights. In practice it is now used in the Konkan to denote any survey number, whether rice, *varkas* or garden land, held under the survey tenure.
10. **Parigh**.—*Parigh* is used to denote the area of unassessed waste *varkas* land, wherever situated within the village boundaries, which remains after all the land included in private holdings and all the land set apart for special purposes, such as forest, grazing, village site, &c., has been separately measured.
11. **Pot Khara'b**.—The uncultivable and unassessed portions of rice, *varkas*, *râbi* or *bâgdyat* fields (survey numbers).
12. **Pot Varkas**.—The *varkas* portions, assessed, of rice survey numbers.
13. **Râbi**.—Not used, as in the Deccan, to denote the late, *i.e.*, cold weather harvest, or a crop belonging to that harvest, but to distinguish from rice land (*kharif*) and *varkas* land, a variety of alluvially formed dry-crop land generally too moist to grow any but a cold weather crop.
14. **Salt rice**.—Land largely impregnated with salt, and reclaimed from the sea, or washed over by sea water. Growing coarse rice without *râb*.
15. **Shinda'di**.—This is that portion of *varkas* which is uncultivated and kept for the production of *râb* material. It is an adjunct of rice land or *varkas* land periodically cultivated, as *bhetta* land is the adjunct of spice gardens in Kânara.
16. **Sweet rice**.—Rice land not impregnated with salt.
17. **Varkas**.—Literally upland. This term is generally used to denote all lands not *kharif*, *râbi*, garden or salt-marsh land. It includes *parigh* but not *khâjan*.

C.—REVENUE TERMS.

1. **Dafter.**—Records.
2. **Kulkarni.**—The hereditary village accountant.
3. **Mahal or Taraf.**—Obsolete sub-division of a *tdluka*.
4. **Maha'lkari.**—The Revenue and Magisterial Officer in charge of a *peta*.
5. **Ma'mlatda'r.**—The Revenue and Magisterial Officer in charge of a *tdluka*.
6. **Panch.**—Body of arbitrators, usually five in number.
7. **Pa'til.**—The Revenue or Police headman of a village.
8. **Peta.**—A sub-division of a large *tdluka* presided over by a *Mahalkari*.
9. **Shera.**—An endorsement.
10. **Tala'ti.**—The stipendiary village accountant.
11. **Ta'luka.**—A sub-division of a district in the charge of a *Mamlatda'r*.
12. **Vahiva't.**—User, usufruct, so *raib vahivat, shinddd vahivat, &c.*
13. **Ya'di.**—Memorandum.
14. **Zilla.**—A district in charge of a Collector of Land Revenue.

D.—TENURES.

1. **Ardhell.**—Literally 'half' payer. A sub-tenure where the cultivator agrees to cultivate the land of an occupant, providing labour, *raib* and manure, and receiving half the gross produce, the superior holder paying the Government assessment or quit-rent.
2. **Dha'ra.**—A superior hereditary and permanent tenure in villages which have, at one time or other, been farmed to *khots*, the holder holding direct from Government and paying nothing more than the Government assessment. Similar to the *miras* tenure of the Deccan.
3. **Gatkul.**—An old term, now obsolete, used to denote a tenure without permanent rights of occupancy, as distinguished from *miras* and other hereditary tenures.
4. **Ina'm.**—Rent-free land or land held at a privileged rate.
5. **Iza'fat.**—The tenure of villages, a percentage or portion of whose revenue has been specially assigned for remuneration of the services of hereditary Government officers.
6. **Judi.**—The quit-rent paid on *indm* lands.
7. **Kha'sbandi.**—A tenure in which the *shindddi* portion of the *varkas*, which is the adjunct of a rice field, is treated as inseparable from the rice to which it is the appendage.
8. **Khoti.**—The tenure of the *khots*, originally farmers of the Government revenue. The *khoti* tenure prevails only in the Ratnagiri district and the southern portion of the Kolaba district.
9. **Na'garbandi.**—A tenure in which the Government revenue is collected in the form of a tax on the number of ploughs actually yoked and taken out for cultivation. This plough assessment either covers that for all kinds of cultivation, or only *varkas* cultivation, where the rice lands are individually assessed at an acre rate.
10. **Pa'ndharpesha.**—The tenure of the *Pa'ndharpeshas* ('white clothed' people?) who were before the survey allowed to hold land at specially low rates. The *Pa'ndharpeshas* of the Konkan including, Brahmans, Parbhus, Shenvis, &c., and artisans are land-holders who cultivate through tenants-at-will.
11. **Rayatva'ri.**—The tenure of *khalsa* or Government land, in which the *rayat* or occupant holds direct from Government.

12. **Suti.**—A term formerly used in the Konkan denoting a tenure of land carrying with it hereditary and permanent rights of occupancy. As a rule rice and garden lands only were held on the *suti* tenure. The term is now used to denote the holding under the survey tenure.

E.—GENERAL

1. **Dalhi.**—A mode of preparing *varkas* land for cultivation by burning *in situ* the vegetation on such land, ploughing or hand-digging and sowing in the area burnt. In the Kolába district *dalhi* is equivalent to *ráb* cultivation in *varkas* in Thána.

2. **Inja'li.**—Jungle wood. The term is generally applied to all forest trees, except fruit trees and the trees (teak, blackwood and sandalwood) which are reserved as Government royalties.

3. **Jhita.**—Side branches of the bamboo used for fencing.

4. **Kolpa't.**—Dead or fallen wood used for firewood (*jalú*) or building timber (*imáratí*).

5. **Kumri.**—A synonym for *dalhi*. It is an above-ghát or Deccan word.

6. **Pha'ni-tukda.**—The sub-divisions or subordinate (*pot*) numbers into which *varkas* survey numbers are divided, so that each occupant's holding may be assessed and shown separately in the records.

7. **Pot Number.**—Ditto of *kharif* survey number.

8. **Ra'b.**—Denotes (1) the materials burnt on the seed nursery for rice, or for *náglí* or *vari*, and (2) the mode of such cultivation.

9. **Shinda'd.**—An occasional synonym for *táhdí*.

10. **Sud.**—The register of lands prepared by the Survey Department for the administration of the settlement. The village Register.

11. **Ta'ha'l.**—Loppings of trees and shrubs used for *ráb* cultivation.