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MADRAS RECORD OFFICE.

Government of Madras.

Public works DEPARTMENT.

G.O. No. 3039 Press ~~Mis.~~

731-732

Dated 30. 9. 1867.

Not to be folded or roughly handled

Proceedings of the Madras Government, Public Works Department,
30th September 1867.

No. 731. Read the following Proceedings of the Madras Government in the Revenue Department :—

Communicating Memorandum by Dr. Cleghorn on the subject of increased floods consequent on forest clearing for Coffee cultivation in Coorg, Wynaad, and Western Mysore. } (Here enter 23rd September 1867, No. 2,223.)

No. 732. ORDER THEREON, 30th September 1867, No. 3,039.

ESTABLISHMENT, No. 73.

Communicated to the Superintending Engineers of the 6th and 7th Divisions and to Captain Kennedy.

(True Extract.)

(Signed) J. H. M. SHAW STEWART, Major, R. E.,
Under Secretary to Government.

To the Superintending Engineers, 6th and 7th Divisions.
To Captain Kennedy.

Allotten Supt^g Engr^s

Exd. S. T. Augustin.

No. 373. Read the following letter from the Conservator of Forests, to the Secretary to Government, Revenue Department, Fort St. George, dated Madras, 16th September 1867, No. 217 :—

1. In accordance with the instructions of Government in their Order dated 16th July 1867, No. 1,580, Revenue Department, I beg to forward a copy of the Memorandum (with trivial alterations) written at Simla upon the correspondence relating to increased floods due to forest clearing for Coffee cultivation in Coorg, Wynaad, and Western Mysore, and offering observations on the measures for counteracting evils that may arise from the extensive destruction of forests in the hill districts.

2. On the 7th ultimo, when the south-west monsoon was in full force, I went to the junction of the Cauvery and Bhowani, and examined the banks of both rivers for any visible traces of unusual flood, but I did not discover any recent erosion of banks or watermarks worthy of notice.

3. The Tahsildar of Bhowani and the people of Coimbatore almost unanimously assert that the rain-fall for some years has diminished, and that the drainage is more precipitate, and they ascribe these changes to the felling of forest in the hilly tracts at the headwaters of these rivers, but I had no means of reducing the statements to a numerical basis, and the water returns of the Tanjore District for twenty years do not prove any material alteration of volume in the Cauvery and Coleroon rivers.

4. The observations of Colonel Lawford and Major Sankey seem to prove local mischief at the headwaters of the Cauvery. To remedy these evils the Government of India have directed the attention of the Commissioner of Mysore and Coorg to the formation of forest reserves, which are not to be alienated, and to the strict conservancy of wooded crests and mountain ridges, and if these important measures be steadily kept in view in the hilly districts of this Presidency, the object of the Government of India in transmitting these papers will be attained.

INCREASED FLOODS DUE TO FOREST CLEARING FOR COFFEE CULTIVATION IN COORG, WYNAAD, AND WESTERN MYSORE.

1. In the Despatch of the Right Honorable the Secretary of State to the Government of India, No. 49, paragraph 7, dated 9th July 1866, it was observed that the remarks of Colonel Lawford and Major Sankey on the increase of floods consequent on the extensive clearance of Forest land for Coffee cultivation, "afford matter for serious consideration," and point to the danger of imprudently disturbing the general arrangements in the economy of nature.

2. The Government of India suggested to the Madras Government an enquiry into the effects of those floods, who thereupon ordered a renewal of the investigations carried on some years ago by Mr. W. Fraser, C. E., with the view of discovering suitable sites for reservoirs near the source of the rivers.

No. 36 C, dated 18th January 1866, in Proceedings Civil Works (Communications), January 1866, No. 45.

3. Three evils are mentioned in the papers (Proceedings, January 1866, Civil Works (Communications), Nos. 41—3) as having resulted from the too extensive destruction of the forests, and various recommendations are made by Major Sankey to meet the altered circumstances of the country.

4. *I.—Effects of Clearings upon the Ghaut roads.*—Marked examples of the effects of clearing are given by Major Sankey, and numerous landslips and formidable breaches are shewn in sketches by that Officer. When the roads were made, there was dense undergrowth on either side, and a shady forest over head. The slopes have now been cleared both above and below the road, and the original cuts for drainage have undermined and breached the banks.

5. To meet this evil, Major Sankey makes three suggestions :—

(1). "*Jungle for fifty yards wide should be preserved both above and below the roads.*" —This has been found necessary upon the hill roads of the Himalayas, as at Makassoo and Murree, and has a conservative influence upon the roads, especially when the slopes are steep. The planting below the road of Broom, Gorse, Cape broom, Laburnum, Australian Acaciæ, and other plants of quick growth, has proved to be of use in binding the banks ; this may be seen on the road between Ootacamund and Coonoor.

6. (2). *Very steep slopes should not be planted with Coffee.*—This point has attracted much attention. It might be supposed that self-interest would be a sufficient safeguard, but not a few plantations have been abandoned after the soil has been washed away from the roots of the Coffee shrubs.

7. (3). *Engineer Officers should be referred to in regard to clearings.*—At present, applications for grants of Coffee land are made through the Collector to the Forest Officer, who gives his opinion as to the advisability of sanctioning the grant. In many cases a professional opinion would be valuable, and it has been my practise, as Conservator in the Madras Presidency, to seek the advice of the Executive Engineer or Canal Officers, when there seemed to be any doubt about the application.

8. *II.—Damage caused to Bridges.*—Many examples are given by Major Sankey of damage to bridges in Coorg, caused by recent floods, the waterway being now insufficient, as proved by recent floods, the severity of which has been intensified by the clearing of forest in the upper part of streams.

I may observe that the erosion of the banks of the Cauvery near the junction with the Bhowani river in the Coimbatore District, attracted the attention of Mr. Grant, the Collector, and was the subject of conference with me in the beginning of the year.

9. *III.—Threatened failure of Summer water.*—The question raised in Colonel Lawford's Memorandum, dated 13th November 1865, has a very wide scope, and requires the most earnest consideration. It is alleged by these two Officers, particularly Colonel Lawford, who has had long experience of Tanjore, that the annual freshes in Trichinopoly and Tanjore Districts have attained a height hitherto unknown, and that the scarcity of water between the monsoons may be seriously aggravated, or, in other words, that Coorg and Wynaad have become gardens, but apparently in some degree at the expense of Trichinopoly and Tanjore.

10. *Observations.*—It would appear from the water returns kept by the Superintending Engineer of Tanjore for twenty years, that this assertion is somewhat overstated, nevertheless the influence of thickly wooded ranges in equalizing and regulating the flow of water precipitated from the sky is now generally recognized, and cannot be denied. During the last twenty years, the axe of the settler has been steadily at work, and clearing has gone on at a rapid rate along the line of Western Ghauts. It was calculated this spring by Mr. Markham,* Secretary of the Royal Geographic Society, that 180,000† acres of forest had been cleared for Coffee, Tea,

* "Within the last twenty years a great change has come over these forest-clad mountain districts, in the establishment of many English planters, who have brought great material blessing to the natives, but, in the extensive clearings of trees which they have necessarily made, have brought about a deterioration of the climate. In all, a total area of 180,000 acres of forest has been cleared for Coffee, Tea, and Chinchona plantations. One effect of this has been the occurrence of sudden floods, which have increased yearly in volume and destructiveness."—*Extract from a Paper by Mr. C. R. Markham, F. R. G. S., printed in the Proceedings of the Royal Geographical Society for November* 1866.

† This figure represents the aggregate area of all the forest land given up for these three industries in British territory, Mysore, Travancore, Cochin, but some of the early grants were large and one-third of the forest at least is standing.

and Chinchona plantations. I travelled with this gentleman from Cape Comorin along the Ghauts to Wynaad early in the year, and we were of opinion that physical changes and climatic influences followed the destruction of the forest on the eastern slopes, as any natural effect follows its cause.

11. The recommendations of the Engineer Officers quoted, are preventive of damage to communication, rather than remedial of the source of the evil. Whence come these floods ? From the water flowing rapidly from the higher tributaries and streamlets. The water no longer percolates through luxuriant vegetation, mosses, lichens, leaves and fallen branches, but rushes down in torrents, unarrested in its course, and carries away the soil, the utilization of which is the planters' object in clearing the forests. The important action of the forest is to retain the rain water, and to regulate the superficial and subterranean drainage.

12. The construction of large reservoirs within the hills, as proposed by Sir Arthur Cotton, Mr. Markham, and the Officers above quoted, and approved by Sir W. Denison, the late Governor, if financially and physically practicable, would be most valuable as providing by art what was previously done by nature ; but this would not prevent the injury to communications in the upper parts of the valleys, arising from encroachment upon the forests which formerly covered the mountains, nor would it alleviate some of the other evils which that destruction has occasioned.

13. The protection of the wooded crest of the ghauts and of a certain proportion of the forest below, particularly in the eastern slopes and along the banks of streams, and also, in certain situations, the restoration or re-planting of the hill sides would be more likely, than any other means, to prevent or diminish the evils alluded to in these papers.

14. Such measures as are here advocated would be acted upon more readily, if positive facts could be collected as to the present floods of the Cauvery, compared with what they used to be in former years, but the observations already made are sufficient to justify action in the direction indicated, without delay.

(Signed) H. CLEGHORN,
Officiating Inspector General of Forests.

SIMLA,
12*th September* 1866.

No. 374. ORDER THEREON, 23rd September 1867, No. 2,223.

Forests, No. 9.

1. Ordered that copy of the revised Memorandum received from Dr. Cleghorn with the above letter be forwarded to the Secretary to the Government of India, Department Public Works, and to the Commissioner of Coorg, with reference to Colonel Dickens's Memorandum dated 1st July 1867.

2. Copy will also be forwarded to the Board of Revenue, for communication to all Collectors.

(True Extract.)

Secretary to Government.

To the Board of Revenue.
,, the Conservator of Forests.
,, the Department Public Works.

Exd. S. T. Augustin.

Lid

№ 3039

Comm^d to the
Supt Engineers of the
6th & 7th Dists and to Capt
Kennedy —

M.

Fort St George
30th Septr 1867

2 Supt 6th & 7th Dists
4 Capt Kennedy
All others Supts Engrs
Recd 1/10/67

Recd 27 1867 Depth
Proc: of Govt for Sept 67
No 3671
Hon: the Madras Govt
Revenue Dept

Dd 23d
Rec'd 26 Sept 67

No 2223

Communicating
Memo: by Dr Cleghorn
on the Subject of Timber and
Wood Consequent on Forest
Clearing for Coffee Culti-
vation in Coorg, Wynaad
and Western Mysore.

Wells au Board

No 3039 - 30th Septr 1867

No 731-732