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Dated 20-2-1923

Not to be folded or roughly handled

Proceedings of the Madras Government, Revenue Department, 20th February 1863.

No. 274. Read the following Proceedings of the Madras Government in the Public Department, dated 13th February 1863, No. 163 :—

Passing orders on Lieutenant-Colonel Hamilton's Reports on the Palny Mountains and Shervaroy Hills. } (Vide Public Proceedings, 13th February 1863, No. 52.)

No. 275. ORDER THEREON, 20th February 1863, No. 360.

1. Communicated to the Board of Revenue and the Conservator of Forests.

2. The attention of the Collector of Salem will be drawn to paragraph 4 in view to his taking steps to eradicate the white passion flower therein referred to.

(Signed) J. D. SIM,
Secretary to Government.

REPORT

ON THE

PULNI MOUNTAINS,

~~TO ACCOMPANY THE~~

~~SERIES OF SKETCHES~~

BY

MAJOR D. HAMILTON,

21st Regiment N. I.

MADRAS:

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1862.

REPORT ON THE PULNI MOUNTAINS TO ACCOMPANY THE SERIES OF SKETCHES TAKEN BY MAJOR D. HAMILTON, 21ST REGIMENT N. I.

1. The Pulni mountains are situated between 10° and 10°15″ north latitude, and 77° 20′ and 77° 55″ east longitude in the Madura District. They extend in a north-easterly direction from the great mass of mountains known as the Western Ghauts, to which they are connected by an Isthmus, or ridge of hills about 8 miles in width; being completely isolated on every other side. To the north are the Districts of Coimbatore and Trichinopoly; those of Madura and Tanjore lie to the east; Tinnevelly and Travancore to the south and west.

2. These mountains were surveyed about twenty-five years ago by Captain Ward of the Surveyor General's Department; he states their length from east to west to be 54 miles with a medium breadth of 15 miles, and their superficial area 798½ square miles; this includes Anjeenaad, now a dependency of Travancore. Captain Ward reckons the area of the Anjeenaad hills to contain 231½ square miles which leaves 567 square miles for the Pulnis Proper. They are divided by the hill people into two ranges: the higher, and the lower range. Mr. T. Clarke of the Board of Revenue, late Collector of Madura, in his Report to Government, dated May 1853, estimates the average elevation of the plateau of the higher Pulnis at 7,000 feet above the level of the sea; but Captain Ryves of the Engineers, who was on the Pulnis in 1859, and took the altitudes with an aneroid barometer, makes their mean height 7,500 with peaks and ridges running up to 8,000 and 8,500 feet, and the edge of the slopes above the precipices from 6,000 to 6,500 feet. He estimates the area of the upper plateau to be about 105 square miles. The plain from which the Pulnis rise is, according to Dr. White, 1,100 feet above the level of the sea.

Vide Madras Literary Journal, Volume V, (1837).

3. With the sketches accompanying this Report, I have entered fully into a general description of the appearance of the higher range.

4. The principal rocks of these hills are immense masses of gneiss interstratified with quartz and traversed by veins of felspar, in places projecting above the surface firm and unaffected by the weather, but more generally decayed to a considerable depth, and occasionally so disintegrated that it is reduced to a gritty clay. The grassy tops of the hills are covered with black soil varying from a few inches to several feet in thickness, the sub-

Vide Dr. White's Report, Volume V, Madras Literary Journal.

soil where the black prevails is a yellowish clay, in some parts of an ochre color, but generally of a darker shade.

5. There is an abundant supply of water on the higher range throughout the year, in some of the valleys there are extensive morasses. According to Captain Ward, "On these mountains are the sources of upwards of thirty large streams, which uniting, form eleven respectable rivers." In the swamps near Kudaikarnal, peat of very good quality has been found.

6. The only made Ghaut up to the higher Pulnis on the southern side is that from Perreakolum to the settlement of Kudaikarnal. There are six other passes to the higher Pulnis, but they are unmade, being tracks up which a pony can scramble with difficulty, one on the western side from Davadanaputty to Shembaganoor and Kudaikarnal, and five on the northern, of which, one from Pulni to Pombarry, another from Pulni to Vilputty, and a third from Pulni viâ Rultambuddy and Manavanoor are the most frequented: of these the Devadanaputty pass is the only one ever likely to be made practicable for wheeled carriages. Since the Perreakolum pass has been constructed, the other passes have become nearly deserted. Traders with cattle from the north of the mountains preferring to come all the way round, to ascending the rugged paths in that direction.

7. The villages of the higher Pulnis are: to the west, Ettoor or the eight villages, so named from its originally consisting of a collection of eight villages, but two have since been abandoned, the remaining six are Manavanoor the principal village, Coomboor, Counjee, Poondee, Poloor, and Calavary, their population being about 1,648 souls. To the north-east, Pombarry with its four hamlets; old and new Pootoor, Pullangee and Kokul. Pombarry is the largest village on the higher Pulnis, its population amounting to about 1,224 souls; to the east is Vilputty, and to the south the small hamlet of Shembaganoor, consisting of only four houses. I was unable to ascertain the number of inhabitants in the village of Vilputty; but in 1853, it had a population of 364 souls, and appears to have increased but little since then. All these villages are situated at an elevation of from 5,000 to 6,100 feet above the sea. Nilaolungum, Vellacavvy, and Adikaree, are hamlets on the southern spurs of the Western Pulnis, but they hardly come under the denomination of villages on the higher range.

8. The entire population of the higher Pulnis may be estimated as not exceeding 3,500, consisting of a mixed race, viz., Koonoovers, Poliars,

Vadogars, Maravers, Chetties, and a few Pariahs. Mr. T. Clarke, whose long acquaintance with these mountains constitutes him an excellent authority, considers the Poliars to be the aborigines, and states that they were until lately the predial slaves of the Koonoovers, who are the most numerous class on the hills. The origin of the Koonoovers is obscure, they declare themselves to be Vellalers of the Coimbatore District, but adduce nothing to support this tradition. Their customs differ from the Vellalers of the plains, and those of the lower range differ much and have no connection with those of the higher. Captain Ward in his memoir of the Pulnis, published in the Madras Journal of Literature and Science, Volume VI, mentions that the Koonoovers are supposed to have resorted to the Pulnis from the plains about four centuries ago. The Poliars were until recently much oppressed by the Koonoovers, but, like the Todas treatment of the Kotas on the Nilgiris; on special ceremonial days or on the breaking out of any fatal disease "the Koonoovers adore and worship "them (the Poliars) under the idea that they have dealings with, and are able to propitiate, evil spirits;" the remaining classes are all emigrants from the plains. The Chetties are the traders and are found in considerable numbers on the hills; the other inhabitants are occupied in cultivation, they are the dupes of the traders from the plains, from whom they purchase goods and occasionally borrow money at exhorbitant prices, and interest. The Ryots dread a civil process more than death, the sight of a notice being sufficient to force them to yield to the most unjust demands. Many of the inhabitants are fine, robust, powerful men, but they have all the appearance of being a mixed race; and there is no distinct stamp of character such as is found amongst the Todas and Kotas of the Nilgiris and the Karders of the Annamallies. Mr. Clarke mentions in his Report that "The hill people are moderate, but at the same time not very particular in their eating; there is scarcely any species of animal the poorer "classes will not eat, not excepting rats, mice and monkies, and it matters "not whether the animal has died a natural death or been killed: the "higher classes are more scrupulous, not eating the flesh of animals that "have died, nor the wild ox (Bison); rice, barley and wheat is their staple "food. The favorite drink of the Poliars is the toddy of the Sago-palm, "which grows in great profusion on the lower range; they also eat the "pith of the tree, ground to powder, with honey, jack fruit, and wild "roots; the toddy is very sour and intoxicating. The Koonoovers of the "lower hills are also much given to strong drink. The people of the "higher range are more temperate; opportunities of getting liquor not

and some of the former in carrying burdens. Compared with the fine breed of Toda buffaloes on the Nilgiris, the wretched Pulni buffaloe appears a very insignificant animal; a few Toda buffaloes might be imported with great advantage to the Hill Tribes if they could be induced to rear them; but, as with the wheat, it might be difficult to persuade them that there was not some hidden motive in attempting to improve their breed of cattle.

12. There is a considerable traffic carried on between the hills and the plains; large droves of ponies, donkies and of bullocks, are continually met with travelling to and from the different hill villages. The chief article of import to the hills is salt; cloth and other necessaries are also bought up, which are bartered for produce of the hills, especially garlic. The whole of the traffic is carried on by Chetties and Lubbays, who make enormous profits by the trade; until very lately the hill men could never be induced themselves to carry their produce to the plains; but I was informed when at Madura, that parties had been met taking their garlic to market.

13. It has already been stated that there is only one made-pass up to the higher range, viz., from Perreakolum to Kudaikarnal, which at the best is but a mere bridle path, and does not extend beyond the settlement. The only communication between the hill villages, is by cattle tracks, in many places absolutely dangerous and in others almost impassable, from being worn into deep ruts and nullahs by the rains. The wonder is how loaded animals ever reach their destination; what would be an ordinary day's journey along a made-road or path, now occupies two if not three days.

14. Having resided on the Pulnis for only a short period, the greater portion being in the height of the north-east monsoon, my personal knowledge of the climate is not extensive. It appears to be milder and of more even-temperature than that of Ootacamund, though the altitude of the sites of the houses at Kudaikarnal is within a few feet of that of the Ootacamund lake. Though a less amount of rain falls than on the Nilgiris it is more equally distributed throughout the year; consequently the Pulnis are never subject to those long droughts that at times occur on the Nilgiris.

15. During my stay at Kudaikarnal, I kept a register of the temperature from two thermometers, one placed in the open verandah, and the other in a room without a fire. The Register which is attached shows a remarkable evenness of temperature.

16. Mr. T. Clarke in his Report has the following remarks regard- the climate. "The year is divided into two seasons, the cold season, "similiar to the autumn of the south of France, may be said to set in "from December and terminate in March; whilst the monsoon season, "resembling a mild autumn in the south of England, occupies the "remaining months.

"With reference to the climate of the higher hills in particular, the "following, as far as I am able to learn, may be considered a pretty fair "estimate:—

"January is uniformly fair, clear and dry. The nights are very "cold and attended with frost in the valleys. The same remarks will "apply to February, except that the frost is stronger, and in March it "disappears, when the weather becomes milder and there are a few heavy "showers. Towards the close of April the wind begins to vary from "the north-east, and finally settles in the south-west, when the air "becomes mild and balmy. May is the warmest month, but the heat "is often relieved by the fall of rain in torrents, intermingled with hail, "ushering in the south-west monsoon, which occurs in the early part of "June, and continues with greater or less constancy throughout July "and August, when the weather on the lower hills is comparatively dry "and fine. September and October are uncertain months, depending "on the state of the south-west monsoon, which, if begun early and "exhausted, renders the weather fine, warm and pleasant; but if defi- "cient in previous rain, a good deal of mist and drizzle generally prevail. "Towards the end of September the wind again begins to shift round "to the north, when the weather becomes suddenly colder. Mists and "fogs are common throughout the year, some gales of wind occur once "or twice a year generally about the changes of the season, but thunder- "storms are of rare occurrence."

17. As an instance of the salubrity of the climate, I may mention that although my servants were much exposed during the monsoon to the inclemency of the weather, yet with the exception of one case of cold and slight fever, they were perfectly healthy, which I know from experience would not have been the case at Ootacamund under similar circumstances.

18. The Pulni mountains are so little known, that many people are apt to confound the western or higher with the eastern or lower range, and declare them to be decidedly feverish during the hot months; this certainly is the case in portions of the lower Pulnis, but the higher

range is without a doubt as healthy, and free from fever, as Ootacamund itself, and moreover possesses a milder and more genial climate.

19. Several families belonging to the American Mission have for many years been in the habit of residing at Kudaikarnal at all seasons of the year. One family to my knowledge passed two hot seasons on the hills without returning to the plains. Some of the Natives from the low country at Kudaikarnal have remained there continuously for years; one a resident of upwards of eight years informed me that he had never heard of a case of jungle fever contracted at Kudaikarnal.

20. I believe the sites of most of the hill villages are also free from fever, for though many cases occur in them the fever is contracted on the lower slopes and valleys where the rice cultivation is situated, it being the custom for all the inhabitants to take their turn of tending this cultivation, to do which, they are obliged to remain near their fields living in temporary huts.

21. Should it hereafter be deemed expedient to establish a European Cantonment or sanitarium on these mountains, there is an excellent site with wood and water in abundance to the west of Kudaikarnal. The only other suitable spot for a Cantonment is on the plateau of Pootoor, but it is at least a thousand feet lower than Kudaikarnal with the valley of Poombarry on one side, and that of Kokul on the other; neither of these valleys are free from fever. Wood and water are obtainable in the vicinity and the site may prove healthy, it is however untried, whereas the salubrity of Kudaikarnal is fully established.

Vide Sketch No. 9.
Vide Sketch No. 13.

22. Kudaikarnal is about 112 miles (1) from Trichinopoly, the Head Quarters of the Southern Division, 65 miles (2) from the town of Madura, and 52 miles (3) from Dindigul, 143 miles (4) from the nearest point of the Eastern, and 90 miles from the Western Coast; Tuticorin is the most convenient port on the eastern side. The proposed line of Railway from Negapatam to Tuticorin, when completed, will pass through Madura.

(1).—To Dindigul..	60
Perreakolum	35
Tope.....	5
Kudaikarnal	12
	112
(2).—Perreakolum	48
Tope.....	5
Kudaikarnal..	12
	65
(3).—Perreakolum	35
Tope.....	5
Kudaikarnal...	12
	52

23. There is no direct communication between the Pulnis and the Western Coast established, owing to the hilly country and

(4).—Madura to Autancurray	78
Perreakolum...	65
	143

unhealthy jungle intervening; the only practicable route now available is viâ Pulni and Coimbatore, and from thence by rail to Ponany; but I understand a road is now being opened up between Cumbum and Trevandrum viâ Cottyum—the foot of the hills will be only 50 miles from this road and Kudaikarnal 12 more.

24. The great drawback to the opening out of the Pulnis as a settlement or Colony at present, is the difficulty of access. Notwithstanding this, I think, the numerous advantages these magnificent mountains offer need only to be known to induce enterprizing Europeans to settle there.

25. The best Coffee ground I am told is on the lower Pulnis. Mr. DeFonclair has a small plantation there near Perryoor, at present the only one on the Pulnis, but besides the great valley of Pombarry there are several other spots on the higher range well adapted for its growth.

26. Dr. Cleghorn, Conservator of Forests, on his visit to the Pulnis in 1859, left a few tea seeds to be sown at Kudaikarnal; on my departure from the hills in 1860, the plants raised from these seeds were an inch or two above the ground and appeared fresh and healthy. I have since heard that they are thriving exceedingly well.

27. I much regret that during my stay in China I had no opportunity of visiting the tea country; but from the little information I could gather the similarity of the mountains in soil, vegetable productions, and climate to the Pulnis is so close, that I have very little doubt tea culture will be found to succeed admirably on these hills.

28. To judge from the gardens at Kudaikarnal and the cultivation round the hill villages, the soil is evidently very productive, and from the facility of storing water in the valleys a quantity of land could be turned to good account in growing excellent wheat, barley, and other cereals. Very superior potatoes are now raised in the gardens at Kudaikarnal and Shembaganoor—their culture might be increased to any extent. A gentleman of the American Mission informed me that New Orleans cotton had been tried and succeeded at an elevation of 5,000 feet above the level of the sea.

29. Every European fruit and vegetable that grows at Ootacamund and Coonoor on the Nilgiris would succeed equally well at Kudaikarnal and Shembaganoor.

30. The sweet wild strawberry, however, which grows abundant on the Nilgiris, I did not meet with on the Pulnis, but I saw a few plants of red or tasteless kind.

31. There are extensive and good grazing grounds entirely unoccupied. Horned cattle thrive well—sheep and goats equally so—but sheep should be housed at night in a warm building with a boarded floor. This latter precaution should be particularly borne in mind, for it was neglected, I believe, on the Nilgiris when sheep-farms were attempted there, and they failed in consequence.

32. I was told that horses did not do well on the hills, the grass being too coarse for them. The four or five ponies I had with me during my stay on the mountains, however, kept in good condition.

33. Sir Charles Trevelyan in his Minute of February 1860, in reference to the upper plateau, states, "It is an important fact that as "regards much of the largest portion of this tract there is no claim to the "soil which can interfere with the most absolute freehold; the villages "are few and far between, and the rights of the inhabitants are con-"fined to the land they cultivate."

34. I had not an opportunity of ascertaining whether a good clay for brick-making was obtainable on the Pulnis; it probably is not in the immediate neighbourhood of Kudaikarnal, or it would have been discovered ere this.

35. Stone is found in abundance at Kudaikarnal from the size of an ordinary brick to one or two cubic feet and even larger, it is easily worked, and has been used for building purposes by the Missionaries; it is considered by them a good material, though stated by others to absorb too much moisture and never to dry thoroughly.

36. Timber for building purposes is obtainable from the woods on the plateau and the slopes on the mountains. Labor at present is tolerably cheap and plentiful. Masons cost from 5 Annas to 8 Annas per day. Carpenters the same rate, and coolies from 2 to 2½ Annas; at present all supplies have to be brought up from the low country, there being no bazar at Kudaikarnal.

37. In concluding my report, I would again repeat the suggestion conveyed in my letter of the 1st March 1860, that measures be at once taken to plant on these mountains Australian Acacias, gum and other trees. A considerable supply of young plants and suckers can be obtained from the gardens of the settlements; the cost of transplanting would be very trifling compared with the advantage that would accrue hereafter.

38. I lately sent to the Government Gardens at Ootacamund some seeds of the common China fir (Pinus Sinensis). If this tree succeeds, as I anticipate it will, some seeds or plants might be sent to the Pulnis, as the fir, besides being ornamental, is useful for building purposes or for firewood.

39. Lieutenant Beddome, Assistant Conservator of Forests, visited the Pulnis officially in 1857, and his report on their vegetable products has already been published by Government.

(Signed) DOUGLAS HAMILTON, *Major*,
21st Regiment N. I.

Register of the Thermometer taken at Kudaikarnal on the Pulni Mountains.

Date.	In open Verandah.												In a room without a fire.												Remarks.
	Morning.			Noon.			Evening.						Morning.			Noon.			Evening.						
	Hours.	Minutes.	Degrees.	Hours.	Minutes.	Degrees.	Hours.	Minutes.	Degrees.	Hours.	Minutes.	Degrees.	Hours.	Minutes.	Degrees.	Hours.	Minutes.	Degrees.	Hours.	Minutes.	Degrees.	Hours.	Minutes.	Degrees.	
1859 Oct. 13th	5	0	52½	8	0	60	12	0	64	7	0	56	..	..	....	5	0	61	8	0	60	12	0	62	7	0	61½	..	..	....	Morning cloudy, with appearance of rain—a shower in the afternoon—evening clear.
,, 14th	5	30	54	10	0	61	12	0	62	5	0	60	8	30	55	5	30	62	10	0	61	12	0	61½	5	0	63	8	30	61	Clear at daylight, mist and fog soon after—cleared off in the afternoon—night fine.
,, 15th	5	30	55	10	15	62	12	0	60	5	0	59	9	0	56	5	30	61	10	15	61	12	0	61½	5	0	62	9	0	60	Clear morning, cloudy at 10 A. M.—rain for two hours in the afternoon—evening cloudy
,, 16th	6	0	53	..	..	....	12	0	69	5	0	60	9	0	55	6	0	60	9	30	62	12	0	63	5	0	62½	9	0	61	Bright sunshiny morning—cloudy at noon—dense fog in the afternoon—night clear
,, 17th	5	0	55	8	0	60	12	30	68	7	0	59	8	30	57	5	0	61	8	0	60	12	30	64	7	0	63½	8	30	63	Morning overcast, strong wind from the N.E.—noon cloudy, occasional sunshine—night fine with passing clouds.
,, 18th	5	30	56	8	0	56	12	30	62	..	..	....	9	0	58	5	30	62	8	0	62	12	30	63	..	..	....	9	0	62	Morning cloudy — strong wind and drizzling rain during the day.
,, 19th	6	0	54	10	0	62	12	0	61	4	0	60	8	30	58	6	0	62	10	0	64	12	0	63	4	0	63	8	30	62	Fine clear morning, strong wind from the N. E.—fog at noon, sunshine at intervals during the afternoon—rain in the evening.
,, 20th	5	30	55	8	0	62	12	0	60	4	0	60	9	0	56	5	30	61	8	0	62½	12	0	62	4	0	63	9	0	61	Heavy clouds in the morning, wind strong from the N. E.—fine at noon—heavy rain in the afternoon—evening fine.
,, 21st	5	30	55	8	0	60	12	0	59	4	30	58½	8	30	57	5	30	61	8	0	61	12	0	61½	4	30	62	8	30	61	Morning fine—misty at noon—rain at night.
,, 22nd	7	0	54	..	..	....	12	0	58	4	0	57	9	30	54	7	0	60	..	..	....	12	0	60½	4	0	62	9	30	60	Dense fog in the morning—heavy rain the greater part of last night—noon and afternoon fine—fog in the evening.
,, 23rd	6	0	53	8	0	57	12	0	58	4	0	56	8	30	56	6	0	59	8	0	58	12	0	60	4	0	60	8	30	59	Fine till noon—wet afternoon—very heavy rain for several hours set in after dark.
,, 24th	6	30	52	8	0	54	12	0	57	..	..	....	9	0	56	6	30	59	8	0	58	12	0	59½	..	..	....	9	0	59	Cloudy day—slight rain in the afternoon.
,, 25th	6	0	54	8	0	57	12	0	59	4	30	58	9	0	56	6	0	59	8	0	59	12	0	61	4	30	61½	9	0	59½	Morning drizzling rain and fog—noon cloudy, strong wind from N. E.—occasional sunshine in the afternoon—evening fine.
,, 26th	6	0	53	8	0	54	12	0	59½	..	..	....	10	0	54	6	0	59½	8	0	60	12	0	60	..	..	....	10	0	59	Dense fog—strong N. E. wind, cleared up at noon—fine starlight night.
,, 27th	5	30	52	8	0	58	12	0	63	4	0	60	8	30	58	5	30	58	8	0	60	12	0	62	4	0	62	8	30	61	Fine bright sunshiny day, strong N. E. wind blowing—slight rain in the evening.
,, 28th	5	30	55	8	0	58	12	0	59	4	0	58	9	30	56	5	30	60	8	0	60	12	0	61	4	0	62	9	30	60	Fog and rain all day.
,, 29th	6	0	55	8	0	64	12	30	60	5	0	57	8	30	56	6	0	61	8	0	61	12	30	62	5	0	62	8	30	60	Clouds and sunshine with occasional mist in the morning—stormy afternoon and night.

Register of the Thermometer taken at Kudaikarnal on the Pulni Mountains.—(Continued).

Date.	In open Verandah.												In a room without a fire.												Remarks.
	Morning.			Noon.			Evening.						Morning.			Noon.			Evening.						
	Hours.	Minutes.	Degrees.	Hours.	Minutes.	Degrees.	Hours.	Minutes.	Degrees.	Hours.	Minutes.	Degrees.	Hours.	Minutes.	Degrees.	Hours.	Minutes.	Degrees.	Hours.	Minutes.	Degrees.	Hours.	Minutes.	Degrees.	
1859.																									
Oct. 30th	6	15	54	8	0	57	12	30	58	4	0	58	9	0	56	6	15	61	8	0	59	12	30	61	4	0	61	9	0	60	Stormy, with rain in morning—sunshine and showers during the day—stormy night.
„ 31st	5	30	55	8	0	56	12	0	59	4	30	55	9	0	56	5	30	60	8	0	59	12	0	59	4	30	60	9	0	59	Morning fine with strong wind—heavy rain set in at half-past 10 A.M., and continued the whole day.
Nov. 1st	5	0	54	8	30	54	..	..	....	5	30	57	9	0	56	5	0	60	8	30	59	..	..	....	5	30	60	9	0	59	Rain till noon, ceased for an hour or two—wet afternoon till 5 P.M., commenced raining again at 7 P.M.
„ 2nd	6	0	55	8	0	57	12	0	62	4	30	57	9	30	56	6	0	59	8	0	59	12	0	62	4	30	61	9	30	60	Morning sunshiny and clouds—very heavy rain from 11 till 4 o'clock—drizzle and mist rest of the day.
„ 3rd	6	0	54	8	0	57	12	30	62	5	0	60	8	0	58	6	0	59	8	0	59	12	30	62	5	0	62½	8	0	61	Fine day—rain set in at dark, and continued all night.
„ 4th	6	30	56	8	0	57	12	30	59	..	..	....	9	0	57	6	30	61	8	0	59	12	30	61	..	..	....	9	0	61	Cloudy morning with fog at noon—heavy rain in the afternoon, which continued all night.
„ 5th	6	0	54½	8	0	55	12	30	57	5	0	56	9	0	56	6	0	61	8	0	59	12	30	60	5	0	61	9	0	60	Fog in the morning and rain since noon, set in a wet night.
„ 6th	6	0	56	8	0	56	12	0	56	4	30	55	8	30	56	6	0	60	8	0	60	12	0	60	4	30	60	8	30	59	Heavy showers and fog during the day.
„ 7th	6	0	55	8	0	58	12	0	55	5	0	55½	9	0	55	6	0	59	8	0	59	12	0	59	5	0	59½	9	0	59	Much rain during last night—morning fine—wet fog and heavy showers during the day—wet night.
„ 8th	6	30	54	8	30	54	12	0	54	..	..	....	..	..	....	6	30	59	8	30	59	12	0	58	..	..	....	..	..	....	Exceedingly heavy rain last night—wet day with heavy rain at intervals.
„ 9th	6	30	53	9	0	54	12	30	57	4	30	56	8	30	55	6	30	58½	9	0	58	12	30	59	4	30	59	8	30	59	A wet day with heavy fog.
„ 10th	6	0	54	8	0	57	12	30	60	..	..	....	9	30	55½	6	0	59	8	0	59	12	30	62	..	..	....	9	30	60	Fine morning—thin mist with sunshine in the forenoon—rain in the afternoon which became very heavy after dark.
„ 11th	6	30	54	8	0	55	12	0	57	6	0	57	9	30	56	6	30	60	8	0	60	12	0	61	6	0	61	9	30	59½	Heavy showers with occasional sunshine during the day—wind and rain in the evening.
„ 12th	6	0	54	8	0	60	12	0	60	5	30	59	9	0	57	0	0	59	8	0	59	12	0	61	5	30	62	9	0	61	Fine morning—cloudy and slight mist at noon—afternoon fine—heavy showers at night.
„ 13th	6	0	56	8	0	58	12	30	60	5	0	59	8	30	56	6	0	61	8	0	60	12	30	62	5	0	62	8	30	61	Cloudy morning—fine forenoon — showery afternoon.
„ 14th	6	30	56	8	0	58	12	30	57	..	..	....	9	0	55	6	30	61	8	0	61	12	30	61	..	..	....	9	0	61	Rain before daylight—fine forenoon—afternoon showers and fog, set in wet at night.
„ 15th	6	0	55	8	0	56½	12	0	60	6	0	58	9	0	56	6	0	60	8	0	61	12	0	61	6	0	61	9	0	60	Morning showery—sunshine and light in the forenoon—fog and showers during the afternoon—night fine.
„ 16th	5	0	53	8	0	62	12	0	63	4	0	60	9	0	56	5	0	60	8	0	60	12	0	63	4	0	62	9	0	61	Fine day, strong wind.

Register of the Thermometer taken at Kudaikarnal on the Pulni Mountains.—(Continued.)

Date.	In open Verandah.												In a room without a fire.												Remarks.
	Morning.			Noon.			Evening.						Morning.			Noon.			Evening.						
	Hours.	Minutes.	Degrees.	Hours.	Minutes.	Degrees.	Hours.	Minutes.	Degrees.	Hours.	Minutes.	Degrees.	Hours.	Minutes.	Degrees.	Hours.	Minutes.	Degrees.	Hours.	Minutes.	Degrees.	Hours.	Minutes.	Degrees.	
1859.																									
Nov. 17th	6	0	53	8	0	55	12	30	60	6	0	57	9	0	56	6	0	60	8	0	60	12	30	61	.. ..	9	0	60½	Very strong wind in the morning, decreased towards noon—rain all the afternoon and great part of the night.
,, 18th	6	0	56	8	0	56	12	30	62	6	0	59	9	0	60	6	0	60	8	0	60	12	30	62	6 0 61	9	0	62	Wet night—wet and windy morning—foggy and wet during the day — wet evening.
,, 19th	6	0	58	9	0	56	1	30	57	5	0	56	8	30	54	6	0	62	9	0	61	1	30	60	5 0 60	8	30	59½	Blowing a gale and heavy rain, the rain continued all day—wind lulled towards noon.
,, 20th	6	30	53	8	0	56	12	30	59	5	0	57	9	30	54	6	30	59	8	0	59	12	30	61	5 0 61	9	30	59½	Wet showery night—dense fog in the morning, cleared up during the day.
,, 21st	5	0	53	8	0	56	12	0	58	5	0	55	8	30	53	5	0	59	8	0	58	12	0	60	6 0 60	8	30	58	Fine day with strong wind.
,, 22nd	6	0	51	8	0	53	12	0	57	5	30	54	8	30	54	6	0	58½	8	0	56	12	0	59	5 30 59	8	30	58	Fine morning and forenoon—cloudy afternoon—rain in the evening.
,, 23rd	5	30	53	8	0	61	1	30	59	4	30	58	9	0	57	5	30	57	8	0	59	1	30	61	4 30 61	9	0	59½	Very fine morning—drizzle at noon—rain in the evening—wet night.

,, 24th	5	30	55	8	0	60	12	0	59	6	0	57	9	0	57	5	30	60	8	0	59	12	0	61	6 0 61	9	0	60	Fine morning—showery at noon—rain in the evening—wet night.
,, 25th	5	30	55	9	0	57	12	0	59	5	0	55	9	0	54	5	30	60	9	0	60	12	0	61	5 0 60	9	0	58	Heavy rain in the forenoon—afternoon fine.
,, 26th	6	0	56	8	0	61	.. ..			... .			.. ..			6	0	61	8	0	60	.. ..			.. ..	.. ..			Sunshiny morning.
,, 27th	6	0	54	8	0	61	12	0	60	6	0	58	9	0	57	6	0	60	8	0	60	12	0	63	6 0 63	9	0	61	Morning fine with sunshine—thick fog at noon—fine afternoon.
,, 28th	6	0	56	8	0	61	12	0	59	.. ..			9	0	56	6	0	61	8	0	60	12	0	62	.. ..	9	0	61	Drizzly morning—fine, but windy day.
,, 29th	6	30	56	8	0	58	12	0	59	.. ..			9	0	59	6	30	61	8	0	60	12	0	61	.. ..	9	0	60½	Cloudy morning—fog at noon with occasional sunshine—wet afternoon and night.
,, 30th	5	30	56	8	0	61	12	30	59	.. ..			9	0	58	5	30	61	8	0	60	12	30	61	.. ..	9	0	60½	Fine morning—slight showers at noon and afternoon.
Dec. 1st	6	0	56	8	0	59	12	0	59	.. ..			9	0	57	6	0	60	8	0	60	12	0	61	.. ..	9	0	60	Clouds and fog but no rain—afternoon fine.
,, 2nd	5	30	54	8	0	62	12	0	59	6	0	57	9	0	54	5	30	59	8	0	59	12	0	61	6 0 61	9	0	59	Morning fine with bright sunshine—mist at noon—dense fog in afternoon.
,, 3rd	5	30	53	8	0	57	12	30	58	.. ..			.. ..			5	30	58	8	0	59	12	0	59½	.. ..	.. ..			Morning fine—clouds and fog during the day.
,, 4th	7	0	56	9	0	55	2	0	58	5	0	57	9	0	55	7	0	57	9	0	58	2	0	59	5 0 59	9	0	58	Morning fine—stormy clouds—mist at noon—afternoon fine.
,, 5th	5	30	51	8	0	57	12	0	56	4	0	58	... .			5	30	57	8	0	59	12	0	58	4 0 59	.. ..			Fog and mist with occasional sunshine.
,, 6th	5	30	52	8	0	61	12	0	59	.. ..			9	0	55	5	30	57½	8	0	59	12	0	60	.. ..	9	0	59	Bright sunshiny morning—looked stormy at noon, but no rain fell.
,, 7th	6	0	52	8	0	54	12	30	56	4	30	56	9	0	54	6	0	58	8	0	57	12	30	57½	4 30 58	9	0	58	Fog nearly all day.
,, 8th	5	0	52	8	0	55	.. ..			3	0	58	8	0	54	5	0	57	8	0	57	.. ..			3 0 59	.. ..			Fine morning—mist and fog during the day.

Note.—These observations were made with two ordinary Thermometers, one placed in the outer verandah of Mr. Clarke's house with a north-easterly aspect, and the other inside a room on the western side of the house. The house being situated close to the edge of the Ghaut is oftener enveloped in mists than other houses of the settlement.

Register of the Thermometer taken at Kudaikarnal on the Pulni Mountains in open verandah facing the North-east.

Date.	Morning.				Noon.		Evening.				Remarks.
	Hours.	Degrees.	Hours.	Degrees.	Hours.	Degrees.	Hours.	Degrees.	Hours.	Degrees.	
1859.											
December 9th	6	54°	8	58°	12	60°	...	.....	...	.....	
,, 10th	.....	.....	.....	.....	12	58°	4	58°	8	56°	
,, 11th	6	54°	8	55°	12	55°	4	56°	8	54°	
,, 12th	6	54°	8	55°	12	56°	4	58°	8	60°	
,, 13th	6	52°	8	58°	12	58°	4	58°	8	54°	
,, 14th	6	50°	8	55°	12	58°	4	58°	8	54°	
,, 15th	6	54°	8	58°	12	58°	4	52°	8	52°	
,, 16th	6	58°	8	58°	12	59°	4	56°	8	55°	
,, 17th	6	50°	8	54°	12	54°	4	54°	8	52°	
,, 18th	6	51°	8	54°	12	56°	4	56°	8	54°	
,, 19th	6	53°	8	55°	12	56°	4	57°	8	54°	
,, 20th.....	6	54°	8	56°	12	56°	...	.....	8	55°	
,, 21st	6	54°	8	57°	12	58°	4	56°	8	54°	
,, 22nd.....	6	52°	8	60°	12	61°	4	56°	8	52°	

This Register was taken by a Native whom I had carefully instructed in reading the Thermometer.

Revised Ed.

REPORT

ON THE

SHEVAROY HILLS,

~~TO ACCOMPANY THE~~

~~SERIES OF SKETCHES~~

~~TAKEN~~ BY

LIEUT.-COLONEL D. HAMILTON,

21ST REGIMENT N. I.

MADRAS:

PRINTED BY H. SMITH AT THE FORT SAINT GEORGE GAZETTE PRESS.

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Report on the Shevaroy Hills, to accompany the series of Sketches taken by Lieutenant Colonel Douglas Hamilton.

1. The Shevaroy Hills are situated in the Salem District of the Madras Presidency, about six miles to the north of Salem, in north latitude 11° 50″ and east longitude 78° 20″. They form the northern boundary of the valley in which the town of Salem lies. Their entire length from north to south is about seventeen miles, with a breadth of from ten to twelve miles forming an irregular mass of mountains intersected by deep vallies. The superficial area of the higher plateau has been estimated at one hundred square miles, but this must include all the hills with the exception of quite the lower spurs.

2. The Shevaroyen on the Green Hills is the highest mountain, its elevation is variously estimated, but from 5,200 to 5,300 feet above the sea level is perhaps the nearest approximation;* the higher portions of the plateau are from 4,500 to 5,000 feet; the western and southern portions attain the greatest elevation descending to the eastward to 2,500 feet above the level of the sea. The whole range is separated into three divisions called Nàuds,† *viz.*, Moch or Mogo-nàud, Salem-nàud and Mootoo-nàud. Yercaud, the present settlement, is in the latter naud.

3. The lower slopes of the mountains are rocky and thickly wooded, but the timber is not of large growth, on ascending the size of the trees decrease, the summits of the hills are generally covered with stunted timber and brushwood, or are bare and rocky. Formerly some of the upper vallies contained groves of large trees, with few exceptions these have disappeared, still many fine trees remain adding greatly to the beauty of the scenery, which, from the variety of wood-clad hill and

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*The town of Salem is 870 feet above the sea level.
[Mallapooram 1,400 do. by Railway levels.

†Salem-naud is bounded on the north and east by Oothergerry Talook, on the south by Salem Talook, and on the west by Mogo-naud.

Mogo-naud, on the east by Salem-naud, on the south by Mootoo-naud, on the north by Oothergerry Talook, and on the west by Salem Talook.

Mootoo-naud on the north by Mogo-naud, east by Salem-naud, south and west by Salem Talook.

dale, crags, precipices and bare masses of rocks, with bright green tree-studded fields of the Malayalies interspersed here and there is strikingly beautiful.

4. The inhabitants of these mountains are called "Vellalers" or Malayalies (mountaineers), they number about 3,500 souls, occupying seventy-nine villages scattered over the hills. Very little appears to be known of their origin; according to the generally accepted tradition, they emigrated from Conjeveram about six hundred years ago; in appearance and habits they differ little from the inhabitants of the plains, speaking the same language (Tamil), and being of the same religion (Hindoo). They are tolerably healthy-looking, and certainly have no appearance of a fever-stricken race. Their dress is similar to the natives of the plains, a black cumbly is generally worn by the men in cold and inclement weather, but it appears to be considered too great a luxury for their women, who do as much, if not more, out-door labor than the male population. The Malayalies like most other Hill tribes in India are not cleanly in their dress or habits; their villages are usually situated in the vallies amidst their cultivation, and from the peculiar shape of their huts (*vide* Sketches Nos. 10 and 11) have a very singular appearance, they are of circular form; the walls are made of split bamboo with an outer coating of mud; the roof is conical, thatched with grass.

5. The Malayalies have selected the richest and most fertile vallies for cultivation, their chief products are raggy, tennay, punnie varagoo, shama, cootta nelloo, wheat, vendium, mustard, plantains, cholum, mocha-kotay (beans) and dholl, a few Coffee plants are also cultivated in the neighborhood of their villages.

6. There are about 8,000 acres of land under native cultivation.

7. The Malayalies possess considerable herds of cattle and a few goats. According to Dr. Fasken's Report on the Shevaroys, written in 1824, they then appear to have had a superior breed of *black* cattle; the distinctive color has disappeared, but the hill cattle are still superior to the ordinary run of cattle on the plains; sheep are said not to thrive on the Shevaroys and are therefore seldom met with.

9. The Malayalies are employed in clearing jungle and other work on the plantations when not occupied on their own cultivation.

10. Yercaud, the principal settlement, is situated on the southern portion of the hills, or that nearest Salem, its average elevation is about 4,500 feet above the sea; the houses are scattered over irregular undulating hills; where not cleared for Coffee, the hills and vallies are covered with jungle interspersed with occasional bare and rocky heights. There are several good roads traversing the settlement, forming pleasant rides and drives; from many points the views of the hills and plains are very beautiful; a small but very picturesque lake has been formed by throwing a dam across the end of a swamp; surrounded by wooded hills and grassy slopes, with the crags and precipices of the Green Hills in the distance, it forms a pleasing object in the scenery of the Shevaroys (*vide* Sketch No. 5). Owing however to the dam forming the lake not being sufficiently raised, the upper portion of the valley in which the lake is situated still remains a swamp, in many places over-grown with thick vegetation; which is much to be regretted, as it causes the immediate vicinity to be decidedly unhealthy. A considerable portion of the available ground in the neighbourhood of Yercaud is under Coffee cultivation, in many instances reaching close up to the houses to the exclusion of lawns and gardens. A Coffee plantation being far from a picturesque object, the beauty of the settlement is considerably marred by their prevalence, nevertheless the appearance of the settlement viewed from any of the surrounding heights, has a very pleasing effect. (*Vide* Sketch No. 6).

11. To the north of Yercaud, about five miles distant, the Green Hills stand out in bold relief against the sky, their rounded slopes, free from jungle, except an occasional small wood or "shola" in the vallies, form a marked contrast to the rocky wooded hills around Yercaud (*vide* Sketches 2 and 6), and one feels surprised that the settlement should have been established amidst the rocks and jungles of Yercaud instead of on the open uplands of the Green Hills; the reason no doubt was the proximity of the latter to Salem, and its being the portion of the hills first selected for Coffee cultivation. Now that the railway passes close to the foot of the Green Hills, it is probable they will eventually become of more importance.

12. Yercaud contains about twenty dwelling houses, most of them of small dimensions; a Protestant Church capable of holding about sixty persons, and a small Roman Catholic Chapel. There is no bazar on the hills, the want of which is much felt by the residents; no vegetables are cultivated for sale, which is surprising, where so much good soil is available for gardens; in fact, it is exceedingly difficult to procure any vegetables on the hills, for except at some of the houses of the permanent residents the gardens are utterly neglected, and generally the Coffee

planters have secured every piece of available ground for Coffee to the entire exclusion of gardens. Besides the settlement of Yercaud, there are several other houses scattered over the hills belonging to Coffee planters, *viz.*, on the Green Hills, on the Balmodies further north, at Nagalore from two to four miles west of the Green Hills, and at Mungalum from two to three miles to the north-west of the same.

13. Until lately there were only two ghauts leading to the high ranges, *viz.*, the ghaut from Salem on the southern, and the Mallaporam ghaut on the northern side. The former is six miles in length; some portions of it are very steep, it might be much improved and shortened, but a road for wheeled carriages could not be made except at a great expense; by this ghaut all supplies, &c., are brought from Salem. The northern ghaut leading from the Railway Station at Mallaporam* (eight miles from the foot of the hills) to Yercaud, *viâ* Nagalore, is at present an unmade bridle-path, but the gradients are easy, and it might be made into a carriage ghaut.

14. A bridle-path has recently been opened down the valley leading to Athoor, a few miles to the west of Mallaporam (*vide* Sketch 12). The Railway at this place (Athoor) approaches to within two and a half miles of the foot of the pass, the pass itself being only five and a quarter miles to the Green Hills and eight miles to Yercaud; the gradients are easy with the exception of one small portion, and a good bridle-road could be constructed at a moderate expense. The only difficulty I noticed to its being made a carriage road was the ascent of a steep spur about two and a half miles from its summit; could this be surmounted, a carriage road *viâ* Nagalore and Mallaporam would not be required. By ascending the Athoor ghaut, the summit of the Shevaroys can be reached from Madras with the greatest ease in twelve hours, an immense saving of time compared with the hitherto used route *viâ* Salem, where the traveller had to remain one night on the plains, or if he attempted to make the ascent, seldom reached his destination before midnight. This pass is the nearest approach to the Green Hills, the highest and most healthy portion of the Shevaroys where it is hoped when the unreasonable dread of fever has disappeared, the wealthy residents of Madras will eventually establish their *country villas*. Though the Green Hills are only a few hundred feet higher than Yercaud, and the difference of temperature is scarcely two degrees,

*Mallaporam is 140 miles from Madras.

yet there is a freshness in the mountain air, which is altogether lost amidst the dense vegetation of Yercaud. This charge is most marked in any one leaving the latter and ascending the former place. Water is more abundant on the Green Hills than elsewhere, three or four streams, that never fail even in the driest seasons, are to be found here, as well as an extensive range of excellent soil suitable for gardens, and numerous sites for houses commanding the most extensive and grandest views on the Shevaroys (*vide* Sketch No. 8). Several miles of road could be constructed without difficulty, and a lake formed in the swamp below the village of Munjaykoottay, (*vide* Sketch No. 9). It is difficult to conceive a more charming spot than the Green Hills might become with building plots well selected, grounds judiciously planted out, and a fine lake. Several of the best building sites are now occupied by Coffee plantations, but as the shrub does not appear to thrive well except in the vallies, many of the proprietors would probably find it more remunerative to convert their plantations into building lots than continue the cultivation of the plant in such unsuitable land.

15. There are 5,101 acres of the Shevaroys planted with Coffee, held by thirty Europeans and East Indians, and including the small lots about the villages, 100 Natives. The present Coffee cultivation on these mountains, with few exceptions, is barely remunerative. Coffee was first introduced about forty years ago by Mr. Cockburn, of the Madras Civil Service, so ignorant were the early planters of the proper sites for Coffee, that they established their planations in the open fields previously cultivated by the Malayalies.* Many patches of stunted Coffee trees may still be seen on the Green Hills, and other open spots where neither jungle nor forest ever grew! Until recently the advantages of careful pruning appear not to have been thought of, the process being generally entrusted to ignorant coolies, who, as long as they hacked off a certain number of branches from each plant, imagined they were doing all that was requisite. In some of the plantations the plants are a thick mass of branches and leaves quite excluding free circulation of air, and consequently the production of berries in any quantity. Cattle are allowed to graze amongst the plants, treading down and hardening the ground so that the rain instead of penetrating, runs off the soil. Many of the estates are sadly overgrown with weeds and the plants either choked and stunted or allowed to run to wood. Considerable difficulty is experienced in procuring coolies at the proper season, the usual hire

*Note.—The same mistake I am informed was made by the Planters at Nuddea

of a cooly is two Annas and 4 Pice per diem, and few of the planters could afford to pay a higher rate. The difficulty of obtaining coolies during the feverish months is not surprising when one sees the little attention generally paid to their health and comfort; a wretched hovel is erected often down in some valley amidst weedy Coffee plantations and dense jungle, the very hot bed of fever, few escape, some die every year, consequently the dreaded Sheravoys are only resorted to by the starving cooly when all other prospects of employment have failed.

16. The soil in many of the vallies is deep and rich and adapted for the cultivation of Coffee, but it is doubtful if the returns will ever equal those of Wynaad, the Neilgherries, Coorg, and other more favored localities in Southern India. That it would be remunerative if carefully cultivated, the ground kept clean, and proper attention paid to pruning, there can be little question.* A great deal of the best Coffee ground is already occupied, but there still remains a considerable extent of available land.

17. Whether Tea cultivation will succeed remains to be proved. Mr. Fischer of Salem introduced a few plants several years ago, they have grown most luxuriantly, though no care whatever appears to have been taken of them, nor has the manufacture of Tea from them been attempted that I am aware of. They are now tall trees from twenty to twenty-five feet high and flower and seed yearly. There are also a few plants in a flourishing condition on Mr. Richardson's estate.

18. The Cassurina grows well on the hills, and is highly ornamental. There are also several Australian acacias and eucalypti, but they have rather a stunted appearance and certainly do not thrive as well as on the Neilgherries or Pulnis. The Rhododendron is not found on the Shevaroys, it requires a greater altitude; according to Dr. Cleghorn, Conservator of Forests, it is not met with in Southern India, below an elevation of 5,500 feet.

19. Many fruits, both European and Indian, succeed well on these Hills, apples, pears, peaches, plums, loquots, figs, strawberries, oranges, lemons, limes, citrons, shaddocks, guavas, plantains and the Brazil cherry,† are found in the gardens. The oranges are excellent, quite equal to those of Coonoor. The pear tree grows in every hedge and garden of Yercaud in great abundance; there are two kinds both of a

* *Note.*—The berry I am told is of superior quality and commands a fair market value.

† This agreeable fruit has spread itself all over the Hills, as is also the case on the Neilgherries and Pulnis.

coarse quality, but they are left in an almost wild state and might be much improved by cultivation, or others of a better description introduced. Apples appear to succeed well; but there are not many trees as yet on the hills. The loquot abounds, and some of the trees bear fruit of a very superior flavour. The vine when tended with care has succeeded well.

20. Nearly every kind of European vegetable grows to perfection, and excellent potatoes might be abundantly produced.

21. The flowers that have been imported, such as geraniums, roses, fuschias, heliottrope, verbenas, &c., grow almost wild, especially the roses and geraniums.

22. There can be no doubt that the Shevaroys might become the market garden of Madras, with the Railway at the foot of the hills, and the Athoor ghaut open to traffic, fruits and vegetables fresh from the gardens could be delivered in the Madras market twelve hours after leaving the hills. There is very good garden ground on the Green Hills, and an ample supply of water might be obtained by sinking wells should no stream be available. Capital laid out in establishing a large fruit and vegetable garden to supply the city of Madras would certainly prove more remunerative than Coffee planting, but it must not be expected that any garden on a large scale can be established without considerable labor, care and expense, like most rich and uncultivated land, the soil abounds with destructive grubs, caterpillars and other insects. Many persons who have attempted to form vegetable gardens have given up in despair on seeing crop after crop destroyed by insects; one especially, a dark nearly black grub is the most destructive of all, and very difficult to get rid of, but with care and perseverance the soil can be sufficiently cleaned of them and good crops produced, as a few of the gardens on the hills testify.

23. Should the experiment of establishing a market garden for the supply of Madras ever be attempted, it is to be hoped that more careful labor will be bestowed upon it than the generality of Coffee plantations appear to have had the benefit of, otherwise failure in all probability will be the result.

24. The following is a description of the Geology and soil of the Shevaroys.

"*Geology.*—"The Shevaroy Mountain presents but few features of interest to the Geologist, in common with all our hill

Dr. Cornish's "Notice of the Shevaroy Hills."

"ranges in Southern India, basic rocks are of the metamorphic series "and consist chiefly of gneiss in its varied forms. At the base of the hills "on the Salem side ferruginous, hornblende and specular iron ore are "found, some of the low ranges in the neighbourhood are almost entirely "made up of magnetic iron ore. The quality of the steel and iron ores "of this district has long been known to be very superior, and at one "time the Porto Novo Iron Company drew their supplies of ore from "this source. On the hill plateau the ferruginous rocks are not met "with in any quantity although the soil contains a considerable portion "of iron. There is a good deal of clay iron stone in the laterite which "cover the hill sides and summits.

"The lamination of the gneiss is in most parts very well marked, "the surface rocks splitting vertically, and the line of foliation being "generally south-east and north-west. Large veins of quartz and felt-"spar are met with here and there, and mostly running at right "angles to the lamination of the gneiss. The lamination appears to be "due to the intermixture of a softer and more easily decomposed mate-"rial in which mica enters largely, this, on exposure, soon crumbles away "leaving the more solid gneiss standing out in their plates, and gives to "some of the weather-worn rocks the appearance of a number of slates "standing on end. Granite of a coarse crystallization was observed in "one or two situations.

"The whole of the mountain plateau appears at one time to have "been covered by that peculiar formation we term 'laterite,' near Yercaud "and in fact every where except on the Green Hills and certain undu-"lating saddles of land it has been washed away, leaving the bare gneiss "exposed. The highest of the Green Hills is covered with laterite, which "in many places is of great thickness. In proof that laterite has been "washed down into the vallies, it may be mentioned that on inspecting "a recent cutting on the side of a hill for the formation of a new road, "a considerable deposit of laterite was found over-lying dark vegetable "soil; in six feet of the cutting were noticed the following: —

	Depth.
Black vegetable mould.....	1 foot.
Laterite and Gravel.....	2 feet.
Blackish soil.....	2 „
Red clay and Gravel.....	Beneath.

"The peak from which the laterite in this instance must have been "washed down was quite bare."

"No deposit of limestone, either crystalline or tufaceous, has been "discovered on the Shevaroys. Kunkur abounds in the Salem valley, and "bands of crystalline limestone have been found in the District. "The want of this useful material is a great drawback to builders, as "every particle of lime has to be carried up the Salem ghaut on the "backs of Bullocks. The same observation, however, applies to the "Neilgherries, and there the absence of limestone has not proved an "insuperable obstacle to building operations. There is no deficiency of "lime in the soil of the Shevaroys, if one may judge from the number "of land shells every where apparent on the surface.

Soil.—"In forest cleared land on the slopes of the hills and in the "deeper vallies, the surface soil consists of a dark vegetable mould of "considerable depth, and in soil of this description the Coffee plant "luxuriates. The soil rests generally upon a reddish clay, which latter "appears to have resulted from decomposition of the surface rocks and "laterite covering them. In the more open part of the hills the soil is "of a light brown color and shallower, resting on a similar sub-soil to "that previously noticed. There are a few marshy situations where "the natural outlets of hill streams have been obstructed by alluvial "deposits, in which peat bogs have formed, but these are not numerous, "nor of much value for fuel."

25. The climate of the Shevaroys is exceedingly delightful, being at a much less elevation than the Neilgherries, and consequently warmer; the new arrival from the plains feels none of the bad effects from the sudden change so liable to occur on reaching the colder climate of Ootacamund; yet the air on these hills is sufficiently bracing to be invigorating, and the effect produced on the languid heat-striken frame of a person long resident on the plains is astonishing. The temperature appears to be very even throughout the year. Annexed are the readings of the Thermometer during the period I resided on the Shevaroys. Also the monthly means of a series of Thermometrical observations taken at Yercaud by Dr. Marrett, Civil Surgeon of Salem, and a Register by Mr. Beattie, Resident Engineer of the Madras Railway.

Marked A.

Do. B.

Do. C.

Captain Gahagan, District Engineer, in his report, 19th August 1858, states abundance of sharp sand and tolerably good earth for brick-making are to be found in and around the Munjaykoottay swamp.

Assistant Surgeon England, in his official report of the Shevaroys, written in 1824, states, "I have frequently exposed the Thermometer "to the sun at noon, during a series of serene and cloudless days, and "it has been usually between 80° and 84,° and never above 90,° which "therefore does not show a great disproportion between the sun and "shade, and by no means so much I imagine as will be found to exist at "this dry season on the most elevated parts of the Neilgherry, where the "sudden transitions from the influence of the sun to shade frequently "produce unpleasant rigors on weakly subjects." It might be inferred from the above that the Thermometer never rose above 90° in the sun; but such is not the case, for, on the 9th September 1861, I exposed a dry bulb Thermometer to the sun at 1-30 P. M., and it rose to 97,° and on the 11th of the same month at 11-30 A.M., it stood at 101°. There is no doubt that on all hill ranges within the tropics the sun is very powerful and should be guarded against; although from the freshness and coolness of the air, it is not felt to the same extent it would be on the plains below, still the head should be always well protected. Many on first arrival neglect this precaution and suffer in consequence.

26. These hills have the advantage of both monsoons, the average yearly rain-fall appears never to have been taken, it has been put down at 45 inches; but it appears to me that this is considerably below the correct amount.

The following summary of the seasons by a resident whose experience extends over seven years is given:—

"The month of January is generally fair, clear, and dry, and the "nights cold. The same remark may also be applied to February; in "March the weather is warmer, and there are occasional slight showers. "April is a warm month, in fact, with the exception of May, the warm- "est. In May the air is close accompanied with thunder storms, and "towards the end of the month smart showers fall preparatory to the "monsoon. Early in June the south-west monsoon sets in and con- "tinues more or less throughout July and August. The next two months "are generally fine, and about the end of October the north-east mon- "soon sets in and continues through November and part of December, "in which months the weather is misty and cold."

In January and February there have been occasional white frosts in the vallies sufficient to injure the Coffee, but these are considered quite exceptional occurrences. Towards the latter end of February, until the middle or end of May, the hills become very parched and dry.

The Green Hills are no longer green, and many of the mountain streams fail; persons arriving at this season having heard, probably, glowing accounts of the beauties of the Shevaroys, are likely to be disappointed at first with their appearance, but all must appreciate the charming climate.

27. During the dry season considerable difficulty is experienced in obtaining sufficient fodder for the numerous cattle kept on the plantations for the benefit of their manure.

28. The game animals found on these hills are tigers, cheetahs, bears, bison, samber, spotted-deer, muntjack, or barking-deer, mouse-deer, wild hog, jungle fowl, spurfowl, hares, partridges, quails, also woodcock and snipe in the season. The tiger is rarely met with on the higher range. Cheetahs are more numerous, and the planters and other residents occasionally have their dogs carried off by these prowling depredators. There are very few bison, and those only found in the lower thickly wooded vallies where bears are also occasionally met with. Samber are not numerous; none are found on the upper range. The spotted-deer inhabit the bamboo jungles on the slopes of the hills, and have at rare intervals been seen in the neighbourhood of Yercaud; but they are now so reduced in number that the most persevering sportsman rarely falls in with them. The muntjack, generally known as the jungle sheep, is pretty numerous amongst the Coffee gardens and jungles of Yercaud; but from its wary habits and the jungle being so continuous and thick it cannot be easily driven, and is consequently seldom shot. Wild hog are also rather numerous, but for the same reasons are not often killed. The little mouse-deer is rarely seen, but its foot prints are found in many places. The jungle fowl, spurfowl, hares, partridges and quails, afford an occasional shot during a morning's walk, but good dogs are required to find them. There is tolerable woodcock and snipe shooting during the season from November to March.

The Malayalies are great adepts at netting game. Even the tiger being occasionally captured by them; the mode they adopt is to enclose a large space with nets and drive the game towards them, when the animals either become entangled in the meshes or are destroyed in their attempts to escape.

29. The cause of these mountains not having become so frequented, as they deserve to be, is owing to the bad name they have obtained for fever. Many people at Madras would as soon encamp in the most deadly jungle as go to the Shevaroys, there is no doubt that

in occasional seasons when the south-west monsoon has been late in setting in, there is a good deal of fever on the hills during the months of May and June, and at long intervals there have been severe outbreaks of fever; but few stations in India are entirely free from such outbreaks, and as a general rule the Shevaroy fever is not of a severe type and is easily amenable to treatment. Much depends on the site occupied, as well as the precautions taken on first arrival (such as avoiding over fatigue, exposure to the sun or wet, sitting out in the verandah, or with open doors and windows after sunset), too often neglected by persons whose long residence in the plains has weakened their system. It will be found, on inquiry, that there are several houses in Yercaud where fever never has been known; whereas there are others which are considered never safe during the feverish months. The former are situated on high ground with free circulation of air and distant from any marsh, swamp, or jungly valley; the latter are located under hills or down in vallies amidst the rank vegetation, or else in the neighbourhood of some undrained swamp. It has already been stated that Yercaud is situated in the midst of Coffee plantations and low jungle, over-grown with weeds and creepers, especially the white passion flower which, originally imported as a garden ornament, has now completely overrun the settlement, choking up every valley and hedge-row, and spreading over many of the Coffee plantations; if dense vegetation, and absence of free circulation of air, are causes of fever, measures should be taken to eradicate this noxious plant, which has also made its appearance on the Green Hills.

30. I have heard it remarked that fever is just as bad on the Green Hills as at Yercaud; but this is scarcely just. The Green Hills have never yet had a fair trial, they are open, and above the jungle, and considerably higher than the present settlement. They ought to be, and there is no proof that they are not, free from fever, for the houses of the Coffee planters are in general down in vallies as much surrounded by vegetation as at Yercaud, it is therefore not surprising if the occupants may occasionally contract fever. A native in charge of a plantation on the more open part of the Green Hills told me that he had been nearly twenty years on the Estate, and had never known fever there, though his neighbours in the vallies occasionally suffered; but all the natives I questioned on the subject stated that the fever was never so bad on the Green Hills as at Yercaud. The only European family, not planters, residing on these Hills in [illegible]

rosy cheeked children, and their own healthy looks seemed to be good vouchers for the same.

31. Assistant Surgeon W. R. Cornish, Secretary to the Principal Inspector General Medical Department, who inquired minutely into the subject during his visit in 1861, is of opinion that the Shevaroy fever, when it does occur, is quite as much under control of medicine as the same form of disease elsewhere. The following extracts from his valuable "notice of the Shevaroy Hills" published in the Madras Quarterly Medical Journal of 1861, particularly deserve the notice of those who avoid visiting the Shevaroys from a dread of the fever.

"Thus in the last forty years, from 1822 to 1861, we have evidence "of four unhealthy seasons.* These seasons "were in all cases marked by unusually high "temperature, prolonged drought, and failure, or "scanty supply of the early monsoon rains. In "all these instances the hills became perfectly free from the influences "of fever, after a copious rain-fall, and in no case did the unhealthy season last beyond two months."

* 1824. 1833. 1854. 1860.

"So much has been said and thought to the prejudice of the "Shevaroy climate, that it is no figure of speech to say that eight peo- "ple out of every ten one meets in Madras, would as soon think of spend- "ing their holidays in a tour to the western coast of Africa as on the "Shevaroy Hills. They are still looked upon as a hot bed of fever, "and at all seasons dangerous to those who visit them. With a view of "dispelling the popular errors on this point, I have at some length "given the history of all the unhealthy years of which I can find any "record. The result show that the months of May and June are not "always safe. That if the hot season is unusually prolonged and the "rains scanty, malarious fevers will be pretty frequent, and the hill "residents liable thereto until the natural course of the seasons is re- "sumed. The experience of later years also goes far to show that those "who live in elevated spots and in houses well adapted to the climate, "who take moderate care of themselves in the way of clothing and diet, "and who avoid the lower slopes and vallies, rarely get fever. I was "informed by one planter that he had resided nearly twenty years on "the hills, and during that period he twice contracted fever, and on "both occasions attributed his illness to long continued daily exposure "to the sun and heavy rain and subsequent neglect in changing clothes. "Another had resided twelve years on the Green Hills and had twice been

"laid up with fever. Children born and rared on the Shevaroys "are pictures of health. The healthy appearance of young people is "no bad test of a climate, and in this respect the hills may safely com- "pete with the choicest of our Indian possessions.

"*Type of Fever.*—It is generally supposed that fevers contracted "on the Shevaroys are of a peculiarly malignant type. I am not aware "that they differ in any material degree from malarious fevers common "to other localities. The most common form is the quotidium intermit- "tent, which if neglected, not unfrequently terminates in remittent.

* * * * *

"*Objections to the Shevaroys.*—It is impossible to overlook the "fact that a malarious type of fever does occasionally prevail on these "hills, but it need not be the "bugbear" which the public have made "it. Granting that once in ten years the climate for a limited period "may be insalubrious, we have said all that can be adduced against it. "It is only of late years that the treatment of the diseases dependent "on malarial poisoning has been well understood; nothing in Indian "medicine has been more satisfactory that the gradual diminution of "mortality both in European and Native Troops, since the more general "appreciation of the wonderful powers of quinine in controlling mala- "rious fevers. The Shevaroy fever, when it does occur, is quite as much "under the control of medicine as the same form of disease elsewhere. "There are perhaps no localities in India altogether exempt from the "causes of fever. The Neilgherry Hills, our favorite sanitarium, "certainly form no exception to this general statement. Remittent and "intermittent fevers, just before the setting in of the monsoon rains and "after the first showers, are not uncommon there.

"In the hot season of 1860 (May and June), the Regiment sta- "tioned at Wellington lost five men from remittent fever; whereas, "although fever was prevalent on the Shevaroys during the same period, "no fatal case occurred.

"The residents of Coonoor, a station which is nearly 1,000 feet "higher than Yercaud, occasionally suffer from malarious fevers. Not- "withstanding these drawbacks the Neilgherry stations have never been "objected to on the score of fever. And it is notorious that Europeans "do preserve their health in these temperate regions, much better than "they can possibly do in the plains. This observation applies with equal "force to the European residents on the Shevaroys, who are generally a

"healthy looking and robust people, and who certainly do not give one "the impression of being "malaria-striken."

"Admitting the full force of the objection that the hills are occa- "sionally malarious, it is no less certain that they are free from many of "those sources of disease which abound in the plains. Malignant cholera "and dysentery destroy one-half of those who die in our European ar- "mies located on the plains, "fevers" on the other hand, do not cause "more than one-tenth of the whole mortality. There can be no ques- "tionth at where a choice of evils is to be had it is best to adopt the "minor one. Our statistics show that the mortality from fevers, includ- "ing the "continued" and "typhoid" varieties in the Madras Presidency, "do not exceed one per cent.; whereas of every two Europeans attacked "by the cholera-poison, one dies, and of every 100 cases of dysentery, "seven prove fatal.

"The Shevaroy Hills have as yet enjoyed an immunity from "cholera, and it is evident that with due attention to sanitation, this "terrible pest can never obtain a footing. Its germs have, as before shown, "been frequently introduced, but the conditions necessary to their de- "velopment have as yet been wanting. Dysentery, hepatitis, and inso- "lation, are diseases unknown amongst Europeans in the Shevaroy cli- "mate.

* * * * *

"*Climate suitable for Invalids.*—It is not improbable that some "forms of disease, which are aggravated by the Neilgherry climate, may "be treated with benefit on the Shevaroy Hills. Such as rheumatism, "chronic affection of the liver, bowels, air passages, &c. It is not how- "ever to invalids suffering from organic disease that our mountain cli- "mates hold out much ground of hope; but rather to those who are "simply exhausted in mind and body from prolonged exposure to a "high temperature in a low country, and who need rest from work and "a cooler air to breathe. These are the cases which benefit in a re- "markable degree from a short residence on the Shevaroys.

32. Should it hereafter be deemed advisable to establish a Military Sanitarium, or a Depôt for European Troops on the Green Hills, there could not be a better site for such a purpose than that selected by Dr. Macpherson, Inspector General of Hospitals, near the village of Mun- jakoottay, (vide Sketches Nos. 8 and 9). It comprises about 250 acres of undulating ground on the borders of a swamp, which could be easily

converted into a lake of some extent. There is space for the accommodation of a Regiment, and an excellent parade ground could be formed in the vicinity of the barracks.

35. Dr. Macpherson, and Captain Gahagan, the District Engineer, having fully reported on the capabilities of the site in question, any further remarks from me would be superfluous.

(Signed) DOUGLAS HAMILTON, Lieut. Colonel,
41th Regiment N. I.

A. *Register of the Thermometer taken*

Place and Date.	In open Verandah.											
	Forenoon.				Noon.		Afternoon.					
	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees	Time.	Degrees.	Time.	Degrees.
Mr. Ritchie's House. June 27th	5-30	61	10	67	12	67	2	63	5	62½	9	63
„ 28th	5-30	61	8	62½	12	64½	2	66	5	62	9	61½
„ 29th	5-30	59½	0-30	64½	12	68	3-30	66½	5	65	9.30	62
„ 30th	6	60½	9	64½	...	..	2	70½	..	...	10	64
July 1st	6	62	8	66	12-30	73½	2	73	5	68	9.30	63
„ 2nd	6	61½	9	71½	12	73½	2	73½	5	70½	10	64½
„ 3rd	6	61	9	70	12	73	2	74½	5	73	10	64½
„ 4th	6	62	9-30	69½	12-30	74½	2	75½	5-30	73½	9-30	68½
„ 5th	6	63½	9-30	71	12	76	2-30	77½	6-30	66½	9	64
„ 6th	6	63	9-30	68½	12	76	2	74	6-30	67½	10	64

at Yercaud, Shevaroy Hills.

In a room without fire.												Remarks.
Forenoon.				Noon.		Afternoon.						
Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	
5.30	68	10	67	12	67	2	68	5	68	9	68	Morning cloudy—heavy rain for an hour in the middle of the day—mist and drizzle in the afternoon, strong S.W. wind—mist and rain in the evening.
5-30	68	8	67	12	67	2	67½	5	67	9	67	Wet morning with strong gusts of wind—showers greater part of the day, with mist.
5-30	66½	9-30	66	12	67	3-30	67	5	66½	9.30	66	Dense damp fog in the morning with light breeze, wind increased during the day with showers and occasional sunshine.
6	66½	9	65	..	..	2	67½	..	..	10	66	Fine morning but cloudy—very strong wind—showers in the afternoon—evening cloudy with fresh breeze.
6	66½	8	65	12-30	67	2	68	5	67	9-30	66	Morning cloudy but fine—sunshiny day with occasional clouds—fresh breeze.
6	66½	9	66	12	68	2	68	5	68	10	67	Morning fine, strong wind—bright sunshiny day, occasional clouds, fine starlight night, fresh breeze.
6	67	9	66½	12	68	2	68½	5	68	10	68	Clear morning—bright sunshiny day with fresh breeze—starlight night
6	67	9-30	67	12-30	69	2	70	5-30	69½	9-30	69½	Sunshiny morning and calm—fine day—heavy clouds and thunder in the evening.
6	68	9-30	68	12	69	2-30	70½	6-30	70½	9.	69½	Morning and noon fine with bright sunshine, —wind light—heavy thunderstorm for an hour in the afternoon—wet evening.
6	69	9-30	68	12	70	2	70	6-30	69½	10	69½	Morning fine with strong S.W. wind—cloudy at noon—wind light in afternoon—heavy rain and thunder in the evening—strong wind at night.

Register of the Thermometer taken

Place and Date.	In open Verandah.												In a room without fire.												Remarks.
	Forenoon.				Noon.		Afternoon.						Forenoon.				Noon.		Afternoon.						
	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	
Mr. Ritchie's House. July 7th	6	63	9.30	65½	12	70½	2	71½	...	..	10	65½	6	67½	9.30	67½	12	68	2	69	...	...	10	68½	Stormy looking morning but no rain—strong S.W. wind all day and cloudy, fog at night, no wind.
„ 8th	6	62	10	69	12	74	2	76½	6	68½	9.30	63½	6	67	10	67½	12	68½	2	69½	6	69½	9.30	69	Morning fine but cloudy —moderate wind, freshened towards noon—thunderstorm in the afternoon with very heavy rain, lasting an hour.
„ 9th	6	61	9-30	65	12	68	2	72	..	...	10	64½	6	67½	9-30	67	12	68	2	68½	..	..	10	68½	Cloudy morning — wind strong, cloudy and misty all day.
„ 10th	6	61½	...	...	12	75	3	69	7	65½	9-30	64	6	68	..	..	12	68	3	69	7	68½	9.30	68½	Morning fine with strong wind—bright day till 2 p. m., when the sky became overcast with occasional mist—thick fog at night.
„ 11th	6	61½	10	69	12	74½	2-30	74½	..	..	10	62½	6	68	10	67½	12	68½	2-30	69	..	..	9	68	Morning fine, wind strong —cloudy at noon followed by dense mist—rain in the evening.
„ 12th	6	60½	9-30	68½	12-30	68½	2	69	7	64	10	62	6	67½	9-30	66½	12-30	67½	2	68	7	66½	10	67	Rain in the night—morning fine—heavy mist between 7 and 8 a. m., strong wind — cloudy afternoon.
„ 13th	5-30	61½	10	69	12	66½	2-30	67	6	62	...	...	5-30	67	10	66½	12	67	2-30	67	6	67½	...	..	Morning cloudy and windy —a wet afternoon.
„ 14th	6	60	9-30	65	12	65	...	..	6	63	9	61½	6	66½	9-30	65	12	67	..	..	6	67	9	67	Dense wet fog in the morning—wind strong —set in a wet day with dense mist at times.
„ 15th	6	60	...	..	12	66	2	69	6-30	65½	9	62½	6	66	...	...	12	67½	2	67½	6-30	67	9	67	Morning fine, cloudy at at times—rain set in at noon — showery afternoon—dense mist in the evening.
„ 16th	6-30	61	9.30	62½	12	64½	2	67½	7	67	9	64½	6-30	66½	9-30	66	12	67½	2	67	7	67	9	66½	Dense damp mist with drizzling rain the greater part of the day—fine moonlight night.
„ 17th	6	61	9-30	60½	12	67½	2	67	7	65½	9-30	64½	6	66½	9-30	65½	12	66½	2	66½	5	66	9-30	66	Cloudy stormy looking morning, fresh breeze—cloudy forenoon, showers in the afternoon with occasional sunshine—cloudy evening.

at Yercaud, Shevaroy Hills.

Register of the Thermometer taken at Yercaud, Shevaroy Hills.

Place and Date.	In open Verandah.												In a room without fire.												Remarks.
	Forenoon.				Noon.		Afternoon.						Forenoon.				Noon.		Afternoon.						
	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	
Mr. Ritchie's House.																									
July 18th	6-30	61½	...	...	12	71	2	68½	..	..	10	64	6½	66	..	..	12	67	2	67	...	..	10	66½	Cloudy morning and forenoon strong wind—shower in the afternoon.
» 19th	6	61½	..	...	12	72½	3-30	72½	7	64	10	62	6	66½	..	..	12	67	3-30	68	7	68	10	67	Morning fine but cloudy—afternoon fine with fresh breeze.
» 20th	6	61	9	71	12-30	74	2	71½	7	68	9	65	6	66	9	66	12-30	68	2	68½	7	68	9	67	A fine sunshiny day with fresh breeze at times and occasional clouds—bright moonlight night, strong wind.
» 21st	6	62	9	66½	12	74½	2	76	7	67	9	66½	6	66½	9	66	12	67	2	68½	7	68	9	67½	Morning and forenoon fine with strong wind—afternoon cloudy, slight showers — wind very strong in the evening.
» 22nd	6	61½	...	..	12-30	73½	2	73½	6	65½	9-30	64	6	66½	...	..	12-30	68	2	68	6	67½	9-30	67	Fine but cloudy morning and forenoon—showers in the afternoon—very strong wind blowing all day.
» 23rd	6	61½	...	...	12	71½	2-30	72	7	66½	9-30	65	6	67	...	...	12	67	2-30	68	7	67	9-30	67	Morning cloudy with strong breeze — noon cloudy, wind decreased —cloudy afternoon, very little wind
» 24th	6	60½	...	...	...	..	2	74	7-30	68	10-30	65	6	67	...	...	..	...	2	68	7-30	68	10-30	67½	Morning fine but cloudy, the rest of the day bright and clear with occasional clouds.
» 25th	6	60½	9-30	67½	...	..	3	77½	..	..	9-30	65	6	67	9-30	67½	...	..	3	70½	...	...	9-30	69½	A bright clear day—heavy rain at night.
» 26th	6-30	60½	9-30	71	..	..	3	77	7	68½	9-30	66½	6-30	68	9-30	68	12	69	2	70	7	70	9-30	69½	Misty morning and windy —cloudy day—rain in the afternoon, wind lulled.
» 27th	6-30	63	10	63½	12	73½	2	74	7	66½	10	66	6-30	68½	10	68	...	..	2	70	7	70	10	69½	Wet morning, day cloudy, with occasional sunshine — clear starlight night.
» 28th	6	63½	10	74½	12	76½	2-30	78½	..	..	9	67½	6	69	10	69	12	69½	2-30	71	..	..	9	70	Morning wet, cleared up at about 7 a. m.—fine sunshiny day, very hot —thunder about.
» 29th	6	64	10-30	73½	..	...	2-30	76½	7	66½	10	65	6	70	10-30	69	..	..	2-30	70½	7	71	10	70	Rain in the night—morning misty—day fine but cloudy, rain after dusk.
» 30th	6	62½	9-30	72	...	...	2	72½	7-0	67	10	63	6	69½	9-30	68½	..	...	2	71	7-30	70	10	69½	Morning fine but cloudy —a close sultry day—much thunder about—heavy rain after dusk.

Register of the Thermometer taken

Place and Date.	In open Verandah.											
	Forenoon.				Noon.		Afternoon.					
	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.
Mr. Ritchie's House. July 31st	6	61	..	..	12-30	73	3	73½	7-30	68	9-30	65
August 1st	6	61½	..	..	12	74	..	..	7-30	67½	9-30	66½
„ 2nd	6-30	62	9	65½	1-30	73½	..	..	7-30	67½	10	64
„ 3rd	6	60½	10-30	68	12-30	72½	2-30	71½	7-30	68½	10-30	66
„ 4th	6	63	10	67½	12-30	70	2-30	74½	7-30	65	9-3	64
„ 5th	6	62½	10-30	76½	12-30	74	2-30	71½	7	67½	9-30	65½
„ 6th	6	63	10	72	12	74½	2-30	69	7	68	9-30	66
„ 7th	6	62	..	...	1	73½	2-30	75½	7-30	65	9	63
„ 8th	6	60½	9-30	66½	12-30	73	2-30	72	7	65	9	64
„ 9th	6-30	61½	10	67½	12	71	2-30	72½	..	..	9	65½
„ 10th	6-30	62	..	..	12-30	72	2	72½	..	...	9-30	65
Mr. Beattie's House. August 11th	6-30	62	9-30	69	12-30	70	2	70	7	66	9-30	64

at Yercaud, Shevaroy Hills.

In a room without fire.												Remarks.
Forenoon.				Noon.		Afternoon.						
Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	
6	69	...	..	12-30	70	3	70½	7-30	70	9-30	69½	Heavy rain in the night—morning fine with strong wind—fine day with clouds, wind decreased towards the afternoon.
6	69½	...	..	12	68½	...	...	7-30	69½	9-30	69½	Day fine but cloudy—starlight night.
6-30	68½	9	68½	1-30	68½	..	...	7-30	68½	10	69½	Cloudy morning with strong wind, day fine but cloudy—showers towards evening—heavy rain at night.
6	68	10-30	67½	12-30	68½	2-30	68½	7-30	69½	10-30	68½	Cloudy morning with strong wind, decreased during the day, fine but cloudy forenoon, fine sunshiny afternoon.
6	68½	10	68½	12-30	68½	2-30	69	7-30	69	9-30	69	Morning and forenoon cloudy but fine, very little wind—heavy shower in the forenoon.
6	68	10-30	69	12-30	70	2-30	70	7	69½	9 30	68	Heavy rain in the night—fine clear morning—forenoon sunshine and cloudy—at noon heavy showers—thunderstorm in the afternoon.
6	68	10	69½	12	69½	2-30	70	7	69½	9-30	69½	Heavy rain in the night—bright sunshiny morning—mist and rain at noon—afternoon fine no wind—heavy showers at dusk.
6	68½	..	...	1	70	2-30	70	7	69	9	69½	Bright clear morning, heavy dew—mist in forenoon—a wet afternoon and evening.
6	67½	9-30	68½	12-30	69½	2-30	70	7	69½	9	68½	Heavy rain in the night—fine bright morning and forenoon—showers in the afternoon—mist and rain after dusk.
6-30	68	10	67	12	68½	2-30	69½	...	..	9	68½	A fine but cloudy day—rain in the evening.
6-30	68½	..	...	12-30	68½	2	68½	..	..	9	69	Morning cloudy with strong wind — cloudy day, wind decreased—slight rain in the evening.
6-30	67½	9-30	68	12-30	69½	2	70	7	68½	9-30	67½	A dense damp fog in the morning—cloudy day—foggy afternoon.

Register of the Thermometer taken

Place and Date.	In open Verandah.											
	Forenoon.				Noon.		Afternoon.					
	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.
Mr. Beattie's House.												
August 12th...	6-30	61½	10-30	70	12-30	70½	2-30	71½	7-30	66	10	64
„ 13th	6-30	60½	9	65½	1	62½	2-30	68½	6	62	9	62
Mr. Ritchie's House.												
August 14th...	6-30	60	9	63	12	64½	2-30	65½	7	64	10-30	61½
„ 15th..	6	60½	7	60½	12-30	60½	2-30	68	7	64	9	63
Mr. Beattie's House.												
August 16th..	6-30	60½	..	..	12	67½	2-30	68	7	65½	9	63½
„ 17th..	6	60½	..	...	12	73	2 30	71	7-30	64½	10-30	63½
„ 18th..	7	62	10	68	12-30	66½	2	70½	7-30	63½	9-30	63
„ 19th...	6	61½	..	...	..	...	..	...	..	..	10	63
„ 20th..	7	61½	10	71	12	72½	3	69½	7	64	11	62
„ 21st...	6	61½	10 30	70	12-30	71	..	...	7	64½	10	64½
„ 22d..	6-30	63	10-30	67	1	69	3	70	7	65	10-30	64½

at Yercaud, Shevaroy Hills.

In a room without fire.													Remarks.
Forenoon.				Noon.		Afternoon.							
Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.		
6-30	67½	10-30	68	12-30	68	2-30	68½	7-30	68½	10	67½		Misty morning and strong wind—cloudy with occasional sunshine during the day—mist and light rain in afternoon —much thunder about.
6-30	67½	9	67	1	68½	2-30	69						Morning foggy with occasional sunshine — heavy showers and thunder in the forenoon —wet afternoon.
..	...	...	..	..	..	...	...	..	..	...	...		Morning misty—cloud and mist the whole day.
..	..	..	..	..	...	2-30	67	7	66½	9	66		Morning misty—cloudy all day—rain in the afternoon.
6-30	65	..	..	12	66½	2-30	67	7	67	9	66½		Showers during the day with fresh breeze—fog at night.
6	65½	..	..	12	67½	2-30	67½	7-30	67	10-30	66		Morning fine with slight mist—noon cloudy—strong wind in the afternoon—mist in the evening.
7	66	10	66½	12-30	67	2	67	7-30	67	9-30	66½		Damp and foggy morning, strong wind—mist and fog greater part of the day—wet afternoon.
6	66	..	..	..	...	..	...	...	...	10	67		Morning fine — heavy showers in the afternoon, cleared up before dusk.
7	65½	10	66	12	67	3	67½	7	66½	11	66		Morning alternate mist and sunshine—noon fine but cloudy with strong breeze—rain in the afternoon.
6	65	10-30	66½	12-30	67	...	...	7	66½	10	67		Morning and forenoon fine but cloudy—heavy rain in the afternoon—mist in the evening and at night.
6-30	67	10-30	66½	1	66½	3	67½	7	67	10-30	65½		Dense fog and heavy rain in the morning—cloudy during the fore and afternoon with fresh breeze—evening fine.

Register of the Thermometer taken

Place and Date.	In open Verandah.											
	Forenoon.				Noon.		Afternoon.					
	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.
Mr. Beattie's House. August 23rd..	6	61½	9	66½	12	70½	2-30	73½	7	68½	9	65½
,, 24th..	6-30	60	10	66½	1	70½	2-30	72½	7	67	9-30	66½
,, 25th...	6-30	60½	9-30	65½	12	68½	3	72	7-30	66¾	9-30	65½
,, 26th	6	61	9	71½	12	70¼	2	73½	7	67	9	65½
,, 27th	6	62	9	70½	12	72	2	74½	7	66½	9	65
,, 28th...	6	62	9	67	12	70	2	71½	7	64½	9	64
,, 29th...	6	62	10	70	12-30	72	2-30	73	7	66	...	...
,, 30th...	6	62	9	66	12	70½	2	71	7	65½	9-30	63½
,, 31st	6	62	9	66½	1	71½	2-30	71½	7	64½	9	64
September 1st	6-30	63	10	68	12	67	2	71½	7-30	66	9	65½
,, 2nd	6-30	62½	9	70½	12-30	72	2-30	73½	7-30	66½	10	66
,, 3rd	6	62	9	68½	12	70	2	...	7	68	9-30	66½
,, 4th	7	63	9	68½	12	70½	2	73	7	67½	9-30	65½

at Yercaud, Shevaroy Hills.

In a room without fire.												Remarks.
Forenoon.				Noon.		Afternoon.						
Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	
6	65½	9	65	12	66½	2-30	67½	7	66	9	66½	Morning cloudy but fine—bright sunshiny day with strong breeze—cloudy night.
6-30	65	10	65	1	66½	2-30	67	7	66½	9-30	67	Fine all day—wind very strong in the morning, decreased towards the afternoon.
6-30	65½	9-30	65½	12	67½	3	66¾	7-30	66½	9-30	66½	Morning fine—a cloudy day—fine fresh breeze in morning, which decreased towards the afternoon.
6	65½	9	67	12	67	2	67½	7	67	9	67	Morning fine and clear—noon fine—showers in the afternoon.
6	65½	9	67	12	67	2	68	7	67½	9	67	Morning fine—rain in the afternoon.
6	66	9	66	12	67	2	67½	7	67	9	67	Morning fine—mist and rain in the forenoon—heavy rain in the afternoon.
6	66	10	66½	12-30	67½	2-30	68	7	68½	...	..	Cloudy dull morning—forenoon sunshiny, with heavy clouds about—fresh breeze, very heavy thunderstorm in the afternoon.
6	65	9	66½	12	67	2	68	7	67	9-30	67	Morning fine but cloudy—heavy rain in the afternoon—dense mist at night.
6	66	9	66½	1	67½	2-30	68	7	67	9	66½	Cloudy morning with strong wind—fine but cloudy at noon—shower in the afternoon—cloudy night.
6-30	66	10	66½	12	67	2	67	7-30	67	9	66½	Morning fine—noon cloudy with drizzling rain—cloudy and fresh breeze in the afternoon—night fine.
6-30	65½	9	67	12-30	67½	2-30	68½	7-30	67½	10	67	Morning cloudy with strong wind—fine during the day—heavy rain towards evening.
6	66	9	66½	12	67½	2	68	7	67½	9-30	68	Fine day with strong wind—shower after dusk—night fine.
7	66½	9	66½	12	66½	2	68	7	67½	9-30	67½	Fine day with strong wind—evening fine.

Register of the Thermometer taken

Place and Date.	In open Verandah.											
	Forenoon.				Noon.		Afternoon.					
	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.
Mr. Beattie's House.												
September 5th	6	61½	9	67½	12	72	2	74½	7-30	67½	9-30	63½
Mr. Ritchie's House.												
September 6th	6-30	62	9-30	67¼	12	73	2-30	74½	..	..	10	64¾
„ 7th	6-30	62	..	..	12	72	2	73	7-30	68	9-30	64
„ 8th	6	61	..	..	12	74	..	...	7-30	66	10	64
„ 9th	6	60½	...	...	12	74½	2-30	75	7	69	9	68
„ 10th	6	61½	..	...	..	..	..	..	7	71½	9-30	69
„ 11th	6	62½	...	...	12-30	75	..	..	7	69½	10	65½
„ 12th	6	62½	9-30	73½	12	77½	...	..	7	68½	10	67½
„ 13th	6	61½	...	...	..	...	..	..	...	..	..	...

B.

Mr. Marrett, *Civil Surgeon of Salem, gives the following as the monthly means of a series of Thermometical observations at Yercaud.*

Dry Bulb.	January.	February	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Maximum	72	73	78	78	78	74	72	73	76	72	71	70
Minimum	60	61	62	63	67	60	68	69-5	68	60	60	60

at Yercaud, Shevaroy Hills.

In a room without fire.												Remarks.
Forenoon.				Noon.		Afternoon.						
Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	Time.	Degrees.	
6	66	9	66½	12	67	2	68	7-30	68	9-30	67½	Fine day, wind very strong—heavy shower for an hour in the evening—night cloudy.
6-30	66	9-30	66½	12	67	2-30	68	..	...	10	67	Fine day with strong wind and cloudy.
6-30	66	...	...	12	67	2	67	7-30	67½	9-30	67	Morning and forenoon fine—cloudy afternoon with fresh breeze.
6	66	...	...	12	67	..	..	7-30	67	10	67	Fine day, with fresh breeze—rain at dusk—night fine.
6	65½	..	...	12	67½	2-30	68	7	68	9	67	A fine day throughout—heavy shower of rain at night.
6	65	..	..	..	..	..	..	7	69½	9-30	68	A fine day with strong wind.
6	67	..	...	12-30	69	...	...	7	69	10	69	Morning fine—cloudy at noon—heavy shower in afternoon—rain at night.
6	68	9-30	67½	12	68½	...	..	7	70	10	69	Dense fog in the morning—rain in the forenoon—fine afternoon.
6	67	..	..	..	...	..	...	..	...	..	..	Rain in the night—foggy morning. Left the Hills at Noon.

C.

A Register by Mr. Beattie, *Resident Engineer of the Madras Railway, differs but slightly from the above. In his observations the Thermometer was kept* inside *the House.*

Dry Bulb.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Maximum	70	70	73	75	75	72	72	72	70	70	70	70
Minimum	60	60	63	68	68	67	67	65	65	63	63	60

Rec'd 4 Dec '63

PUBLIC DEPARTMENT.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Read the following :—

(Report on the Pulny Mountains, by Lieutenant Colonel D. Hamilton.*)

(Report on the Shervaroy Hills, by do. *)

ORDER THEREON, 13th February 1863, No. 163.

His Excellency the Governor in Council has perused with interest Lieutenant Colonel Hamilton's Reports on the Pulny and Shervaroy Hills, copies of which will be sent to the local booksellers for sale to the public. They will be priced at 8 Annas a copy.

2. The attention of the Conservator of Forests will be called to the suggestion made in paragraph 37 of the Report on the Pulny Hills, to the effect that Australian Acacias, Gum and other trees, which thrive so well on the Neilgherries, should be planted on the Pulny Hills.

3. It is very desirable that the communication between the plains and the higher range of the Pulnys should be improved. The restrictions which have been imposed on Public Works charges for the ensuing official year, preclude any expenditure being incurred at present in carrying out this object; but it would be well to determine at once which of the several passes may most advantageously be improved, in order that if funds should be available, the project may be entered in the Budget for 1864-65. Colonel Hamilton apparently gives the preference to the Dévadhánapatti Pass, observing that it is the only one ever likely to be made practicable for wheeled carriages. Orders will be issued on this subject in the Public Works Department.

4. The only point in the Report on the Shervaroys which calls for special remark, is the jungly condition of the Hills in the immediate vicinity of the European Settlement of Yercaud, to which reference is made in the 29th paragraph of the Report. Some steps should be taken, as suggested by Colonel Hamilton, to eradicate the white passion flower which has so completely over-grown the Hills in that locality. The Collector would probably find no difficulty in inducing the residents to remove it.

5. The elevation of the Shervaroys is not sufficient to justify the expectation that they will be largely resorted to by European settlers; but as a place of temporary resort, their position close to the Railway and within easy reach of Madras, Arcot and Vellore, renders it probable that they will be much frequented during those months in which they are ordinarily free from fever. The Deputy Chief Engineer in charge of the Southern Circle will be called upon to report what progress has been made in completing the communication between the Ahtoor Station and Yercaud.

* Printed separately.

(True Extract.)

C. J. Lushington

Chief Secretary.

To Lieutenant Colonel D. Hamilton.
To the Public Works Department.
" Revenue Department.

Exd, T. McMootry.

Rev. 1863 Dep.t
Pro: of Govt for Feb.y
No. 408.

Proceedings of the
Madras Govt in the
Public Dep.t

Dated 13th July
Recvd 14th " 1863.

E. 2. No. 163.

Passing orders on
Lt Col Hamilton's Reports
on the Pulney Mountains and
the Sherevaroy Hills.

No 360. 20 Aug.t

With one Order

Q

Communicated to the Board of Revenue and the Sd
Commission of Forests. —

The attention of the Collectors of Salem Malabar
Madura & Tinnevelly is invited to the following steps
to be taken for the public preservation of Teak
timber referred to. —

No 274 of 25th.

Rd Feb. 16th 3.
Pd to the Dep.t Sec.
to Govt

Communicated to the
Board of Revenue for
information.