

(1) Number of pages 6
(2) Date of repair Feb 1887
(3) Initials of the Referencer 6000 ✓

TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

Public DEPARTMENT

G.O. No.	1557	Press.
~~B.P. No.~~		Mis.
Dated	17 - 11 - 1881	~~19~~

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CURRENT No. 2387.

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GOVERNMENT OF MADRAS.

MILITARY DEPARTMENT.

8th November 1881, No. 5907.

Sanitary.

Read the following papers :—

No. 158. From Surgeon-General Sir A. D. HOME, V.C., K.C.B., Surgeon-General, Her Majesty's Forces, to Colonel E. L. HANKIN, Acting Secretary to Government, Military Department, Ootacamund; dated Fort St. George, 3rd October 1881, No.—.

With reference to G.O., No. 5323, of the 21st August 1880, I have the honor to submit the following Report on the prevalence of Enteric Fever in this Command during 1880, compiled by Surgeon-Major Bidie, M.D., Statistical Officer :—

2. Stations at which the Disease appeared.—The total number of cases reported amounted to twenty-five against twelve in 1879, and the stations at which they occurred and the results are shown in the following statement :—

	No. of Cases.	Died.	Recovered.
Bellary	1	...	1
Secunderabad	13	6	7
Kamptee	10	4	6
Tayrangoon	1	1	...
Total	25	11	14

3. Regiments in which Attacks occurred.—The corps in which the disease appeared were :—

	No. of Cases.	Died.	Recovered.
12th Lancers	5	3	2
L/1st Brigade, Royal Artillery...	1	1	...
L/6th Do. do. do. ...	1	...	1
N/6th Do. do. do. ...	3	1	2
2/13th Regiment	9	4	5
1/21st do.	1	...	1
44th do.	1	1	...
48th do.	3	1	2
77th do.	1	...	1
Total	25	11	14

The liability to enteric fever is greatest in the young soldier and during the earlier years of residence in India, so that if the personnel of a regiment continued unchanged, the susceptibility of the men would in the course of a few years be nearly exhausted.

As fresh drafts, however, are annually received from England and these consist chiefly of young recruits it follows, that the liability of a regiment to suffer from enteric fever bears no relation to the period of residence of the corps, as a whole, in India.

4. *Ages of Men attacked.*—The following table shows the ages of the men attacked in 1880:—

Under 20 years	1	with 0 death.
20 to 22 "	5	" 3 "
22 to 25 "	10	" 1 "
25 to 27 "	1	" 1 "
27 to 30 "	6	" 5 "
30 to 35 "	1	" 0 "
35 to 40 "	1	" 1 "

Of the twenty-five cases, twenty-three occurred in men not exceeding thirty years of age. This bears out the well-known fact in the natural history of the disease, viz., that it is specially a complaint of the young; but at the same time it has to be observed, that about seven-eighths of the non-commissioned officers and privates in the Command in 1880 were men under thirty-five years of age. This circumstance and the small number of cases render it impossible to draw any practical conclusions from the above figures.

5. *Relation of Attacks to Residence in India.*—The relation which the attacks of enteric fever bore to length of residence in India is shown in the following statement:—

	Admissions.	Deaths.
Under 1 year...	8	8
1 to 2 years	6	1
2 " 3 "	4	3
3 " 4 "	4	3
4 " 5 "	2	0
5 " 9 "	1	1

These results agree with past experience, both in this and other parts of India, and illustrate, on a small scale, what was established by the late Dr. Bryden on a large scale, viz., that the liability to an attack is greatest amongst fresh arrivals, and during the first two or three years of residence in India. There are thus two factors which largely determine the susceptibility of individuals—viz., age and term of residence—and of these, the latter is the more potent. This is borne out by the fact that, although nearly the whole of the men serving in India are at ages at which the susceptibility to enteric fever is about its maximum, still comparatively few are attacked after the third or fourth year of Indian residence. Why the man fresh from England and presumptively full of vigour should be more liable to the disease than another more or less debilitated by tropical service, it is impossible to say; but the phenomenon is not singular, as tropical residence seems to confer a certain amount of immunity as regards some other diseases. Whether, in the case of enteric fever, this immunity is due to what may be called acclimatisation, or to an acquired power of resistance to the special cause of the fever, it is at present impossible to say.

6. *Relation of Enteric Fever to Season.*—The relation of enteric fever to season is shown by the following figures:—

February	2 attacks and 1 death.
April	2 " " 1 "
May	3 " " 1 "
June	2 " " 1 "
July	3 " " 3 "
August	3 " " 3 "
September	4 " " 1 "
November	2 " " 0 "

As in 1879, so in 1880, the cases occurred at intervals throughout the year; but in both instances the fever was most prevalent during the third quarter, when the health of the men, or their power of resistance, would be reduced by continued exposure to a high temperature and other debilitating influences. In 1879, out of a total of twelve admissions, one-half took place in the third quarter of the year; and in 1880, with a total of twenty-five cases, fifteen occurred in the same period. The above statements refer exclusively to the non-commissioned officers and men.

7. *Enteric Fever amongst Officers, &c.*—In 1879, there were no attacks of enteric fever reported amongst officers or amongst the wives and children of soldiers, but in 1880, the results were somewhat different.

Officers.—In an annual average strength of 382 officers of British troops, there was one fatal case. An officer of the Madras Staff Corps was also attacked, but recovered. Both cases occurred at Secunderabad.

Women.—The annual average strength of soldiers' wives was 962, and no attacks were recorded.

Children.—The average annual strength of soldiers' children was 1,082, and no attacks were returned.

8. *Native Troops.*—Amongst these, only one case was reported to have occurred. It was treated in the field hospital at Jellalabad, and as no particulars were received regarding it, its real nature must be considered doubtful.

9. *Prevalence of Fevers during the past eleven Years.*—The following table shows the admissions and deaths from fevers, except the eruptive kinds, which occurred amongst European troops in the Madras Command during each of the ten years preceding and also in 1880:—

Years.	Strength.	Enteric Fever.		Simple Continued Fever.		Febricula.		Remittent Fever.		Ague.		Total.		Ratio per 1,000 of Strength.	
		A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.	A.	D.
1870	10,783	44	14	362	1	375	...	51	7	3,980	...	4,821	22	449.1	2.06
1871	10,684	45	15	375	4	311	...	943	6	947	...	2,621	25	245.3	2.34
1872	11,511	79	26	1,041	5	468	...	79	8	1,323	...	2,980	84	267.6	2.96
1873	11,508	53	10	641	3	473	...	59	4	1,417	...	2,673	17	232.3	1.48
1874	11,578	34	12	756	...	565	...	43	...	710	...	2,108	13	182.1	1.04
1875	11,233	23	7	895	2	420	...	37	2	802	...	2,177	11	193.8	0.99
1876	11,132	51	21	966	4	540	...	33	1	586	...	2,176	26	195.5	2.34
1877	11,016	65	22	785	1	655	...	21	1	753	...	2,279	24	206.8	2.18
1878	10,880	7	5	1,241	13	693	...	175	8	1,592	...	3,708	25	340.8	2.29
1879	10,507	12	10	998	8	372	...	189	5	2,604	...	4,175	24	397.3	2.28
Total	1,10,783	412	142	8,060	40	4,862	...	1,660	37	14,728	...	29,717	220	268.2	1.99
1880	10,280	25	11	612	2	482	...	180	3	3,404	...	4,632	16	450.6	1.65

As remarked in last year's report, the fact most perfectly brought out in this table is the recurrence of epidemic periods of fevers generally. These epidemic periods last for three or four years, and there is then an abatement for about the same length of time. The general mortality from fevers in the several years was not appreciably affected by the prevalence or otherwise of enteric fever.

10. *Mortality from Enteric Fever.*—During the eleven years ending 1880, the number of recorded attacks per annum ranged from 7 to 79, and during the same period the annual death rate varied from 833.33 to 192.31 per mille of admissions. Such discrepancy in the annual death-rate implies that only a portion, varying from year to year, of the cases occurring were recognised as, and accounted for, under the head of enteric fever. This is partly due to the fact that the diagnosis of the disease, especially in its milder forms, is often particularly difficult. Taking the total numbers of admissions and deaths for the eleven years it appears, that the latter were in the proportion of 350.11 per thousand of admissions. This rate is also high, and still further shows that the recorded attacks of enteric fever do not represent the full extent of its prevalence amongst the troops. At the same time, it must be stated that, although the average death-rate from enteric fever in temperate climates is well established, it cannot, without proof, be accepted as the measure of mortality from the disease amongst Europeans in this country. On the contrary, it is highly probable that future enquiry will show that enteric fever is more fatal in the tropics than in an European climate.

Causes of the Out-breaks of Enteric Fever.—For the cases which occurred at Secunderabad, no special causes could be traced. The water-supply was good, and

the food supplies were carefully attended to. It appears, however, that the house drainage from some of the married quarters and wash-houses was connected with cesspools—at all times a dangerous arrangement. The latrines were managed on the dry-earth system, which is theoretically perfect, but practically it was found that unpleasant smells were common in them, and the married quarters nearest to the latrines of a battery of Royal Artillery had to be vacated on account of the stench. Whether these defects—which have since received attention—were in any way connected with the cases of enteric fever was not established. As regards the outbreak at Kamptee, it is probable that it was due to the use of impure water. During the third quarter of the year, there occurred in the 2/13th Regiment at that station twenty-seven cases of fever, of which eight were returned as enteric, and the rest as simple continued fever. Regarding the latter, it has to be observed that, from the description given, they appear to have also been cases of mild enteric fever, although the distinctive symptoms were not considered sufficiently marked by the Executive Medical Officer to warrant his returning them under the head of Enteric Fever. The twenty-seven men attacked belonged to various blocks in the barracks, and no room seemed to be more obnoxious to the disease than another. The latrines were all in fair order and no suspicion attached to them. The drinking-water supplied to the barrack rooms was taken from a well specially conserved for the supply of drinking water. After being drawn from the well it was passed through a filtering tank and again filtered in barracks. The milk was also beyond suspicion. After a time, it was noticed that nearly the whole of those attacked were teetotallers. Of the eight cases of undoubted enteric fever, seven occurred in men belonging to this class, and of the nineteen attacks returned as continued fever, thirteen were in total abstainers. Further enquiry elicited the fact, that the teetotallers had a recreation room where tea, coffee and aerated waters were supplied, and that the water used there was taken, not from the well set apart for drinking purposes, but from another, close at hand, the water of which was considered fit for cooking purposes only. This well was situated close to the site of former latrines, the surface drain from the wash-house passed within four feet of it, and, on closer examination, signs were discovered of percolation from the drain into the well. On analysis, the water was found to contain an undue proportion of organic matter. The well was then closed, and the fever ceased soon afterwards. These facts afford strong presumptive evidence that the outbreak was due to the use of impure water, but, on the other hand, the fact must be stated, that many others, including children, made use of the water from the suspected well and did not, so far as is known, suffer any injury.

No. 159. ORDER THEREON, 8th November 1881, No. 5907.

Ordered that the Report be printed and distributed as detailed in Proceedings of Government, No. 4266, dated 6th August 1879.

(True Extract.)

W. H. Smith Colonel,
Ag. Secretary to Government.

To the Surgeon-General, Her Majesty's Forces.
„ Public Department. 11th 5/10/81

Exd. A. Raith.

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Public (1881) Dept
Medical
Govt. of (1881) Madras.
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To
THE SURGEON-GENERAL,
HER MAJESTY'S FORCES,
R.D. *17 NOV 81*
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Dated November, 8th
Issued
CURRENT No. 2387
Recd. *17* Encl.

G.O., 8th November 1881, No. 5907.

NOVEMBER.
Nos. 158-161.

Directing that the Report on Enteric Fever
amongst British Troops in the Madras Command
for 1880 be printed and distributed.
17 Nov 1881, No. 1557
Recorded.
The Surgeon-General
11/11/81