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TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

Public DEPARTMENT

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India Office,
London, 13th October 1881.

Statistics and Commerce.

No. 23

To His Excellency The Honourable The Governor in
Council, Fort St. George.

SIR,

* 12 by mail; 58 through Store Department.

I forward, for your information, 70* copies
of a Memorandum by the Army Sanitary Commission on the Health Returns of British troops in
Madras for 1879.

I have the honour to be,

Sir,

Your most obedient humble Servant,

(Signed) HARTINGTON.

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ENCLOSURE.

MEMORANDUM of the Army Sanitary Commission on the Health Returns of British Troops in Madras for 1879.

These returns do not by themselves afford all the information usually sent to the Army Sanitary Commission on this subject, but after their receipt other papers drawn up by Surgeon-General Sir A. D. Home, V.C., K.C.B., were forwarded by the India Office, and the present Memorandum is intended to include the practical points in all the papers.

1. The Medical Officer's returns received by the Surgeon-General gave the average annual strength of Non-Commissioned Officers and men at 10,507, but another estimate, namely 11,293, founded on the mean of the numbers at the beginning and end of the year, which were respectively 10,859 and 11,728, is given by Dr. Funnell, the successor of Mr. Cornish as Sanitary Commissioner of Madras. In former years, we called attention to the necessity of arriving at some common estimate of the strength of British troops, because of the close relation of this statistical element to the question of loss. For instance, the Surgeon-General's estimate of the admission-rate is 1,402·6 per 1,000, of the death-rate, 16·17 per 1,000, and of the constantly sick rate, 66·71 per 1,000, while corresponding ratios of the Sanitary Commissioner are, admissions, 1,438·7, deaths, 16·8, and constantly sick, 68·4, per 1,000. Curiously enough, the total invaliding rate is almost precisely the same in both returns, viz., 44·45 and 44·5. We shall, of course, accept the Surgeon-General's estimate, and have merely pointed out the differences for the reason stated above.

2. In our Memorandum on the Health Returns for 1878, we showed the relation of the higher death-rate of the year to general causes affecting the sanitary condition of troops all over India, and we may here reproduce the statistical data for comparison with those of 1879 :—

	Ratio per 1,000 Strength.				
	Daily Average Sick.	Admitted.	Deaths from Cholera.	Total Deaths.	Invalided.
20 years average	61·19	1,328·55	2·13	20·49	46·75
1878	62·31	1,336·12	2·57	21·42	45·77
1879	66·71	1,402·6	2·19	16·47	44·45

The death-rate was nearly 5 per 1,000 less in 1879 than it was in 1878. The cholera death-rate, with the exception of a minute fraction, was not due to losses in Madras, but at one station, Thyeetmyo, in Burma. The admission-rate was somewhat higher. The average sick had increased about 4 per 1,000, but the invaliding rate had fallen.

The Surgeon-General summarizes the facts in this comparison in the following words, which we cannot do better than quote :—"During the 10 years comprised in the period, there has been an advance in nearly everything connected with the sanitary well-being of the soldier; he is now sent to India at a somewhat more mature age, and after a very careful medical examination as to his fitness; in many instances he lives in better barracks, cooler and more commodious than those formerly occupied. The articles composing his food are

4
"better of their kind, the barrack supply of water is carefully and probably is effectually protected from pollution, and in other matters having relation to health, clothing, amusements, duties, &c., there has been a steady elimination of hurtful influences." And he then proceeds to raise the question, how it happens that certain of the results to health have not been more marked? why, with less severe sickness and lower death-rates, have more men been admitted to hospital and retained there? We must try in the following paragraphs, with Sir Anthony Home's assistance, to find a practical answer to this question.

3. And first, as regards admissions to hospital and daily sick, the ratios from the chief causes were as follows:—

	Ratios per 1,000 Strength.	
	Admissions.	Constantly Sick.
Paroxysmal fevers -	265.83	7.13
Continued fevers -	131.53	4.38
All venereal diseases -	311.13	18.07
Digestive system -	300.66	13.90
Aggregate -	1,009.15	43.48

We have here four groups of diseases, of which it is not too much to say that they are, in the main, mitigable or preventable, causing 71 per cent. of the total admissions to hospital, and 65 per cent. of the total daily inefficiency from sickness.

Before dealing with individual disease causes, it may be well to see what the Surgeon-General says on this point. Paroxysmal fevers, he says, "though always very numerous, have years of aggravated prevalence, epidemic years depending on meteorological phenomena, whose influence is little lessened by the means hitherto used to countervail their action. The year under notice was one of these years; in it ague was present as an epidemic at various stations in the command, and the men attacked by it were in more than double the proportion of that for the ten years' period, the contrast is therefore virtually between an epidemic and a non-epidemic year."

4. Referring to the increase of venereal diseases in this table, the Surgeon-General says, in the "Sanitary Reports and Returns" (13th October 1880, No. 6462): "Venereal diseases were exceedingly common, and were so in spite of the enforcement of the Contagious Diseases Act, at most of the important stations." These affections, as we shall presently show, have largely increased of late years.

5. While remarking on the prevalence of diseases of the digestive system (dysenteries, diarrhoeas, hepatic affections, dyspepsia, and the like), the Surgeon-General states as follows:—"It is morally certain that, both directly and indirectly, the habit of drinking has caused a large proportion—a very large proportion—of the whole amount of illness from which the force has suffered. The disease under which the state of ill health caused by habitual drinking is ordinarily shown is dyspepsia—705 admissions for this are returned. It is quite safe to assume that half of them were due to drink."

Then, as regards more severe forms, dysentery, hepatitis, &c., their relation to drink as one of the causes is well known, although not here specially noticed.

As regards the relation of drink to fevers and to general illness, the following remarks are made:—"The diseases under which illness caused by debauch of drink (as distinguished from habitual drinking) are usually shown, are simple continued fever and febricula. In the present

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"year the combined admissions from them were 1,370. It would not probably be an overstatement to say that one fifth of this number were due directly to drink."

Nothing can well be clearer than this very cautious estimate of an experienced officer on the subject of those general causes which have led to so high an admission and constantly sick rate for the year 1879. We need scarcely say that we entirely concur in Sir Anthony Home's views, which are, indeed, those put forward by the Commission year after year, and which, in the present case, have been arrived at quite independently and from information obtained on the spot. In fact, the whole subject of these inefficiency causes has long since been really in the hands of the executive authorities, and it is to their action we must look for measures of improvement.

With these remarks on the general question, we next proceed to discuss the details of the returns and reports.

6. As usually happens, average inefficiency rates include extremes, and, by themselves, do not afford all the information required for sanitary purposes. In the present instance, the average death-rate of 16.47 per 1,000 includes the following ratios for the more important stations:—

	Strength.	Death-rate per 1,000.	Admissions per 1,000.
Trichinopoly -	164	6.10	993.90
St. Thomas' Mount -	306	9.80	1,150.33
Fort St. George -	462	10.82	1,716.45
Bangalore -	1,278	12.52	1,663.54
Secunderabad -	2,181	11.46	1,351.67
Bellary -	599	18.36	2,275.46
Cannanore -	428	11.68	2,179.91
Kamptee -	877	19.38	1,599.77
Thyetymyo -	1,094	40.22	1,268.74

This abstract gives a general idea of the distribution of death-ratios during 1879, but it is necessary to state here that the 40.22 per 1,000 ratio at Thyetymyo includes 19 per 1,000 from cholera.

We have added the admission-rates at the same stations to the preceding abstract, but generally these ratios include admissions from diseases not connected with the stations. For example, the Bangalore rate includes 442.09 admissions per 1,000 from venereal diseases, and at Bellary 410.68 per 1,000 admissions were due to the same causes.

7. *Fevers.*—At the present time the most important admission causes connected with stations are fevers. But there are no means in the returns of classifying the fevers by stations. The following abstract, however, gives the admissions and deaths for the whole European Army in Madras from the year before the famine:—

Years.	Typhoid.		Continued.		Remittent.		Intermittent.		Total.	
	Admission.	Died.	Admission.	Died.	Admission.	Died.	Admission.	Died.	Admission.	Died.
1876 -	51	21	1,598	4	33	1	586	—	2,178	26
1877 -	64	22	1,444	1	15	1	758	—	2,281	24
1878 -	7	5	1,940	13	180	8	1,593	—	3,720	26
1879 -	12	10	1,357	8	190	5	2,617	1	4,176	24

This abstract throws some additional light on the general fever history of these years. It shows, in the first place, that, although only one man has died of intermittent fever in the four years, the increased prevalence of intermittent fever due to the meteorological conditions of the famine

year 1877 led to a duplication of the admission ratio from the fever in 1878, and that the ratio largely increased in 1879. This fact bears out the Surgeon-General's statement, that the increase amounted to what is usually called an epidemic. If we admit the diagnosis as having been correct, a similar remark would be applicable to remittent fever, and also, so far at least as the death-rate is concerned, to continued fever. But then the question arises, how has it happened that typhoid fever, which was credited with 43 deaths in the first two years of the series, only yielded 15 deaths during the second two years? the total fever deaths being exactly the same in each group, namely 50. This number was made up as follows:—

Fever Deaths.

	1876-77.	1878-79.
Typhoid fever	43	15
Continued "	5	21
Remittent "	2	13
Intermittent "	—	1
	50	50

There appears little ground for doubt that the difference has been merely a matter of diagnosis and classification; at all events, the *post mortem* appearances ought to settle the question of the prevalence in any year of typhoid fever at Madras stations. But even this test may not always be sufficient, if we can judge from the following statement of the Deputy Surgeon-General about cases at Bangalore. He says: "Enteric fever, a disease which we must regard as one greatly controllable by suitable sanitary measures, was present in several of the barracks at Bangalore, but in view of such notices as the following, which occur in the same sanitary report, it is idle to speculate on the extent to which it prevailed. No case of cholera or enteric fever occurred during the year." A little lower down it is stated: "The symptoms and *post mortem* appearances resembled those of enteric fever." Work like this scarcely calls for remark.

Taking the classification as it stands, there were 12 cases and 10 deaths returned from "enteric" fever. At Secunderabad (1 death), Kamptee (2 deaths), Bangalore (5 deaths), and Tonghoi (2). All the other stations escaped.

8. The Surgeon-General gives the following summary of reports from these stations: "The reports afford no new facts in contribution to the controversy so long in progress respecting the originating cause of enteric fever in India; accumulated proof is given of the already thoroughly accepted fact, that youth and recent arrival in a locality combine the conditions which render a person most likely to be attacked with this disease."

The liability of ages to this fever was as follows:—

Years.	Deaths.
20 to 22	—
22 " 25	4
25 " 27	1
27 " 30	4
	1

and the deaths to length of residence showed these proportions:—

Years.	Deaths.
Under 1 year	—
1 to 2 years	6
2 " 3	1
3 " 4	1
7 " 8	1
	1

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The dry-earth system of conservancy is in general use. He says: "It is difficult to connect the causation of the disease with excremental impurity in barracks, but on the other hand it is very far from being disproved."

Contagion is not adverted to in the reports. The water-supply with one doubtful exception is good; and milk is drawn from the cow at the barracks and in presence of a soldier.

"No facts are given such as might justify a suspicion that the enteric fever contagion may be introduced into the body by any other than those present recognized means of air, water, and certain foods."

One fact comes clearly forward in the Report, and this is, that youth is a very powerful predisposing cause of enteric fever, when the soldier is brought for the first time into relation with Indian climates, habits, and conditions of service. The remedy for this, as we have long ago pointed out, is sending out older men and attending to their personal hygiene.

9. Nothing very specific is stated in the reports about local causes. But attention must be called to the fact that there were five deaths from enteric fever at Bangalore, and that the water from one of the worst water sources in India, the Ulsoor tank, is used at this station. The Deputy Surgeon-General states that "the Ulsoor tank receives in abundance polluting matters of the most loathsome kind." This is a fact stated apart from all opinions about the water, and it practically amounts to the decision that none of it should ever be used for drinking or culinary purposes. The entire question about the water-supply of Bangalore may be said to have been exhausted by the Royal Commission of 1859. It was then clearly proved by evidence that the Ulsoor tank was unfit for human use, and ever since the report was issued there have been almost yearly complaints about it, and yet we have in the present reports the statement quoted above. If no other source of water be available for drinking and cooking, it may be worth consideration whether a condensing apparatus ought not to be provided for this station.

10. Little is stated as to the causes of malarial fever. Perhaps the most important fact is one which has often been adduced regarding certain lines at Secunderabad, and it may be here repeated:—"The Medical Officer of the 12th Lancers notes the absence of any system for carrying off surface or other drainage from the immediate environs of the barracks of the corps, and both the Medical Officer of the battery of Royal Artillery in the entrenched camp and the Medical Officer of the 2nd battalion 16th Foot remark that the low swampy ground to the west of the barracks is a disease-producing element. During the monsoon it is to windward of the camp, and its broken irregular surface (these are old gravel pits and other receptacles for the lodgment of water) prevents the ready escape of water. They consider it one cause of the prevalence of ague in its immediate neighbourhood. Another Medical Officer notices that the rain-water falling from the spouts connected with the roof is only carried a few feet from the walls, and then is allowed to spread on the surface."

The remark of the Officer commanding on this question of drainage is that "it is reported that the nature of the ground is such that when the rains commenced it was cut up into channels. That efforts were made to keep the ground neat, but that a regular system of built drains would cost a very large sum." It would be impossible, without local examination, to state what ought to be done with cases such as this. The principle, however, ought to be that channels of some kind, formed of some cheap impervious materials, concrete for instance, should be formed to turn away all water flowing towards the sites of barracks and

for removing the actual rainfall as speedily as possible. What are called built drains" may not be always the best means to adopt.

All gravel pits and holes near barracks should be filled up. The general statement may here be repeated that climatic causes of paroxysmal fevers are beyond human control, but that by drainage, by suitable clothing, especially at night, by proper barracks and avoiding temperature extremes of all kinds, especially by getting rid of drunken habits, which destroy the general health and disease resisting power, much may be done to lessen the influence of climatic and local fever causes.

11. *Cholera*.—British troops in Madras proper almost escaped the cholera of 1879. There was, indeed, only one death out of two attacks at Kamptee; but at Thyetmyo, in Burma, there were 34 attacks, of which 22 proved fatal. Thyetmyo is liable to very severe outbreaks of cholera, apparently for topographical reasons. The barracks are close to the river, not on low ground, but the ground near the Royal Artillery barracks "becomes a swamp during the rains" (Report of Sanitary Commissioner for Madras), and in previous reports about the station objections have been raised against the position of barracks. There can be no doubt whatever that in the course of years troops stationed there will be subject to large periodical losses from cholera. The disease prevailed among the Native population before the troops were attacked.

The Surgeon-General states the following facts about this outbreak:—
"The first case occurred on the 12th June and the last on the 22nd September;" it attacked "every corps in the cantonment, but local infection was clearly apparent, thus five of the eleven cases in the 43rd Foot occurred in one company of the regiment, and of the remaining ones a relatively considerable number occurred in hospital. The troops were promptly removed out of the different barracks in which the disease had showed itself, and this proceeding was attended with a good result; the subsequent cases being for the most part those of men who had acquired the disease in barracks, though it showed itself after the moving into camp. Though infection of buildings was shown, contagion was not seen, neither the medical officers nor attendants suffered except in one doubtful instance."

12. The barracks at Thyetmyo are of wood, raised eight feet above the ground, those in the fort are raised three feet on piles. The ground underneath is paved with brick. Cubic space is ample; the ground can be drained. One doubtful point is the water-supply, which is procured from wells within the barrack enclosure; "it contains much mineral solids," no analysis is given, but the matter should be carefully inquired into. The most obviously unfavourable condition at this station is its position, close to a river liable to flooding, swampy land, and drying up watercourses. So long as the cantonment is in its present position the troops should be removed out of it as soon as cholera appears among the civil population. It is by no means sufficient to move them when cholera has appeared in the barracks. This cholera outbreak in Burma added 2 per 1,000 to the general mortality of the Madras Army.

13. *Venereal diseases*.—We have so frequently discussed the question of lock hospitals and police regulations in their bearing on the amount of syphilitic affections in the Madras Army, that it would be mere repetition to say more on the subject at present, except to place on record the following facts, which must be taken in connection with the more or less efficient action of these preventive measures at the stations:—

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Years.	Venereal Admissions per 1,000 Strength, at 8 Stations.
1871	172.09
1872	175.19
1873	164.33
1874	206.34
1875	208.73
1876	178.70
1877	247.12
1878	265.89
1879	311.13

The increase of admissions in 1877 was supposed to be due to sore necessity under which the poor laboured at the time of the famine, but as will be seen, the increase has gone on since the famine year.

The venereal admissions for 1879 are shown at the same eight stations individually in the next abstract:—

Stations.	Admissions per 1,000 Strength.
Bangalore	442.09
Bellary	410.68
Cannanore	247.66
Kamptee	291.90
St. Thomas' Mount	379.08
Secunderabad	238.88
Trichinopoly	341.46
Wellington	202.95

These results have followed attempts made year after year to improve the working of Contagious Diseases Acts, and in view of them the Surgeon-General states as follows:—"The suggestions made in many of the reports that a wider extension and stricter enforcement of the Act would arrest the evil are, in my judgment, if adopted, not likely to be useful. There can be little doubt on this point."

14. *Diseases of digestive system*.—Under this heading there were 3,159 admissions to hospital, 51 deaths, and 152 invalids. The fatal cases were the following:—

	Total Deaths.
Gastritis	1
Dysentery	12
Diarrhoea	1
Hepatitis	25
Abscess of liver	12

The deaths from dysentery, hepatitis, and abscess of liver are connected with climatic elements as predisposing causes, but before these can take effect there must of necessity be some other cause or causes to call them into activity.

These exciting causes are drink, diet not adapted to climate, and exposure to chills, especially while asleep at night. We have called attention to the facts year after year. That they admit of being dealt with at every station of Madras troops does not admit of a doubt. It might not be possible in all constitutions to prevent these diseases from showing themselves, but the principle of action should be recognized that, by the means stated above, many attacks may be warded off and most of the loss by death and invaliding avoided. Two companies were lost to the Madras Army in 1879 from them. The Surgeon-General gives an illustration of how these losses are brought about as follows. A battery of Royal Artillery arrived in the country in the beginning of the year. "Towards the end of the year four invalids were sent

"home, one man for the effects of an accident resulting from intemperance, one for disease produced by intemperance, and one for constitutional disease aggravated by intemperance; the fourth man was sent home for secondary syphilis."

It is right to state that attempts are being now made to diminish drunkenness by altered canteen regulations, but the very first step towards the reduction of hepatic and dysenteric disease has yet to be taken, for the optional spirit ration is still issued even to young soldiers, and this practice is objected to in the Medical Officer's reports, because, amongst other injury which it entails to the State, "it initiates a habit of drinking in young soldiers," and then, as at Cannanore, "49 cases of palpitation were treated, out of which number six were invalided. The cases were purely functional, and were attributed to climate, and the habits of the men in drinking and smoking to excess," the two latter being the removable causes of the loss to the State.

15. In the separate reports on the stations not much is said by Medical Officers on sanitary condition. What is said refers chiefly to drainage, and one of the cases at Fort St. George barracks, Madras, is stated as follows:—"The chief sanitary defect in the Fort was caused by the reflux of sewer air (in certain winds) through the main channel which carries the sewage of the Fort into the sea."

Defects of this kind are not uncommon, and have given rise to much loss of life. It ought to be no difficult problem in local engineering to protect the outlet by a flap or trap sufficient to prevent the nuisance complained of. A number of minor complaints appear to have been dealt with, but the main local disease cause disclosed by the statistics is malaria, connected, apparently, with the immediate vicinity of barracks, or with subsoils under barrack floors. Many improvements have of late years been effected, but local causes of malaria have still to be rooted out. This is the chief sanitary lesson taught by the year's reports so far as locality is concerned, but the Surgeon-General has shown us how much requires to be done in improving the personal habits of the men before the benefits of local improvements already effected can be realized by the State, and we cannot better conclude these remarks than by recording emphatically our concurrence in the principles he has laid down, involving as these do the abolition of the spirit ration and improved oversight of the personal habits of troops in Madras command, and at the same time expressing our regret in observing that well known and long acknowledged causes of disease, such as the Ulsoor tank at Bangalore and the swampy ground to windward of the barracks at Secunderabad, to which specific reference has often been made in preceding Reports, should apparently remain to this day unabated.

22nd July 1881.

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GOVERNMENT OF MADRAS.
MILITARY DEPARTMENT.

16th November 1881, No. 6051.

Sanitary—Reports and Returns.

Read the following :—

No. 232. *Despatch from the Most Honorable the MARQUIS of HARTINGTON, Her Majesty's Secretary of State for India, to His Excellency the Honorable the Governor in Council, Fort St. George; dated India Office, London, 13th October 1881, No. 23.*

Statistics and Commerce.

I forward, for your information, seventy* copies of a Memorandum by the
* 12 by Mail; 58 through Store Department. Army Sanitary Commission on the
Vide—To England, No. 111, dated 10th September 1880. Health Returns of British Troops in
Madras for 1879.

No. 233. ORDER THEREON, 16th November 1881, No. 6051.

Communicated to the Surgeon-General, Her Majesty's Forces, Madras, with
reference to Proceedings of Government, No. 5253, dated 19th August 1880.

(True Extract.)

W. S. R. A. N. Colonel,
Ag. Secretary to Government.

To the Surgeon-General, Her Majesty's Forces, with 12 copies of the Memorandum.
„ Surgeon-General with the Govt. of Madras, with 27 copies of the Memorandum.
„ Quartermaster-General ... with 10 do. do.
„ Sanitary Commissioner ... with 2 do. do.
„ Public Department ... with 5 do. do.
„ Adjutant-General, for information ... with 2 do. do.

Exd. A. Raitt.

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