

(26) P. W. C. H. 1886
Govt. of 1886 Madras.

FINANCIAL.

No. 1008 Wd 17 April 1886

Communicated to
the Suply. Engineer
to file for early report

9/4/86

12-4-86

Issued

Recd. 9/4/86

Encl. 1

G.O., 26th March 1886, No. 361 L.F.

No. 1008 Wd 17 April 1886

MARCH.

Sanitation.

Communicating to the President, District Board, North Arcot, report of the Sanitary Commissioner on the causes of malarious condition of Chittoor, and requesting to report what action the District Board propose to take on the suggestions of that officer.

S.E. & B. 19/4/86

10-10-86

W. H. order

2 copies to 804

17TH FEBRUARY 1886, No. 370, PUBLIC.

GOVERNMENT OF MADRAS.

PUBLIC DEPARTMENT.

READ—the following papers :—

From L. MOORE, Esq., Acting Collector of North Arcot, to the Acting Chief Secretary to Government, dated Chittoor, 29th January 1886, No. 8.

On the 6th instant, I received the following letter from the District and Session Judge :—

"Fever during the last month has been far worse than usual at this time of year. It does not appear to be confined to any locality or any class of persons. My knowledge of Chittoor goes back only to October 1884, but from all I hear, the fever began with the famine and has prevailed ever since. It seems to be now firmly established. You are aware that Chittoor has had the reputation of being a remarkably healthy place. These facts are doubtless as well known to you as to me, and I mention them, not as new information, but as my reasons for asking you to urge upon the Government the desirability of holding an inquiry into the sanitary conditions of Chittoor. If things grow but a little worse, it will at times become almost impossible to carry on the business of the public offices in Chittoor. If the evil is preventable, it should be prevented without delay, but if not, it will be well to know it, that the possibility of enforced removal of the public offices may be brought home to the knowledge of the Government."

2. I referred this letter to the District Medical and Sanitary officer, with the following remarks :—

"Forwarded to the district medical officer, for favor of his opinion as to the causes of the great increase of fever in Chittoor in the last few years."

"Statistics showing the prevalence of fever for the last 10 or 15 years should be given."

And received the following reply :—

"I regret to say that the season has been a very unhealthy one, malarial fever (ague in its various types) being very prevalent, both in the European and the Native portions of the town. In the former not a house has been free from fever, and in some of them every member has been affected by it, and the household servants have suffered equally."

"That fever has been more prevalent in Chittoor from the famine of 1877, the statistics attached to this letter show, and I have also a clear testimony of most of the old residents to this fact."

"The fever is purely a malarial one, as all its symptoms and effects show. As to the causes, I am strongly of opinion that it is chiefly due to the increase of wet cultivation right within the town limits, extending now, as it does, into the compounds of some houses and along the portions of the main road. These paddy fields act like a large marsh, and with decaying leaves, branches of trees and night-soil thrown in, saturated with water for days, with a strong sun beating down, must surely be strong factors in the production of malaria."

"The drainage of the ground being bad, and the town nearly shut in by hills, the soil is now water-logged, and retains this moisture far into the hot weather."

"Probably also the unseasonable rains of the north-east monsoon, which fell here very late in the year, have added to the unhealthiness of the season."

"In this increase of wet cultivation, it seems to me, we have all the factors which experience has pronounced to be the causes of malaria, viz., vegetable decomposition, moisture to saturation, sub-soil and water almost at the surface and a high temperature."

"Other theories are often brought forward to account for malarial fevers, but none of them have stood their ground."

"If these paddy fields but once be removed, I am certain Chittoor will be as healthy as it was some years ago."

The following statement shows the admissions from fevers in the District Jail, Chittoor, from the year 1874 to 1885 :—

	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.
Average strength ..	257	163	241	752	532	220	179	158	156	172	146	144
Admissions from fever.	75	74	93	237	374	675	348	177	43	109	220	270
Percentage of admission from fever to average strength ..	29.80	45.39	38.58	31.51	70.30	306.81	194.40	112.02	27.56	63.74	150.68	187.50

The following statement shows the number of cases of fever treated in the Chittoor dispensary for a series of years :—

Years.	Number of cases.
1868	747
1869	1,092
1870	1,113
1871	917
1872	898
1873	811
1874	187
1875	1,701
1876	1,878*
1877	1,488*
1878	6,103*
1879	3,647
1880	1,928
1881	1,928
1882	1,811
1883	2,317
1884	2,244
1885	3,465

* Famine years.

3. As Dr. Lancaster ascribes the great increase of fever in Chittoor to the extension of wet cultivation, I annex a statement showing the area in Chittoor town and neighbourhood cultivated with paddy for Faslies 1284-85 and 1289 to 1294. Faslies 1286-87 and 1288 are omitted, as they were years of famine :—

Fasli.	Area cultivated.	Fasli.	Area cultivated.
	ACS. CTS.		ACS. CTS.
1284	127 41	1,291	198 79
1285	104 28	1,292	203 74
1289	189 5	1,293	231 33
1290	197 39	1,294	234 59

4. The present season in Chittoor has been most unhealthy. Not a European family has escaped fever. The Rev. Mr. Conklin, of the American Mission, has removed his boarding school to Ranipet, in consequence of the numerous cases of fever among the boys. Mr. Harmann (the Executive Engineer, No. II Party, State Railway, Madras), who had his head-quarters here, has been obliged to move them temporarily to Vellore. Mr. Stevenson, the Superintendent of Police, has been obliged to move his family to a healthier portion of the district. No one is left in Chittoor except those who cannot, by any possibility, get away. I joined the district only two months ago, and in that time every servant I have has had fever.

5. It is beyond my province to discuss the causes of the great increase of malarious fever in Chittoor. The matter is one, however, that I think it is advisable should form the subject of a scientific inquiry, and I hope, therefore, that Government may be able to send the Sanitary or Deputy Sanitary Commissioner to investigate it. My principal reason for bringing this question before Government is as follows: I under-

stand that a scheme of redistribution of districts is being considered under which Vellore and Chittoor would both become head-quarters of district. In view of the extreme unhealthiness of Chittoor, it becomes, I think, a matter for consideration whether, in any changes that are made, Chittoor is a suitable place to be the head-quarters of a district.

Office note from the Secretary to Government, Revenue department, dated 3rd February 1886, No. 6.

ORDER—dated 17th February 1886, No. 370, Public.

Communicated to the Sanitary Commissioner, who will report, after due inquiry into the alleged malarious condition of Chittoor now and in recent years and the causes to which it is due.

(True Extract.)

W. WILSON,
Acting Chief Secretary.

To the Sanitary Commissioner for Madras.
" Collector of North Arcot.
" Revenue department.

Exd. A. Raitt.

Govt. of (1886) Madras.

PUBLIC.

Issued

Recd.

Encl.

G.O., 17th February 1886, No. 370.

FEBRUARY.

Sanitary.

Communicating to the Sanitary Commissioner a letter from the Collector of North Arcot, for report, after due inquiry into the alleged malarious condition of Chittoor now and in recent years and the causes to which it is due.

26TH MARCH 1886, No. 361 L.F., FINANCIAL.

GOVERNMENT OF MADRAS.

FINANCIAL DEPARTMENT.

READ—the following paper:—

From Deputy Surgeon-General G. BIDIE, M.B., C.I.E., Sanitary Commissioner for Madras, to the Chief Secretary to Government, dated Madras, 6th March 1886, No. 424.

With reference to G.O., No. 370, Public, dated 17th February 1886, I have the honor to report to the Right Honorable the Governor in Council that, prior to its receipt, I inspected Chittoor with the view of inquiring into the prevalence of malarial fever there and its causes. Both European and native residents have suffered from it, and some bear well-marked symptoms of that depression of the constitutional powers known as *malarial cachexia*.

2. The town is located amongst the outlying spurs of the eastern ghâts at an elevation of about 1,112 feet above sea level. Such situations in the tropics are almost invariably more or less malarial at certain seasons of the year, and liable to outbreaks of paroxysmal fevers at uncertain periods. In fact, such has always been the character of the town and taluk of Chittoor. Thus, in the *Medical Topography* compiled from the records of the Madras Medical Board and published in 1843, after a description of the natural features, &c., of Chittoor town, it is remarked: "it will be observed, from what has been already stated, that the sources of malaria abound at Chittoor, and the numerous admissions from intermittent and remittent fever exhibited in the appended tables will therefore not excite surprise." One striking peculiarity of the site of the town is that it lies in a hollow surrounded with bare rocky hills, which must to some extent interfere with the free circulation of air and increase the temperature by radiation. The lower parts of the valley are covered with soil often of no great depth, watered by a small river and tanks, and under rice cultivation. In short, the valley forms a basin with but one important outlet for its drainage, viz., that of the river, and it appears that, in one case at any rate, the outflow has in recent years been partially disturbed. I refer to the tank near the Judge's house the *calingula* of which was raised several feet during the famine, and the waterspread thereby largely increased. How far this may have deranged the sub-soil drainage in the vicinity of the town, is an engineering problem requiring attention.

3. The site which the town occupies consists of shallow gravelly soil resting on gneissic rock which has frequent outcrops, and shows signs of numerous irregularities and shallow basins immediately under the soil capable of catching and retaining the surface waters, and whatever organic matters they may contain. The effect of this conformation is to hold up moisture and keep the soil saturated after rain—a condition which is sure to generate malaria when vegetable *debris* is present and the process of desiccation going on under a tropical sun.

4. In the order of Government under reply, the District Medical officer expresses the opinion that the prevalence of fever in the station "is chiefly due to the increase of wet cultivation right within the town limits," and Dr. Lancaster pointed out to me instances of its extending into the compounds of houses and along the main roads. From a return given by the Collector in the same communication, it also appears that the area of wet cultivation in and near the town has been increasing of late years, and I do not suppose that this shows the encroachment in gardens. Speaking generally, our experience in Southern India goes to show that rice culture is not usually productive of malaria, but I am not prepared to assert that, under certain circumstances, it is innocuous. In the case under consideration there is evidently imperfect drainage, and as Dr. Lancaster points out the use of green leaves of trees and of night-soil as manure would probably, under such circumstances, confer on the ricefields all the baneful influence of a swamp. The leaves chiefly used are those of the *Pongia-marum* (*Pongamia glabra*) which are offensive while undergoing decay, and the night-soil appears to be applied in the recent state. The odour given off is certainly most offensive and likely to be prejudicial to health. In the *Medical Topography* already referred to as printed in 1843, the following remarks occur and are just a *propos*

now as then, if we substitute *ricefields* for *tanks and ditches*; "the cultivation of rice should be prohibited within a certain distance of the town and the natural vegetation thinned: so powerful are the exhalation from the tanks and ditches at times, particularly early in the morning and after sunset, that they produce in those exposed to their influence, nausea and vomiting, with a disagreeable taste in the mouth." Similar effects are produced by the recently-manured fields at the present day.

5. In appendix A a diagram is given showing the extent to which fever has prevailed in the Chittoor jail, situated close to the town, during each of the past fifteen years, and from this it will be seen that it has fluctuated greatly. The maximum prevalence was attained in 1879 just after the famine, and from this it rapidly declined till 1882, since which period it has again been on the increase. The lower part of the same page shows the ratio of fever cases to total treated from all causes in the Chittoor dispensary and it will be noted that this agrees fairly with the other as to the rise and decline of fever in certain years. The actual figures on which the diagrams for both the jail and dispensary have been based are given in appendix B, and their harmony as to the increase and decrease of paroxysmal fevers at certain periods shows clearly that some general causes, such as those referred to in the preceding paragraphs, were in operation. Along with the fever line for the dispensary the rainfall for the 15 years has also been depicted, but there does not appear to have been any direct relation in the way of cause and effect between the amount of rain and the prevalence of malaria. It is quite possible, however, that the season at which the fall of rain takes place may be of some importance as a governing cause.

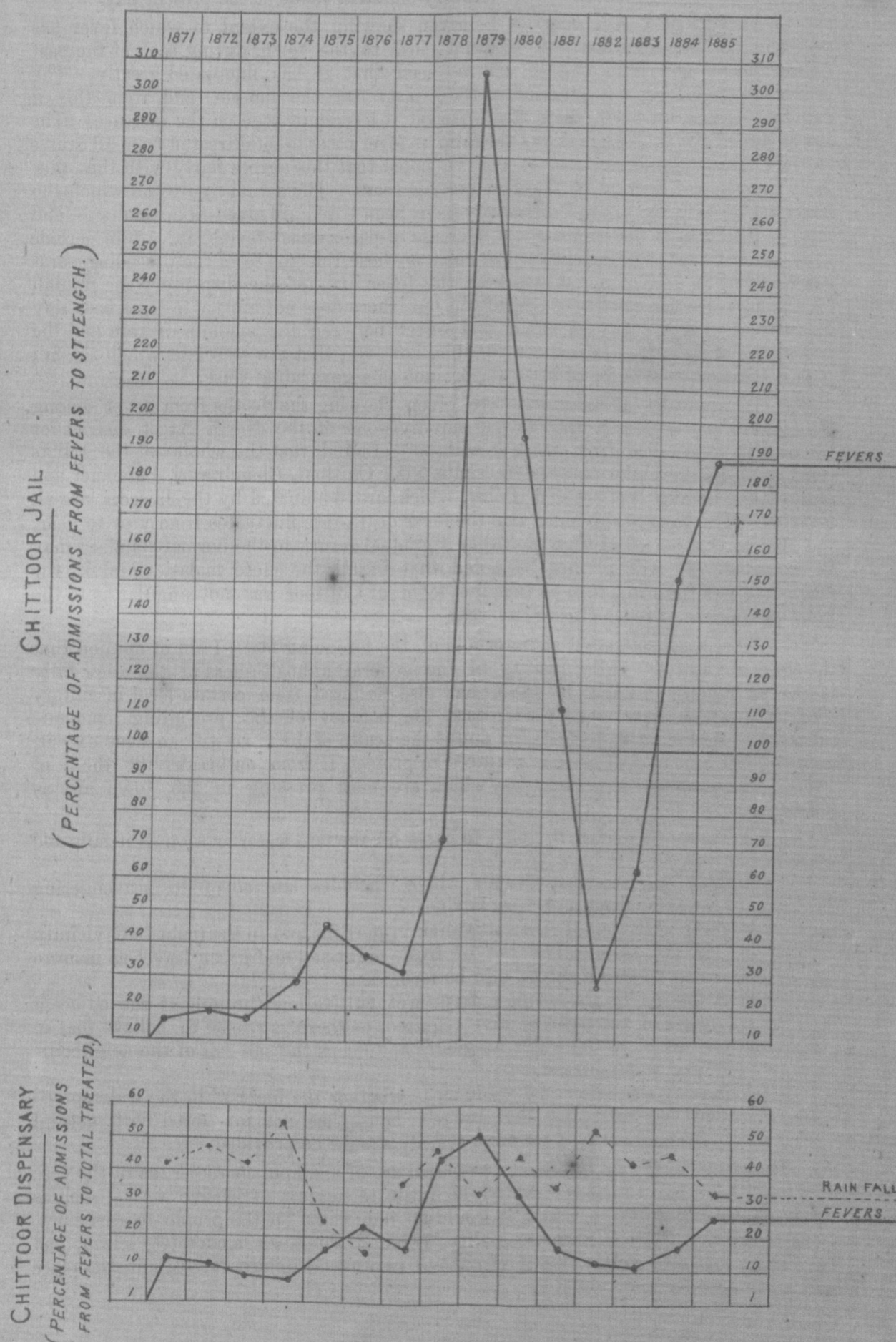
6. In appendix C statements are given showing the deaths from fever among the general population in the several sub-divisions of the North Arcot district for the past 15 years, and from these it will be gathered that the whole of the taluks lying immediately under the eastern ghâts, viz., Chittoor, Chandragiri, Palmanér and Gudiyátam, as also Vellore and Pólúr, which are dominated by the Jawadis, are all feverish. The figures also show that the fever death-rate fluctuates from year to year, and that after a period of high mortality a gradual return to the normal standard may be expected. It will further be noted that in all the more malarious taluks the death-rate was high in 1885, so that the town of Chittoor was not singular as to the great prevalence of fever during last year.

7. From a consideration of the whole of the foregoing facts, I am of opinion that the town of Chittoor, while sharing in the general unhealthiness of the other hilly taluks as regards malaria in 1885, has also suffered from certain local insanitary conditions which have greatly increased the potency of the prevailing epidemic influence. As the latter declines, no doubt the health of the town will, to some extent, improve, but a good deal more is required to protect it from outbreaks like those of 1885. The sanitary improvements which are most pressing in the town are as follow:—

- (a) Thorough surface drainage to carry off the rain water as soon as it falls and sewage.
- (b) Good surface conservancy which includes an adequate scavenging establishment and more latrines.
- (c) The prohibition of rice cultivation in gardens and in the immediate vicinity of the town. The use of fresh night-soil and green-leaves as manure near the town should also be forbidden.
- (d) Attention to the outflow from wet cultivation throughout the adjacent parts of the basin is also required, as there is reason to believe that in many cases the water stagnates and keeps the sub-soil of the neighbourhood water-logged.
- (e) Inquiry should also be made as to whether the increase in the waterspread of the tank near the Judge's house has not interfered with natural drainage, and, if so, some remedy should be provided.

The whole of the improvements proposed are of a simple character, as in the case of a small town like Chittoor it would be futile to suggest expensive works, such as thorough sub-soil drainage, which it would be impossible for the people to carry out. Considering that there is no municipality, I found the town moderately clean, and have every reason to expect that if the above improvements are carried out, the place will again become fairly healthy.

A
DIAGRAM SHOWING THE PERCENTAGE OF ADMISSIONS FROM FEVERS.



B.—PERCENTAGE OF ADMISSIONS FROM FEVERS.

	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.
Chittoor Jail—															
Strength	241	216	200	267	163	241	762	532	220	179	159	156	172	147	144
Percentage of admissions from fevers to strength	17.0	19.4	18.0	29.1	45.3	38.5	31.5	70.3	306.8	194.4	112.0	27.5	63.7	150.6	187.5
Chittoor Dispensary—															
Total treated	7,457	7,524	8,211	2,307	10,450	8,827	8,728	12,484	12,250	11,396	12,002	12,775	11,624	11,799	13,859
Percentage of admissions from fevers to total treated	12.2	11.8	9.8	8.1	16.2	21.2	17.0	45.0	50.4	32.0	16.0	14.1	11.3	19.1	26.0
Rainfall in Chittoor	43.6	48.0	41.3	65.5	26.1	14.8	39.7	48.3	33.4	45.7	36.2	52.2	42.9	44.1	31.6

C.—DEATHS FROM FEVER IN THE NORTH ARCOT DISTRICT.

Taluks.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	Average of 15 years.
Chittoor	1,569	1,305	1,510	1,839	3,025	2,389	6,565	3,177	2,890	1,617	1,295	890	1,040	1,021	2,025	2,144
Chandragiri	702	623	682	721	1,290	810	2,283	1,304	905	738	616	407	443	508	658	846
Palmaner	644	735	912	1,038	1,097	811	3,029	1,919	820	742	442	291	298	405	808	838
Gudiyatam	1,399	1,565	3,435	3,185	4,222	2,132	4,093	2,301	2,618	1,977	1,273	1,028	1,390	1,458	2,380	2,292
Vellore	1,261	3,199	3,822	2,805	3,154	1,627	2,449	1,519	1,430	1,197	918	828	980	1,116	1,440	1,849
Polar	943	1,085	1,905	862	974	752	2,998	844	1,322	596	458	381	562	647	824	1,007
Wandiwash	583	729	749	688	750	657	1,813	587	815	582	337	366	481	479	491	671
Arcot	725	854	864	1,288	1,419	938	1,819	873	1,436	807	560	481	507	688	714	931
Wālaia Vellore	1,218	1,229	1,426	1,483	1,423	1,148	2,712	1,334	1,501	1,066	917	740	877	926	1,006	1,267
M. T., Wālaia	325	311	391	323	752	262	257	226	268	233	176	177	195	195	195	286
M. T., Wālaia	71	42	25	25	48	14	27	48	111	72	44	39	38	21	35	44
Zemindaries	5,941	5,430	6,382	6,461	7,339	5,956	18,119	12,632	7,511	5,155	4,013	3,668	3,774	4,291	5,148	44
Total	15,381	17,107	22,093	20,698	25,493	17,496	46,124	26,764	21,627	14,782	11,079	9,296	10,487	11,755	15,724	19,060

Percentage of Fever Deaths to Population.

	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	Average of 15 years.
Chittoor	0.8	1.6	0.7	0.8	1.4	1.1	3.0	1.4	1.3	0.7	0.6	0.4	0.5	0.5	1.1	1.0
Chandragiri	0.7	0.6	0.6	0.7	1.2	0.8	2.2	1.3	0.9	0.7	0.6	0.4	0.4	0.5	0.7	0.8
Palmaner	1.2	1.2	1.5	1.7	1.8	1.3	5.0	3.1	1.3	1.2	0.7	0.6	0.6	0.9	1.9	1.5
Gudiyatam	1.0	0.9	2.1	1.9	2.5	1.3	1.7	1.4	1.6	1.2	0.7	0.5	0.7	0.8	1.0	1.3
Vellore	1.0	2.2	2.7	1.9	2.3	1.1	1.7	1.0	1.0	0.8	0.6	0.5	0.6	0.6	0.7	0.9
Polar	1.0	0.9	1.7	0.7	0.8	0.5	2.7	0.7	1.2	0.5	0.4	0.3	0.3	0.3	0.4	0.5
Wandiwash	0.4	0.4	0.4	0.4	0.4	0.4	1.1	0.3	0.5	0.3	0.2	0.3	0.3	0.4	0.4	0.5
Arcot	0.5	0.5	0.5	0.8	0.9	0.5	1.1	0.5	0.9	0.5	0.3	0.3	0.4	0.4	0.5	0.6
Wālaia Vellore	0.6	0.6	0.6	0.7	0.7	0.5	1.3	0.6	0.7	0.5	0.4	0.4	0.5	0.5	0.5	0.7
M. T., Wālaia	1.0	0.8	1.0	0.8	1.9	0.6	0.6	0.5	0.7	0.5	0.3	0.3	0.3	0.2	0.3	0.3
M. T., Wālaia	0.6	0.3	0.2	0.2	0.3	0.1	0.2	0.3	0.9	0.5	0.6	0.5	0.6	0.7	0.8	1.2
Zemindaries	1.0	0.8	0.9	0.9	1.1	0.8	3.1	1.9	1.1	0.8	0.6	0.5	0.6	0.7	0.8	0.9
Total	0.8	0.8	1.0	1.0	1.2	0.8	2.3	1.3	1.0	0.7	0.5	0.4	0.5	0.6	0.8	0.9

No. 477-C.

Transferred to the Financial (L.F.) Department for disposal.

(By Order.)

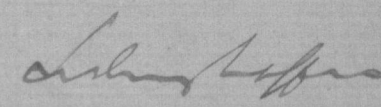
FORT ST. GEORGE,
15th March 1886.(Signed) E. S. LAFFAN,
Ag. Under Secy. to Govt.

ORDER—dated 26th March 1886, No. 361 L.F., Financial.

Communicated to the President, District Board, North Arcot, with the request that he will report what action the District Board propose to take with regard to the Sanitary Commissioner's suggestions (a) and (b) in paragraph 7.

2. The suggestion (c) will be considered in the Revenue Department and (d) and (e) in the Public Works Department.

(True Extract.)



for Chief Secretary.

To the President, District Board, North Arcot, with copy of
G.O., dated 17th February 1886, No. 370, Public.

" Revenue Department.

" Public Works Department, with copy of G.O.,
dated 17th February 1886, No. 370, Public.

" Sanitary Commissioner for Madras.

Exd. P. L. Pereira.