

(1) Number of pages 8 sheets
(2) Date of repair 11.8.82
(3) Initials of the Referencer _____

TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

Revenue DEPARTMENT

G.O. No.	74	Press.
B.P. No.		Mis.
Dated	9.1.1878	197

Not to be folded or roughly handled.

Proceedings of the Madras Government
Read the following

INDIA OFFICE,
London, the 19th July 1877.

Statistics & Commerce.
No. 100.

To His Excellency the Right Honourable the GOVERNOR GENERAL of India
in Council.

MY LORD,—I forward herewith a copy of a Memorandum* by the Army Sanitary Commission on the Reports of the Sanitary Commissioner for the North-West Provinces for 1874 and 1875, and I desire to express my commendation of the ability and practical character of Mr. Planck's reports.

2. I request that attention may be given to the suggestions regarding inquiry into the local causes of specially high death-rates from fever, also as to furnishing, in future statistics of cholera, particular information as to villages attacked and exempted.

3. The remarks of the Commission as to the relation of "bowel complaints" to fever and to cholera are well worthy of attention, and the whole subject demands careful investigation, as also does the classification of the different kinds of fever.

4. I further commend to your notice the observations made in this memorandum on the necessity of irrigation works being supplemented by the drainage of the subsoil, a matter to the importance of which the Government of the North-West Provinces appears to be alive.

5. With regard to the remarks on Cawnpore in para. 17 of the memorandum, I request to be furnished with a special report on the arrangements for the drainage and conservancy of that town.

I have the honour to be,

MY LORD,

Your Lordship's most obedient, humble Servant,

SALISBURY.

Memorandum of the Army Sanitary Commission on the Reports of the Sanitary Commissioner for the North-West Provinces for 1874 and 1875.

As these two reports have been referred to the Army Sanitary Commission at the same time, it is thought advisable to include the remarks of the Commission on both reports in the same memorandum. The cause of the delay in issuing the first report is explained in the appended Government letter as having arisen from important points on the questions of irrigation and drainage, necessitating inquiry in the Irrigation Department, having been brought forward by the Sanitary Commissioner. The reports taken together contain information on the sanitary state of these Provinces, and on steps taken for removing disease causes, of great interest and importance to the progress of public health improvements, not only in the North-West Provinces, but in other districts of India.

1. Assuming the population of the North-West Provinces at 20,769,056, the registered mortality gave a death-rate for 1874 of 21.82 per 1,000, and for 1875 of 21.8 per 1,000. These rates are, however, below the real death-rates, and only indicate the deaths registered during these two years. The registration is improving, but Mr. Planck, the Commissioner, says that he does not, "as a rule, endeavour to prove anything by the mortuary figures", and that "it is bad ground to tread upon yet". This is quite true, and it must necessarily be the

case in any country into which such records have recently been introduced. In cantonments, excluding instances of neglect, the death-rate for 1875 was 23.32 per 1,000—a better result. On the whole, the registration appears to be improving, although the numbers of deaths registered in one part of the country are still double the numbers registered in another. Mr. Planck ascribes the deficiencies of registration to the want of trustworthy agency for the report to the Registrars of deaths which have happened, especially in rural circles, each composed of many villages, sometimes as many of which as 200 report to one centre. The total circles furnishing returns monthly amount to 879. But an important fact is that the town circles with their machinery are able to report death-rates averaging 31.70 per 1,000, while the rural circles averaged only 21.07 per 1,000. Notwithstanding the obvious deficiency in both results, especially as regards the rural circles, the fact that so many deaths have been reported to the Registrar is by no means discouraging for future progress in vital statistics. The wonder is that so much progress has been made in this important department of public health; while the increase of reported deaths, with the better arrangements possible in town districts, holds out a prospect for similar results being attained in rural circles when the registration arrangements are in better working order. This matter must be left in the hands of the Government.

2. The chief practical interest in these mortuary statistics lies as usual in the death causes, the classification of which partakes of course of the inaccuracy incident to the registration itself. But making any reasonable allowance for such deficiencies, the facts disclosed in Mr. Planck's reports are of great public importance.

3. Take, for example, the following registered fever deaths for the last five years in the North-West Provinces:

Seasons.	Registered deaths from fever.					Total.
	1871	1872	1873	1874	1875	
Cold ...	158,340	168,557	152,657	154,260	152,902	786,516
Hot ...	101,198	118,725	125,670	107,360	132,061	585,020
Rains ...	162,293	203,354	180,025	187,002	171,522	905,156
Total ...	421,831	490,436	458,352	449,588	456,485	2,276,692

During the five years 1871—1875 there died above 2½ millions of people in these Provinces from diseases registered as "fevers". The following abstract of the table gives the percentage of total fever deaths according to season:

		Percentage of fever deaths.	
Hot season	March ...	...	26
	April ...		
	May ...		
	June ...		
Cold season	January ...	...	35
	February ...		
	November ...		
	December ...		
Rains ...	July ...	...	39
	August ...		
	September ...		
	October ...		
		—	100

The fever mortality varies greatly from year to year in different registration districts. Three of the most unhealthy in 1875 were Terai, where the fever deaths

per 1,000 living amounted to 27.99; Bulandshahr, where the fever death-rate was 24 per 1,000; and Meerut, where it was 21.01. These figures show the great losses sustained from fevers in certain districts of the country, and the need of strict inquiry into their local causes. The Northern and Central Doab had death-rates in 1875 ranging from 16.89 to 24 per 1,000 living from fever alone.

None of the reports from India contain an account of these fevers. That the great part are of malarial origin appears to be beyond question, but it seems doubtful whether ague is attended by such fatality as these abstracts show. Additional light on the subject appears to be thrown by the following observation of Mr. Planck, who says—"Certainly continued fever is a disease of the North-West Provinces, and is not difficult to find in any centre of population much noted for filthiness, and especially where animal remains are allowed to decay in close proximity to the houses, or where in a year of scarcity poverty has very much pinched the people. But this form of fever is more common about the close of the cold season, and I suspect during the hot season". When it is remembered that the fact has only recently been recognized that the fatal fever of British troops serving in India is typhoid fever, and that enteric fever does show itself among Native troops, it may be here suggested, as matter of further inquiry, that possibly much of the mortality from these fevers may be due to enteric fever, and some to relapsing fever.

This suggestion is not intended to call in question Mr. Planck's opinion regarding the Doab fever, "that it prevails at the time of the drying up of the rains in August, September, October and November", and hence is indicated as of malarial origin.

This is another problem, and one distinctly connected with the drainages of the country.

4. The Doab has been the seat of great irrigation works. The amount of water passed into the subsoil has been sufficient, not only to increase the fertility of land, but to saturate the subsoil with water to such an extent as to occasion a gradual rise nearer the surface of the subsoil water-level, to injure the purity of wells supplying water for domestic purposes, to give rise to swampy ground, and, as is alleged, to cause great sickness and mortality among the population.

In addition to facts on this important matter supplied by the Sanitary Commissioner, he has inserted two reports by Dr. Moir, Civil Surgeon at Meerut, in which the causation of these Doab fevers assigned by Mr. Planck is called in question on certain statistical grounds which amount to an averment that the registered fever mortality has not always borne a definite relation to the proximity of the districts to irrigation lines. The points raised are similar to those raised in Madras a number of years ago on the Godavari fever. The *prima facie* reply is the same in both cases, and is *not* that excessive fever death-rates have or have not a defined topographical relation to drainage works, but that they exist at all. Why are there these excessive death-rates? What is their cause? How are they to be prevented or removed?

Dr. Moir's reports appear to be directed against certain opinions prevalent in the country that these fevers have been caused by irrigation. Such opinions, if they became operative, would destroy irrigation works all over India and render many districts unproductive, and Dr. Moir is quite justified in challenging those who hold them to the proof. He shows that these fevers existed before irrigation works existed, and that they are found where such works have never been carried out. All this is quite true, but it scarcely touches the question at issue, which is this: In a country where malaria prevails, and where the drainages have not been improved, what is likely to be the result of carrying over it extensive irrigation works, some of them cutting across the natural drainage lines and obstructing them, and pouring water on the surface and into the subsoil in quantities far in excess of what is needed to supply the wants of vegetation?

There can be but one answer, that given by Mr. Planck, and practically by Dr. Moir himself, viz., that the subsoil will become saturated with water, the wells injured, and the surface, without perhaps even visible appearance of water, will be converted into a swamp, and of course the usual results to health and life will follow, but not necessarily in these precise localities where the evils are most apparent.

5. To all assertions about the economical results of irrigation works it is imperative to reply that in future the cost of such works should include the costs of

9. The most important element for practical purposes is the distribution of cholera within the circles, but up to the present time little information has been recorded under this head. The following facts are, however, stated by Mr. Planck: In Amara Circle of Basti 60 villages in its South-Eastern quarter were attacked. In Pikhwa Circle of Meerut the deaths occurred in 10 villages and one-fourth in one village. In Banda District there are 1,231 centres of population (villages), of which cholera attacked 240; in only 26 villages were there more than 10 deaths recorded. The attacked villages were in three groups, and in many instances those on contiguous lands were attacked. Mr. Planck states that centres of population situated on or near lines of traffic were very often affected. This must be true wherever cholera is diffused over a country where there are lines of traffic, but a glance at the map shows that the most severely affected districts were very often removed from the main road and railway lines. They appear to have had more relation to river banks.

There are no new facts bearing on the vexed question of spread of cholera by personal communication. Many years ago this Commission prepared instructions for the Indian cholera inquiry, in which special attention was directed to this subject, but it is a noteworthy fact that, although cholera has prevailed more or less over India ever since, not a single occurrence has been brought to light of which it can be said that here we have been able to trace in one instance at least the importation of cholera from one part of a country into another. The evidence up to the present time is beyond a doubt that, if cholera is spread in this manner, the process has not been detected, although, if it were the means by which an epidemic is diffused, it should be above all facts the one most frequently observed about cholera. Mr. Planck has a suspicion that cholera may be spread by human intercourse, but this is scarcely justified by the alleged facts. He states that the first deaths in Banda District (there are 35 districts in all) took place on 10th April on the East of the district, on the 22nd April in the centre of the district, and on the 25th April in the West, and that the villages were attacked in the most irregular manner, not to be explained by atmospheric causes, but possibly by "chance movements of mankind" (the very point which it is so desirable to settle). On the other hand, the district statistical table of cholera deaths shows that cholera existed in January 1875 in 13 out of 35 districts at long distances from each other. The only way to lay the foundation for better knowledge of this disease is to follow some such course as Mr. Planck himself proposes, viz., to map correctly the course of the disease.

To show even in one district all the villages attacked, with the deaths of attack, and all the villages exempted, would afford important information as to the laws of cholera.

10. *Small-pox*.—The following abstract gives the small-pox mortality for the North-West Provinces, arranged according to seasons, during the last five years, including those in the present reports:

Seasons.	Registered deaths from small-pox.					Total.
	1871	1872	1873	1874	1875	
Cold ...	3,521	4,050	11,993	13,867	4,580	38,013
Hot ...	26,850	18,673	65,887	66,879	15,845	194,134
Rains ...	8,078	7,350	19,211	12,501	5,894	52,534
* Total ...	35,449	30,073	97,093	93,247	26,819	284,681

This table shows that, like other epidemic diseases, small-pox has its own relation to season—a fact which is more clearly brought out by the following percentages of deaths in each season:

		Percentage of small-pox deaths.	
Cold season...	January ...	...	13.35
	February ...	...	
	November ...	...	
	December ...	...	
Rains ...	July ...	...	18.45
	August ...	...	
	September ...	...	
	October ...	...	
Hot season ...	March ...	...	68.20
	April ...	...	
	May ...	...	
	June ...	...	
		...	100.00

On comparing these percentages with those already given for fever and cholera, it appears that the rains and cold seasons are the fever seasons, that the hot and rainy seasons are the cholera seasons, and that the hot season is the special season of small-pox prevalence. As regards the epidemiology of the North-West Provinces, these facts are of great importance for practical purposes.

11. Small-pox mortality was very unequally distributed throughout the Provinces. In 1875 the total small-pox mortality for the Provinces was .83 per 1,000 of the population.

The lowest rate was .01 per 1,000 in Kumaon, and the highest 16.12 per 1,000 in Lalitpur District. In three districts, Kumaon, Gurkwal and Dehra Dun, the absence of this disease is attributed to the "labours of the Vaccination Department, by which all the infant population of that large tract of country is brought under the protecting influence of vaccination"—a fact which apparently shows that, under improved vaccination arrangements, similar results might be attained in other districts.

12. *Bowel complaints*.—From diseases (chiefly diarrhoea and dysentery, Mr. Planck says) classed under this designation, there were in—

	Deaths.
1874 ...	60,865
1875 ...	80,337

It appears to be necessary to recall a comparison frequently made between the mortality from bowel complaints and the deaths from cholera.

As already stated, the cholera deaths for the same years stood as follow:

	Cholera deaths.
1874 ...	6,396
1875 ...	41,106

Last year was one of a great cholera epidemic, and yet the bowel complaint deaths were nearly double the cholera deaths. Taking the two years together, the cholera deaths were to the bowel complaint deaths as 1 to 3, and it is worthy of remark that the largest mortality from "bowel complaints" took place in the cholera epidemic year.

13. For practical purposes it is very important to ascertain the relation of these "bowel complaints" to cholera. If there is no "choleraic" relation between them, then cholera must take a subordinate place among Indian death causes.

A remark made by Mr. Planck that he is "inclined to think that deaths from enteric fever are sometimes entered under this head" is worthy of being followed up. We require to know much more of Indian "fevers" and "bowel complaints" than is the case at present in order to be able to deal with them, and why it is that the mortality from bowel complaints "appears to fall principally upon the people of Bundelcund and the Himalayas, and upon the people of certain districts of the Doab and Rohilkund", while the Eastern districts comparatively escape.

14. So far as can be estimated from two years' returns there appears to be a distinct relation between bowel complaints and seasons. This is shown by the percentage of deaths during the same months as those adopted with the other death causes—

Seasons.	Percentage of bowel complaint deaths.		
Hot	...	...	19.0
Cold	...	...	32.3
Rains	...	...	48.7
			100.0

The seasonal relation of mortality from "bowel complaints" follows in the same order as that of "fevers", i. e., greatest in the rains and cold season, and lowest in the hot season. It differs in this respect from the mortality of cholera and small-pox, which is greatest in the hot season, less so in the rains, and least in the cold season. Rain and cold and their concomitants must, therefore, take their places in the bowel complaint etiology of the North-West Provinces, as in the Berars, where the climatic relations are so much the same that the Sanitary Commissioner considers that in searching for the cause of the one disease we may also find the cause of the other. If on further inquiry this remark is found applicable in other districts of India, we should have statistical proof of the causative relation of want of drainage, and its results on the present state of agriculture, inferior dwellings, and insufficient clothing and sustenance, to the prevalence of fever and bowel diseases which are the chief death causes in India.

15. *Sanitary Commissioner's Inspection Reports.*—These reports afford much information tersely given as to the sanitary state of a large number of towns and districts, showing the character of local disease causes, and the nature of the chief sanitary improvements which have been carried out in them. Among the localities inspected in 1874 were 21 municipal towns and two large villages, and 33 were inspected in 1875.

In most of these places sanitary improvement is making progress. In some of them considerable works have been carried out.

Cleansing and surface draining are more or less attended to, and increasing interest appears to be taken by the authorities in the subject. Paving is being introduced in some places with advantage. Town sewage is disposed of in various ways, more or less advantageously; but there is one practice followed at Bijpore, which is curiously in accordance with the Mosaic precept in this matter, and in conformity with sound sanitary principle. Six sarpat plantations have been provided for retirement, and as affording the necessary privacy, and a sweeper is attached to them furnished with a hoe for covering all impurities at once with earth. A long time ago the Commission called attention to this subject, and as the practice has been successfully introduced at Bijpore, there is no reason why it should not be generally followed. It would put an end to air pollution by excretal dust, and with due care in changing ground after a sufficient quantity of manure had been deposited in it to admit of cultivation it would prevent the fouling both of earth and water. It would be quite worth while to call the attention of other municipalities to this practice already followed in one of them.

16. The chief disease cause at all the places inspected by the Commissioner in both years is subsoil wetness, showing itself in expanses of stagnant water, wet and marshy ground, damp surface, damp rising in walls of houses and in districts under irrigation—all these evils aggravated by throwing additional water into the subsoil, and thus raising the subsoil water level, and endangering the purity of wells. In some instances the water level has been so much raised as to occasion flow of water in otherwise dry nullahs.

The reports contain many important observations of this matter, and must be referred to for the details. The practical result of the whole is that those parts of the country which are suffering most should be drained without loss of time.

17. Some skilled assistance is evidently required for local sanitary works. Some time ago attention was called to the drainage of Cawnpore and its want of adaptation to the requirements of the city. There is little said about it in the present reports, but what there is mentioned is illustrative of the necessity referred to. Mr. Planck says—"The new great drain of this city was seen to be embanked with earth near its termination, said to be done expressly to cause stagnation of the sewerage, and bring about deposit of earth and impurities it contains . . . when dug out, it is bad smelling and makes good manure, but its collection in this way is not likely to improve the sanitary state of the city".

Mr. Planck's account of the conservancy arrangements is not favourable, and it shows that for all domestic purposes Cawnpore is still undrained, notwithstanding the great outlay which has been incurred. This matter will have to be taken in hand some time, because the present practices cannot be continued without future injury to health. The case is one which may very well serve as a warning to other municipalities.

18. *Sanitary Improvement.*—By far the most important part of these reports is that which relates to sanitary improvements in progress, or which have been already completed, and first in order must stand land drainage, intended not only to remove the excess of water poured into certain districts of the North-West Provinces by excessive canal irrigation, but also to lower the natural water level of parts of the district. It is only justice to state that the Government of the Provinces has acted in these measures with an enlightened regard to the interests of the district and the health of the people, and that they may expect to reap the advantages of their labours in diminished sickness as well as in increased productiveness of the soil.

After numerous inspections and conferences with irrigation officers, which revealed the fact that large tracts of land were in a marshy condition, that the soil was deteriorating and crops suffering, and that the labourers themselves were enduring all the miseries and losses incident to this state of the country, a large number of drainage works were sanctioned in the following districts: Saharanpur, Mozaffernagar, Meerut, Bulandshahr and Aligarh.

One single work will drain 150 square miles of country.

Alluding to the extent of these works the Sanitary Commissioner says—"The summary shows how numerous these cuts are. They undoubtedly represent a great network of artificial drainage channels, which will direct the surplus moisture of many portions of the country to the natural drainage line. . . . I believe this drainage work is of very great importance, and in its entirety constitutes a work of the first magnitude, in regard to the endeavour to improve the sanitary aspect of a wide surface of country densely peopled." It is the first attempt on a large scale to deal with causes of malaria, but it will at the same time improve the agricultural products of the district both in quality and amount.

19. Sufficient time has not elapsed to show results; nevertheless there is a table in Dr. Meir's report of the 25th March 1876 which may be put on record as exhibiting a singular coincidence with, if not an effect of, one of the most important of these drainage works, viz., at Meerut. These works were sanctioned on 4th February 1875, because, "seeing the extreme urgency of this case, His Honor the Lieutenant-Governor has decided that the drainage of Meerut shall be proceeded with at once, and separate orders have been already issued on the subject" (those referred to above).

Wells for drinking water were marked by flags, and care was taken that no other water was drawn for this purpose. Two temporary hospitals were provided, and provision made for reporting all cases of sickness. The result was that not a single case of any epidemic disease occurred in any camp, that the daily sick lists contained reports of trivial sickness or accident only, and were blank for many days.

There were three deaths from fever with pneumonia among camp followers, from exposure and cold on the march, the day after their camp arrived, and one man was injured by an elephant. Mr. Planck says that, "when the camps were removed, the ground appeared, but for here and there a broken surface or a little stable litter, as clean and carefully kept as before the site was inhabited".

So continuous has been the success of similar measures since Mr. Ellis, of the Madras Sanitary Commission, first introduced them at the Conjeeveram pilgrimage of 1864, that any outbreak of epidemic disease among large assemblages of people in India would appear to argue the existence of neglect somewhere. It is of more importance, however, to remark that measures of this class really embody nearly all the principles required for the improvement of country populations in India.

24. As regards town improvements during 1875, Mr. Planck says that "they consist almost invariably of the results of well-directed efforts to improve the local drainage, to raise and consolidate the public thoroughfares, and to fill up unwholesome excavations. In some towns a considerable amount of improvement has been effected, or is being effected, in the direction of better ventilation by means of straightening existing roadways, or opening out new ways in more crowded portions of the site". He states that, wherever the means of improvement are readily forthcoming from local resources, improvement has made, and is making, good way in the towns from one end of the country to the other; that both English and superior Native officials are far advanced in knowledge of sanitary matters, and convinced of the advantage of sanitary improvements; and in the present state of the larger towns he considers that it will be more advantageous to turn his attention to the smaller groups of population.

25. The mortality statistics show that great improvements are still required throughout the Provinces, as well as further investigation into the nature of local diseases, their causes and remedies; but it is impossible to peruse these reports without recognizing the earnest, active and intelligent practical work done by the Government of these Provinces and by their Sanitary Commissioner, and at the same time not to express a desire that similar work may ere long be reported from every district of India.

In conclusion, the Commission is desirous of directing special attention to the following practical results of these two interesting reports as likely to be useful in other parts of India:

1. Tracing the Doab fevers to want of drainage in connection with irrigation works; taking active steps for draining the worst districts; and the apparent prompt effect of local drainage in reducing the amount of fever.
2. The efficiency of vaccination as a protection against epidemic small-pox when thoroughly carried out.
3. The practicability of introducing perfectly safe arrangements for disposing of sewage when deposited on the ground by covering it at once, as illustrated in the experience at Bijneer, which would apparently be applicable in most parts of India, if not everywhere.
4. The admirable temporary sanitary system, at once simple and efficacious, introduced by Messrs. Simpson and Planck for the protection of the camps assembled at Agra during the visit of His Royal Highness the Prince of Wales, as affording another illustration of the success of a class of measures applicable to all similar public assemblages in India.
5. The practicability generally, under careful supervision of the Sanitary Commissioner, of ensuring the progress of sanitary improvement.
6. The great importance of enlisting the village authorities and people in improving the sanitary state of villages.
7. Continuing the same course of local investigations already followed in past years by Mr. Planck into the history of epidemic diseases in selected localities, with the view to ascertaining their removable local causes.

8. Recognition of the principle that questions of drainage and of irrigation ought to be considered together as forming parts of the same work.

21st May 1877.

No. 304

COPY forwarded to the Government of the North-Western Provinces with a request that a special report may be furnished on the arrangements for the drainage and conservancy of Cawnpore for transmission to the Secretary of State.

No. 13/305

COPY forwarded to the other Local Governments and Administrations and to the Military and Public Works Departments for information.

By Order of the Governor General of India in Council,

HOME DEPARTMENT,
SANITARY;
Fort William;
The 11 December 1877.

Signo/ F. B. Danter
Under Secretary to the Govt. of India.

Exd.—D. N. M.

Order thereon 3rd January 1878 No 7.

Communicated to the Board of Revenue
and to the Sanitary Commissioner

(The Contract)

J. H. H. H.
Under Secretary

To the Revenue Dept.

" Board of Revenue

" Sanitary Commissioner

" Surgeon General Indian Medical Department.

41

✓
Revenue 1878 Department

N^o 21

Pro: of Gov^t Public Dep^t

Dated 3 }
Rec^d 4 } Jan^r

Dep^t N^o 7

Forwarding Reso:
: lution of Gov^t of India on Des:
: patch from Sec^y of State for
: forwarding copy of Memorandum
of the Army Sanitary
Commission on the Reports of
the Sanitary Commissioner for
the North-West Provinces for
1874 and 1875

N^o 74
Recorded

9 Jan^y 78 C.W.