

(1) Number of pages 28 sheets
(2) Date of repair 13.8.82
(3) Initials of the Referencer _____

TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

Revenue DEPARTMENT

G.O. No.	<u>84</u>	Press.
B.P. No.		Mis.
Dated	<u>10. 1. 1878</u>	197 .

Not to be folded or roughly handled

Public Department.
Proceedings of the Madras Government.
Read the following:—

INDIA OFFICE;
London, the 2nd August 1877.

Statistics and Commerce.
No. 116.

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

MY LORD,—I forward for your consideration a copy of a
memorandum* by the Army Sanitary Commission on the report of
the Chemical Analyser to the Government of Bombay for 1875-76.

* Dated 31st May 1877.
2. In connexion with the remarks made in paras. 8 to 10
respecting the best mode of conducting analyses of water in future, I
have to refer you to my recent despatches Nos. 23 and 91, dated
the 31st of January and 5th of July, on this subject.

I have the honour to be,

MY LORD,

Your Lordship's most obedient, humble Servant,

SALISBURY.

Memorandum of the Army Sanitary Commission on the Report of the Chemical
Analyser to the Government of Bombay for 1875-76.

Mr. Lyon's report shows a large amount of important and useful work done
during the year, connected with medico-legal cases, examination of Government
stores, and water analysis, but it is only under the last section that any questions
arise which call for remark by the Commission.

1. During the year 170 samples of drinking water were analysed from 27
cities, towns and stations in Bombay Presidency. The first 45 analyses in the
tables refer to an important question connected with the water supplied to shipping
in Bombay harbour, discussed in other papers, and arose out of the abominable
practice of discharging the cesspool matter of the city by a pipe into the harbour.
The practice had given rise to great nuisance, as well as to suspected water pollution
by absorption of foul matter in the atmosphere by Vehar water in the process of
being transported by barges from the supply pipe to the shipping. This inquiry
has been attended by important results, certain of which fully bear out a recom-
mendation for filtering the water-supply of Bombay long ago made by the Army
Sanitary Commission.

2. To obtain the normal state of the Vehar water as a ground of compari-
son with that delivered to the shipping, two samples were taken—one from the
lake direct, the other from the waste pipe—after having been filtered through
the substance of the dam by accidental leakage. The difference between the two
samples is stated by Mr. Lyon as follows:—"The effect of this accidental filtration
appears to have been (a) to destroy the dead leaf odour possessed by the water
of the lake, and (b) to diminish the albumenoid ammonia, and increase corres-
pondingly the free ammonia. These changes may fairly be interpreted as showing
that the effect of the filtration was to destroy by oxidation the greater part of
the organic matter contained in the lake water". There is nothing novel in this
result. Its importance to the water-supply of Bombay consists in the proof
that is afforded by an accident that the large amount of vegetable organic matter
dissolved from the collecting area of the lake in an Indian climate, sufficient
to confer a peculiar taint on the water, admits of being entirely removed by

oxidation in passing through a filter, as long ago advised by this Commission for the removal of this and other defects in quality. The municipal authority, it is to be hoped, may profit by the result, and complete their water-supply by filtering it.

3. The next series of analyses gives the result of exposing the water while being received and conveyed in the water barges from the supply pipe to the ships. It is briefly to increase the proportion of free ammonia thirty-six fold, no doubt by absorption from the foul atmosphere near the water level. The fact is proved by a test experiment of exposing distilled water to the same air, which resulted in an addition to the water of .04 parts of free ammonia and .08 parts of albumenoid ammonia per million, neither impurity having existed in the water before. The whole series of experiment shows the danger of exposing a surface of drinking water to an atmosphere containing noxious vapours, even in the open air. But the amounts were increased about ten-fold by exposing distilled water to privy air.

4. The final condition of the water in ships' tanks showed that the Vohar water had, as already stated, been polluted more or less by absorption of foul air in the process of carriage from the supply pipe to the ships, that an additional quantity of organic matter had been added, probably from the barge tanks, and that the amount was between 25 and 30 per cent. greater in the ships' tanks than in the barges, showing that the tanks themselves required attention in cleansing.

5. The result has been to place the whole question on a scientific basis, although it must be admitted that common sense and past experience had long ago arrived practically at the same conclusions, namely, that the discharge of night-soil, either above or below the water of Bombay harbour, should be put a stop to, and a proper outlet for the sewage of Bombay provided without delay, and that a little more attention in the way of cleansing should be bestowed on barge and ship water tanks.

6. The remaining analyses, 125 in number, were made in Bombay of samples of water sent long distances, and after long delay in some cases, and although the results are no doubt accurate for chemical purposes, yet, in the absence of all local knowledge as to the immediate surroundings of the water sources, no satisfactory opinion can be formed by the chemist on the sanitary condition of the water. A curious illustration of the benefits of local inspection is given in the case of the water-supply of Asirgarh, which, although submitted to filtration, showed very large amounts of organic impurity when analysed at Bombay. In this case an inspection was considered necessary in order to explain the occurrence; and when the step was taken, the explanation was "apparently an exceedingly simple one". It is thus given by Mr. Lyon. The tank is filled from a catchment area within the memory of man, been cleaned out. In a sanitary sense this means that for unknown years the catchment area had been washed by the rains, and the washings, with all their surface impurities, formed the bed of the tank. No wonder that any available means of filtration should have failed to oxidize the organic matter, and there is no doubt that this case shows what is the condition and its causes of most Indian tank waters.

7. In other cases there is reason to believe that the analysis conducted in the manner described, and by itself, gave a very inadequate representation of the sanitary condition of the water source, and so far might tend to an erroneous estimate of the agency of the water in the production of disease. There are cases in which medical officers on the spot had every reason to suspect that the water was dangerous, while, after being sent to Bombay, nothing of the kind could be detected.

8. Mr. Lyon very properly says that "it is anything but satisfactory to go on year after year analysing sample after sample, knowing perfectly well that the major portion of the analyses are for all practical purposes perfectly useless". The remedy he proposes is to place all questions connected with the quality of waters in the hands of the Sanitary Commissioner, as part of his current duty, in which he would be aided by competent analysts, who would on the spot examine the water source and its surroundings, would then analyse the water, and trace any suspicious impurities to their local cause, and there and then point out the remedy. The necessity for this local analysis has been for a number of years urged by the Commission in their memoranda on the Bombay stations.

9. For immediate guidance in dealing with the more important organic impurities, no better course could be taken than to follow the simple procedure laid down by Dr. Angus Smith in his tract "on the estimation of

organic matter in water", long since printed and sent to India at the request of the Army Sanitary Commission. But more extended analyses should be carried out on the plan prepared by Dr. Macnamara, Dr. Angus Smith, and the late Dr. Parkes, printed in the India Office Blue Book which was issued in 1871.

10. As the Sanitary Commissioner of Bombay has been relieved of statistical work, and as the vaccination service has been required to undertake sanitary as well as vaccination duties, placing the examination and protection of water sources under the Sanitary Commissioner would be nothing more than another very important step taken in the same direction, and with this and other sanitary duties the Commissioner's time would be usefully filled up, and his whole attention directed to sanitary work, which is an indispensable condition to its success.

31st May 1877.

No. 12/292

Copy forwarded to the Local Governments* and Administrations, and to the Military and Public Works Departments for information.

* Except Bombay.

By Order of the Governor General of India in Council,

HOME DEPARTMENT,
SANITARY,
FORT WILLIAM;
The 10th December 1877.

(Signed) L. Keill

Under Secretary to the Govt. of India.

Order thereon - 3 January 1878. W. S.

Communicated to the Sanitary Commissioner and to the Chemical Examiner for information.

(True Extract)

Sherrill

Under Secretary

To the Revenue Department.

Exd - D. N. M.

" Board of Revenue.

Home Dept. Press - No. 432-6-12-77-147.

" Sanitary Commissioner

" Chemical Examiner

" Surgeon General Indian Medical Department

77

4884
Recorded

10. Jan'y 78

Revenue 1897-98 Defruct

No 405

Post: Post Office Defruct

Dated 33 January 78
Recd 33 January 78

No 8.

Communications

Illustration of Govt of India
on. Reprinted from Stamp.
of that forwarding copy
of memo: of the Army
of 24 January 1878

Secretary Commission
the Right Hon. Chamberlain
Windsor 18th Nov
of 1897 Jan 18 78
West Hill