

Public (189) Department.

ORDINARY MS.

G.O., No. 1114

Dated 1- 9- 98.

INDEXED.

[Despatch Abstract.]

Recording Progs. L & M. Dept. Commr. with
remarks, to the Officers concerned, Memorandum
of the Army Sanitary Commission on the
report of the Sanitary Commission for
Madras for 1895.

BACK PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

CURRENT No.

Government {1898} of Madras. LOCAL AND MUNICIPAL.

Recd.

Enclosures

Regd.

1898.

Spare copies

G.O., &c., Nos. 1550, 1551 L., 20th August 1898.

CS.

AUGUST.

Procl No 1114, 81st September 1898
his.

Revised.

30/8/98

30/8/98 12/11/98

Memorandum of the Army Sanitary Commission.

Communicating, with remarks, to the officers concerned — on the report of the Sanitary Commissioner for Madras for 1895 and ordering that a despatch be addressed to the Right Honourable the Secretary of State for India on the subject.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

READ—the following papers:—

Despatch from the Right Hon'ble Lord GEORGE HAMILTON, Her Majesty's Secretary of State for India, to His Excellency the Governor in Council, Fort St. George, dated India Office, London, 29th July 1897, No. 2, Statistics.

I forward, for the information of your Excellency's Government, 160 copies * of a memorandum by the Army Sanitary Commission on the report of your Sanitary Commissioner for the year 1895.

* 1 with despatch; 159 by book post.

No. 1018.

Referred to the Sanitary Commissioner for remarks.

(Signed) G. S. FORBES,
Secretary to Government.

1st October 1897.

From Surgeon-Lieutenant-Colonel W. G. KING, M.D., C.M., D.P.H., Sanitary Commissioner for Madras, to the Secretary to Government, Local and Municipal Department, dated Fort St. George, 3rd June 1898, No. 1239-S.

With reference to your endorsement, No. 1018, dated 1st October 1897, I have the honour to forward herewith, a memorandum on the review by the Army Sanitary Commission of the sanitary report for 1895.

ENCLOSURE.

MEMORANDUM by the Sanitary Commissioner for Madras on the review by the Army Sanitary Commission of the sanitary report for 1895.

Paragraph 1.—(a) The Army Sanitary Commission, in referring to the suggestion that increased attention has been paid to registration in this Presidency, does not pause to ascertain whether this be the case or not, but point to the happy contrast made by other provinces. One would have thought that the Commission would have tested the truth of the assertion in the first place at least by a comparison with the results in Madras in former years, and then have pointed to the example of other provinces as a further incitement to effort. A glance at the following statistics shows distinct improvement has been effected during the last five years, and, as this result has not been achieved without much labour, I do not see why Madras should not be example. The Commission must know that reforms of the description are not made by a stroke of the pen, and that the circumstances of each province are not precisely similar:—

								Birth-rate per mille according to Census of 1891.	Death-rate per mille according to Census of 1891.
1893	..	..	..	..	..	..	..	27.0	19.3
1894	..	..	..	..	..	..	..	27.7	20.0
1895	..	..	..	..	..	..	..	29.1	19.6
1896	..	..	..	..	..	..	..	29.9	20.6

(b) The rates referred to by the Commission as an example to Madras are the total rates for Bengal, Bombay and the Central Provinces. In the endeavour to profit by the lesson offered, I have had the rates collected in the subjoined table, taking care, however, to show urban and rural rates separately:—

		Bengal.		Bombay.		Central Provinces.		Madras.	
		Rural.	Urban.	Rural.	Urban.	Rural.	Urban.	Rural.	Urban.
1887	Birth rate	..	19.35	39.69	27.94	40.20	..	30.4	28.6
	Death rate	23.44	24.12	29.05	18.33	32.67	32.96	21.0	26.1
1888	Birth-rate	..	20.63	40.07	28.44	41.52	..	29.8	27.0
	Death-rate	22.87	24.86	28.04	31.35	29.05	24.93	20.7	27.9
1889	Birth-rate	..	22.76	37.73	27.79	39.30	..	30.9	28.5
	Death-rate	24.22	25.03	31.30	33.12	43.82	43.47	22.9	28.0
1890	Birth-rate	..	21.54	40.52	28.40	38.41	..	31.2	30.0
	Death-rate	22.95	22.03	27.96	29.80	32.76	29.92	22.2	22.1
1891	Birth-rate	..	21.46	37.34	28.63	43.09	..	27.4	28.7
	Death-rate	26.93	27.28	26.96	29.45	35.65	34.37	21.9	27.4
1892	Birth-rate	..	28.27	35.31	35.46	38.39	..	24.9	28.3
	Death-rate	31.85	33.57	32.00	36.13	34.77	27.30	21.9	27.6
1893	Birth-rate	..	36.14	26.27	36.32	38.66	33.55	26.5	32.4
	Death-rate	28.12	30.03	26.80	30.05	27.88	25.64	18.5	29.0
1894	Birth-rate	..	33.32	22.77	36.07	27.99	39.35	33.10	27.4
	Death-rate	34.85	35.34	31.98	34.27	37.44	34.80	19.2	28.4
1895	Birth-rate	..	35.13	23.91	36.78	29.04	33.63	31.05	28.7
	Death-rate	31.24	34.46	28.26	31.18	36.55	38.81	18.4	26.2
1896	Birth-rate	..	38.64	26.18	37.76	29.61	31.79	31.03	29.5
	Death-rate	34.07	36.14	30.92	37.21	49.35	48.79	19.9	29.0

I confess when I peruse these results, I hesitate to accept the example given to me. It will be observed that a considerable difference exists between urban and rural rates in all instances. In Madras, it is held that, as the urban rates include our municipalities, the results should be more reliable than in the rural tracts, and I see no reason why this fact should not apply elsewhere. Yet, the urban registration in other provinces is such as to either lead to the belief that it would pay to give more attention to sanitary matters proper than to registration, or that registration itself is shamefully conducted in urban areas, notwithstanding the fact that circumstances should be more favourable. It will be seen that the death-rate is throughout ten years in Bengal, nine in Bombay and three in the Central Provinces, greater in urban areas than the birth-rate. In Bengal in addition, the death-rate was greater than the birth-rate in the rural areas in 1894 and 1892 and, in the Central Provinces, in 1895 and 1896. If the Commission deduce the opinion from Madras statistics that the Madrassese lives "twice as long" as his neighbours, I deduce the opinion that in the provinces quoted as examples, they are dying at such a rate in the urban areas as to be threatened by entire extinction. If such statistics were presented to me by Madras Local authorities, far from regarding them as examples to be followed with advantage elsewhere, I should deem it my duty to suggest to Government that the contrast between urban and rural rates pointed to the probability that either in one area or the other falsification was rampant.

(c) In my paragraph 9 of the report for 1895 now reviewed by the Commission, after stating that increased attention had been paid to registration during the year—as undoubtedly was the case not only in municipalities, which they acknowledge, but also in rural tracts—I pointed to the fact that until the Village Proprietary Bill gives Collectors more power over zamindars, it is impossible to expect very rapid change in this matter. If the Commission would but take a map of this Presidency, and see how much of certain districts is taken up by zamindari tracts, it might form a conclusion as to the justness of this observation. It is for this reason that Ganjam and Malabar give so obviously incorrect results.

2. In regard to paragraph 5 of the Commission's review, I have never advanced the theory that cholera is conveyed solely by water, and therefore do not see the appositeness of its remarks. Having ventured on one occasion to express certain theories in reference to cholera spread, I was told not to theorize but to state facts only. The statements as to Tinnevely and South Arcot *are facts*, and, although from certain remarks made by the Commission from time to time, it would seem to lean towards the views entertained by Surgeon-General Cunningham when in this country, which practically amounted to nothing being explainable, I would state that I am distinctly of opinion that specifically contaminated water affords one of the most common media for spread of the disease, and that the role of protected water is not, as the Commission would hint, *limited* to forming a single factor in improved hygienic condition of a locality.

3. (a) In regard to paragraph 6 in which the results of vaccination are adversely criticised, I would point out that here, as in the case of registration, there is no reason to think Madras has stood still during the last five years. On the opposite, there has been distinct advance, as seen from the following statistics:—

	1892-93.	1893-94.	1894-95.	1895-96.	1896-97.
Number of primary vaccination	1,101,311	1,101,695	1,114,093	1,116,554	1,168,947
Do. of re-vaccinations	57,141	71,648	81,090	76,251	73,122
Do. of infants successfully vaccinated	257,405	240,123	296,016	311,912	328,383

(b) The Commission consider that the successful vaccination of less than half the infants born in the year is poor work. This estimate puts aside the fact that cent per cent. success cannot be looked for in vaccination. But, I venture to suggest, it hardly takes cognizance of facts as found in this Presidency, where vaccination is not compulsory in rural areas. Parents, in the absence of compulsion, do not readily consent to their children being vaccinated till they are at least one year old. It is, of course, very wrong of them; the Vaccination Department has, however, learnt by experience that it is possible to lead a horse to the water, and yet not get him to drink. Still, presuming that a mother be willing to allow of vaccination at six months of age (which is really the time demanded by Municipal Law in this Presidency), it seems to me that, unless the Commission expect the department to vaccinate infants from one day upwards, it must look for somewhat less than half of the total births to be the result of a year's work. Laying aside, however, this obvious question of attainment of a certain age for fitness for vaccination, or at least to secure willingness on the part of the parents, it must be remembered that in rural areas, the vaccinators cannot be supposed to visit each village more than once in six months, unless money be found for greatly strengthening the department. Granted that the two annual visits are conducted at correct intervals, it is impossible for all infants to have attained six months of age.

(c) In paragraph 8, the opportunity is taken of forcing home the evil conduct of vaccination in Madras by pointing to the absurdity of my statement made with the knowledge that heavy epidemics prevail in other parts of India "it remains to be seen during 1896 how far Madras has been capable of resisting the invasion". Now this statement was made by me, in reference to special exertions for urging upon Local authorities the importance of effecting re-vaccination. The only recognition of such efforts, however, by the Commission is the sarcasm that Madras was more a danger to her neighbours than her neighbours to her. I regret I do not see the connection between my statement and this allegation. My reference was to efforts made in 1895, and to a condition of affairs in that year. This the Commission ignore. They refer me to a state of affairs as judged by the "average of the preceding five years." Now, the Commission have repeatedly drawn attention to the misleading character of "averages" (*vide* memorandum of the Army Sanitary Commission on the sanitary reports for 1889). Yet, it does not hesitate to use the figures here—an average of five years in condemnation

G.O., Nos. 1239, 1239A., L. & M., dated 25th May 1892.

G.O., Mis. No. 601 L., dated 27th March 1896.

of an expression of opinion as to the efficacy of a prophylactic measure specially undertaken in the single year referred to. However, taking the figures as given by the Commission, I respectfully deny their correctness *in toto*. The following exhibits the rate of deaths per mille of the population from small-pox in the different provinces. It will be seen that the calculation by the Commission that it was *five times* more prevalent in the Madras Presidency than in Bengal, *six times* more in the Central Provinces and *eight times* more than in Bombay, is not borne out:—

	Madras.		Bengal.		Bombay.		Central Provinces.	
	Actuals.	Rate per mille of population.	Actuals.	Rate per mille of population.	Actuals.	Rate per mille of population.	Actuals.	Rate per mille of population.
1891	41,322	1.4	16,193	0.23	1,491	0.08	748	0.08
1892	43,757	1.3	22,359	0.31	2,770	0.15	995	0.10
1893	27,289	0.8	14,531	0.20	3,567	0.19	1,602	0.17
1894	11,207	0.3	8,404	0.11	3,155	0.17	1,500	0.16
1895	5,111	0.1	13,020	0.18	2,299	0.12	6,644	0.70
Total deaths during five years ending 1895	128,686	..	74,507	..	13,282	..	11,489	..
Average	25,737	0.8	14,901	0.20	2,656	0.14	2,293	0.24

The table goes to prove when taken in conjunction with the improvement in registration statistics (paragraph 1) and in vaccination result (paragraph 2) especially in connection with better verification of the latter, that Madras, although far from having reached a stage of perfection, has effected very considerable advance, and I confess I cannot understand the reasons which prevent the Commission recognizing this fact.

(d) In reference to the preference which Madras gives to animal lymph over humanized lymph, I do not think I could express the reasons more fully than in the following sentence, which I extract from a letter written by me to the Sanitary Commissioner in 1878, in which I advocated its introduction: "Although, I believe, there is very little prejudice amongst the native classes throughout India to vaccination, still I imagine the cause would be much encouraged were they to understand that the lymph used need no longer be transferred from the dirty child of the Parcherry to the household of the fastidious casteman, but the sacred bull itself would henceforth become the direct medium of protection from the insatiate goddess *Mari*. The stock of lymph once imported could be indefinitely increased with little or no expense or trouble, as in the midst of a country possessing so many cattle as the south of India, peculiar facilities for its propagation would be afforded." I am glad to know that shortly after this letter was written, as shown by the foot-note by the Sanitary Commissioner, animal vaccination was introduced by the Inspector of Vaccination and Deputy Sanitary Commissioner of that period under Dr. Cornish's directions thus anticipating by many years the movement of to-day by the Local Government Board in Great Britain. On this subject, in reply to the same objection by the Commission last year, I wrote as follows (*vide* G.O., No. 1997 L., dated 15th October 1897:—

"I consider the recommendation of the Army Sanitary Commission to revert to arm to arm vaccination astounding. Whilst inoculation of leprosy during vaccination may be held in dispute, there can be, no doubt, of the fact that syphilis can be so conveyed by a moderate exhibition of want of discretion and care. The following at least is the deliberate opinion of a Committee that may be safely said to have been formed of medical experts (Bristowe, Humphrey, Hutchinson and Ballard).

"It is conclusively proved that it is possible for syphilis to be communicated on vaccination from a vaccine vesicle on a syphilitic person, notwithstanding that the operation be performed with the utmost care to avoid the admixture with blood.

"The fate of Dr. Cory who *in corpore vili* put his belief that syphilis was not so transmissible cannot be unknown to the Army Sanitary Commission. That syphilis is, in certain tracts of the country, *extremely common*, should of itself form an all sufficient reason for preference of animal lymph. I need hardly also point to the fact that by use of animal lymph the serious objection as to taking lymph from low caste children for those of better caste has been surmounted. But, even if these advantages did not exist, it is manifest that in pursuing vaccination with animal lymph, an enormous advantage is obtainable in being able, at very short notice, to supply large quantities of lymph in the presence of an epidemic * * *. Finally, I would point out that the Army Sanitary Commission's advocacy of arm-to-arm vaccination is in strong contrast with the following opinion after prolonged and tedious investigation for several years by the late Royal Commission on Vaccination (Final report, paragraph 487) and, in consequence of which, the Local Government Board of England contemplates applying for special powers from Parliament".

"We put the use of calf lymph in the forefront, because, as we have said, this would afford an absolute security against the communication of syphilis. Though we believe the risk of such communication to be extremely small where humanized lymph is employed, we cannot but recognize the fact that, however slight the risk, the idea of encountering even such a risk is naturally regarded by a parent with abhorrence. We think, therefore, that parents should not be required to submit their children to vaccination by means of any but calf lymph, but this should not preclude the use of humanized lymph in case they so desire.

"So long as the State, with a view to the public interest, compels the vaccination of children, so long even as it employs public money in promoting and encouraging the practice, we think it is under an obligation to provide that the means of obtaining calf lymph for the purpose of vaccination should be within the reach of all. We have no hesitation, therefore, in recommending that steps should be taken to secure this result."

* * * * *

I need hardly add the well known fact that the Local Government Board of England is now about to follow the good example set by Madras in 1878; and is also about to adopt the principle of establishing a vaccine institute for issue of preserved animal lymph as at least temporarily recognized in 1891 by the Madras Government.

(e) The Commission quote with approval Dr. Bannerman's objection to glycerine lymph as if confirming their objections. But, in reality, his anxiety on this subject was limited to the fact that, in the climate of India, glycerine does not preserve the activity of the lymph so long as lanoline. I think Madras has every reason to be proud of the practice that the Commission think questionable. The defect in the present system of animal vaccination is the absence of a vaccine institute conducted on principles that would ensure bacterial cleanliness and perfection of lymph cultivation that shall leave no shadow of doubt of its being in a typical condition. This end Government is to a certain extent endeavouring to effect by allowing local bodies to obtain their lymph from the Mysore Government Vaccine Institute, where I know cultivation is effected with great care. From perusal of the review of my report for 1894 by the Commission, it seems to me evident that it objected to animal lymph *in toto*. However, in this review, the possibility of fresh animal lymph being of advantage is allowed, although any form of preserved lymph is objected to. Now, in that review the reason advanced against animal lymph was its great cost, and the Madras Government was invited to remember how cheaply vaccination was conducted in places where animal lymph was not used to the exclusion of humanized lymph. Now, speaking from the actual working out of a full estimate for various systems, there cannot be the slightest doubt that the fresh lymph system is both wasteful of funds and of available animals, and, in practice, cannot be conducted efficiently other than under conditions of compulsion. Not only so, but it is impossible to guarantee that the lymph is maintained in a correct state of cultivation. Indeed the conditions are absolutely inimical to the securing of such a result. No one who had practical experience of the great difficulty of maintaining animal lymph in a normal

typical condition of cultivation would, for a moment, suggest the possibility of effecting vaccination on an entirely fresh lymph system, that is, transferring lymph from generation to generation otherwise than in a specially built institute. To inoculate an animal, and then drag it from village to village is not only cruel, but absolutely crude in a scientific sense. Although, personally, I do not put faith in the efforts against "extraneous organisms" lately effected by the Local Government Board of England, the advantage secured in this respect by glycerine and also by lanoline, when used as a preservative, is stated in the result of experiments by Dr. Copeman—

"From experiments which I have carried out in part since this paper was written, it would appear that anhydrous lanoline possesses the property of inhibiting the growth of saprophytic organisms in a similar manner to that of glycerine."

(Vide "Journal of Pathology and Bacteriology", Volume II, No. 4, May 1894, page 425).

" * * * If, however, previous to making a plate cultivation the lymph has been intimately mixed with a certain proportion of either glycerine or anhydrous lanoline and subsequently kept protected from the air for a period of from a few days to a couple of months, it is found that all "extraneous" organisms have now been killed out and no growth occurs in gelatine or agar plates. At the same time the mixture will be found to have gained in efficiency as vaccine rather than the reverse. * * * " (Extract from a paper read by Dr. Copeman before the International Congress of Hygiene, Budapest, September 1894; vide "Public Health", Vol. VII, No. 3, December 1894, page 111.

(f) Where the commission would apparently pin their faith on lymph is its "taking power" or activity in producing vesiculation. This is, however, no test of its conformity to typical lymph and presumably of its protective power. On this point, in 1891-92, I conducted a number of experiments and found that not only did animal lymph degenerate and die out on careless cultivation, but that any vesicular eruption from the calf could be transmitted from generation to generation and would in time approach typical hours of development found in true vaccine and yet be no vaccine at all. The only condition under which I consider the fresh animal lymph system could be used economically and yet with safety as to retention of character of lymph, is that which I have advised the Madras Government to follow, namely, to cultivate lymph at a central institute and send it thence to stations where it might be used for starting fresh lymph *for one generation only*. In this way economy and yet a typical lymph can be secured. In maintaining humanized lymph in European countries, the practitioner practically fulfils the condition of correct cultivation, because he *chooses* lymph for transmission from healthy subjects having typical vesicles. In this Presidency, one of the greatest objections of the people to vaccination is the taking of lymph from the infant. Were there no other circumstances, this should of itself be sufficient reason for practising animal vaccination: firstly, as it removes a direct impediment to its advance and, secondly, because under this particular method of opposition, it is impossible to secure either a choice of subjects or of resulting lymph for the correct maintenance of vaccination.

4. In paragraph 10 of the memorandum, I am taken to task for not allowing that sufficient has been done for the water-supplies of the country. Against my opinion the Commission quote the fact that in no less than six towns water works were either in progress or in course of completion. The perusal of this sentence by the Commission, however, seems to have been hasty, unless it be understood that they are not aware that only large water works schemes, such as they refer to, would be classed as "major schemes." My sentence runs as follows: "Beyond the improvements effected under major works, advance in the all-important matter of improvement of water-supply has been less than could be wished." In my opinion the sentence of water-supply has been less than could be wished." In my opinion the sentence objected to distinctly allows the advantage of the "major schemes" in progress, but states that less has been accomplished in the same direction than might be wished in regard to ordinary water sources of the country. Obviously the reference is to *minor works* that would embrace improvement of existing wells, tanks, &c., that still form the chief source of supply of the country and for which local bodies are solely responsible. I am respectfully of opinion that it was in the interest of sanitary advance desirable I should call attention to the condition of affairs.

5. (a) In reference to paragraph 11 of the review, I may quote the following from my report for 1897:—

'The "arated household sewage filter" mentioned in my report for 1895 continued to work most satisfactorily at Bellary during the year. As it was animadverted upon by the Sanitary Commission, I have not sought to put it further into use. I may, however, state that it continued to discharge the sewage from the large household served in a condition pure in sight and smell; at the top of the filter a thin layer of deposit formed almost devoid of odour. The filter continued to work without a renewal of the material successfully for over 14 months. The principle of filtration of sewage was also carried on at the Pookkaram festival at Bellary and at the Mahamakham festival at Kumbakonam. In the latter town, owing to the absence of any sewerage system, pools of sewage forming suitable breeding grounds for masses of mosquitoes are common in every lane. Grasping the principle of sewage filtration exhibited to them at the Mahamakham festival, under the superintendence of Surgeon-Captain Walker, the council has sent for approval, as a temporary measure, a scheme for sewage filtration at various convenient parts of the town, united with disposal of the crude sewage upon suitable plots under cultivation.'

(b) The commission consider that my deciding upon attempting sewage irrigation denotes that I have faith in the intelligence of the Madras population. I have faith, founded on nearly 25 years' practical experience in believing that, if the utility of anything be demonstrated to them as against being talked about, the Madrasai is not slow to adopt it. He, however, accepts nothing on trust, which, perhaps, proves his intelligence.

(c) Any one who has in the most casual manner followed the question of the treatment of sewage on principles first clearly enunciated by the Massachusetts Board of Health, which have in the hands of various chemists and sanitarians entered vast and useful fields of development, would, I think, agree with me that my effort to place this mode in the hands, not of the ignorant cooly class, but of the mass of educated persons who live in towns not provided with correct sewage systems, was a move in the right direction. However, in deference to the opinion of the Commission, I have abandoned any effort in this direction. The people must be content with cess-pools and surface pools of sewage until, in the next generation, they are provided with complete sewage schemes.

6. From paragraph 12 of the review, it is evident that my suggestion to found colonies of scavengers also does not meet with the approval of the Commission. In the first place, I would remark that what I have in paragraph 74 of my report advised I have, in practice, actually carried out as District Medical and Sanitary Officer. Further, there is no suggestion of mine to bring scavengers from one province to another, although I know this also can be done. The fact is that in this Presidency there are certain localities where there are plenty of men of the class that will undertake scavengers' work, whilst, in others, none can be procured. My suggestion still seems of a practical nature, and I add from my own experience that it is practicable. It is noteworthy that the Commission, whilst attempting to show objection to this suggestion, favour me with none of their own on the point, although they admit the difficulty exists I had endeavoured to meet. I may add that I have carried my belief to which I have alluded as to uneven distribution of the scavenger population to its logical conclusion by encouraging local bodies to apply for scavengers for fairs and festivals and epidemics to contractors. These men arrange for the transport of scavengers by rail.

7. There can be no doubt about the tendency to animadvert by the Commission on the various matters they have brought to light so far, but I cannot form an opinion as to their intention in referring to another suggestion of mine for getting over want of scavengers. On first reading paragraph 12 of the review, I felt inclined to believe that it was thought I intended to deprive Moses of the credit of being inventor of the system I advocated; but, as on referring to my report, I find distinctly make the statement in paragraph 77 that the method is described in Deuteronomy, Chapter XXIII, this interpretation is impossible. I can only presume that after pointing with anything but approval to such comparatively modern methods as cholera being conveyable by water, and animal lymph vaccination being preferred arm-to-arm, and the theory of sewage filtration being put into practical use, the Commission were relieved to find that I knew something of ancient sanitation which really does seem to meet with their approval.

ORDER—No. 1550 L., dated 20th August 1898.

The memorandum of the Army Sanitary Commission received with the first of the letters read above, will be communicated to the officers concerned.

2. With reference to the remarks of the Commission in paragraph 2 regarding the low rates of births and deaths registered in this Presidency as compared with those recorded in other Provinces, its attention will be drawn to the observations of the Sanitary Commissioner thereon in clauses (a) and (b) of paragraph 1 of his memorandum.

3. The objection of the Commission to the use of inter-censal calculations of population was dealt with in paragraph 5 of the review of the Commission's memorandum on the Sanitary Report for 1894. His Excellency in Council sees no reason to change his opinion that the use of such methods is often valuable.

4. The Government accepts the explanation offered by the Sanitary Commissioner in paragraph 3 of his memorandum regarding the small proportion of infants successfully vaccinated during the year, which is commented upon by the Commission in paragraph 6.

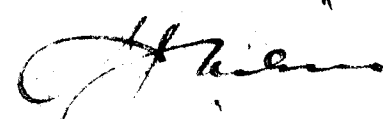
5. The Sanitary Commissioner is requested to explain by foot-notes, in future, all apparent discrepancies, such as those noticed by the Commission in paragraph 6, between the figures entered in the statements appended to the vaccination report and those appearing in the body of the report.

6. The circumstances under which the use of human lymph was prohibited by this Government, regarding which the Commission desires information in paragraph 7, have been fully dealt with in paragraph 9 of G.O., No. 1997 L., dated 15th October 1897, in passing orders on the memorandum of the Commission on the Sanitary Report for 1894.

7. In paragraph 3 (c) of his memorandum, the Sanitary Commissioner has exposed serious errors in the Commission's estimate (paragraph 8) of the comparative mortality from small-pox in Madras and in other Provinces.

8. The following despatch will be addressed to the Right Honourable the Secretary of State for India.

(True Extract.)


for Secretary to Government.

To the Sanitary Commissioner.
" the Sanitary Board.
" the Sanitary Engineer.
" the Surgeon-General.
" all Presidents of District Boards.
" all Chairmen of Municipal Councils.
" all Collectors.
" the President, Municipal Commission, Madras.
" the Public Department.
" the Revenue Department.

ENDORSEMENT—No. 1551 L., dated 20th August 1898.

Copy to the Government of India, Home Department.

H. TREMENHÈRE,
Secretary to Government.

ENCLOSURE.

MEMORANDUM by the Army Sanitary Commission on the Report of the
Sanitary Commissioner of Madras for 1895.

The year was, on the whole, a healthy one. Except that the rainfall was considerably greater than the average for the preceding ten-year period, having been 49.40 against 44.92 inches, the meteorological features of 1895 did not differ much from those ordinarily prevailing. Although the prices of the principal food-grains were somewhat below the average for the preceding two years, they were still above the average for the ten years ending 1892.

2. *Registration* is said to have received increased attention. This may have led to local improvement in the record of *Births* and *Deaths*; but when we find a birth-rate of only 27.0, and a death-rate of only 18.2 per thousand of estimated population recorded for the Presidency as the outcome of this increased attention, we must conclude, either that the conditions of life in Madras differ remarkably from those obtaining in the adjoining provinces, or that the registration of vital statistics in the former is still greatly more backward than in the latter. In the Bombay Presidency the birth-rate for this same year was 35.83, and the death-rate 28.61; in the Central Provinces 33.41 and 35.75; and in Bengal 34.57 and 31.39. The death-rate in Madras is thus so low, that the inhabitants may count on living nearly twice as long as their neighbours in Bengal and the Central Provinces. The Sanitary Commissioner uses the figures of the "estimated" population of the Presidency in making his calculations, instead of the last census figures, on which ratios are calculated in other provinces; and this circumstance somewhat, although to no great extent, affects the results. The "estimated" population numbers may, or may not, more closely approximate to the actual numbers than those obtained by adding the excess of children born over the number of deaths since 1891 to the census figures of that year. It is probable that they are nearer the truth than the last census figures themselves; but however that may be, it is inconvenient for purposes of comparison to find one province adopting one method of calculating ratios of births and deaths, and the next province another method leading to differences in the result.

3. The birth-rate estimated by actuaries for the Presidency is from 42 to 52 per thousand of population, and in municipalities, 33.2—the nearest approach to these rates, is reached. Judged by this result, and the fact that penalties were inflicted in 633 cases for omission to register births and deaths, it may be acknowledged that some effort is being made in municipalities to improve registration.

4. As in the record of births, so in that of deaths, municipalities give the only results which can be regarded as having an approximation to probability. For these, the ratio of deaths per thousand of population was 28.9; in rural towns 18.9; and in villages 19.0. In some of the rural towns, such as those of Salem and Chingleput, the ratios recorded are only 9.0 and 7.7. The ratios for the villages in some of the districts are little better; in those of Ganjám the ratio given is 12.3; and in those of Malabar 14.6. Obviously, it is a waste of time to work out elaborate calculations on data so patently worthless.

5. Of the chief diseases, *Cholera* was credited with 21,172 deaths, or almost exactly half the number caused by it in the preceding year. The disease was most fatal in the two districts of South Arcot and Tinnevely; and the Sanitary Commissioner states that both "have water-supplies liable

to contamination in a very marked degree." This is no doubt true; but as remarked by the Government in their review of the Report:—"the same argument might be applied to other districts." Although it is universally acknowledged that one of the most effectual protections against cholera is the provision of a pure water-supply, experience proves that it would be unsafe to trust to this alone, if other sanitary precautions are neglected. As the Health Officer of Bombay puts it:—"to believe, as some do believe, that, with a plentiful and pure supply of water, there will be no more an epidemic of cholera is, in my opinion, to believe in a delusion."

6. *Small-pox and vaccination.*—The mortality from small-pox during the year was greatly less than during any of the preceding three years, and equalled a ratio per thousand of estimated population of only 0.1, as compared with 0.9, the average for the previous five years. Of the 5,111 deaths from this disease, 1,111 occurred amongst children under one year of age. Turning to Statement No. I in the Appendix to the Report on Vaccination for 1895-96, we find that, of the 1,007,166 cases of successful primary vaccination, only 311,230 were amongst children during 1895, under one year of age. The recorded number of children born alive during 1895, exclusive of Europeans and Eurasians, as shown in Statement I, Appendix D, of the Annual Sanitary Report, was 976,572. Of these, 162.3 per thousand of births are stated to have died before reaching their first year of age, leaving available for vaccination upwards of 800,000 children. As only 311,230, or less than half of these, were successfully vaccinated, it is obvious that infant vaccination in Madras is still very incomplete; and that it would be a delusion to found expectations of immunity from small-pox mortality in the future on a record of a low death-rate from the disease in the year under report. The large proportion of infants annually failing to be vaccinated in this Presidency is a danger, the gravity of which will force itself into notice when small-pox next appears, as it assuredly will appear, in epidemic form. It is not a little confusing, when extracting figures from the authorized forms appended to the Vaccination Report, to find that these do not always agree with the figures in the body of the Report. For example, in paragraph 5 of the Vaccination Report, a table is given, showing the "total vaccination work done by all agencies throughout the Madras Presidency" in 1895-96 as 1,120,625 primary vaccinations and 77,546 re-vaccinations. Statement No. I gives, of the former, the "Grand Total" to be 1,103,099, and of the latter 75,871. No doubt these figures can be reconciled; but it would have saved trouble had the discrepancy been explained. Again, a reference to the table in page 5 of the body of the Report gives the percentage of success in primary vaccination to be 93.0, and in re-vaccination 80.3; whilst in Statement No. I the figures are 87.0 for the former and 80.5 for the latter. If the ratios from the authorized statement are accepted, they show that, as the strictness of inspection of results increases, the percentage of successful cases diminishes. It is significant that the Inspector of Vaccination himself, and District Sanitary Officers, found only 79.6 of the cases examined by them to be successful, as compared with 91.8 and 92.5 reported by the Native Deputy Inspectors and Vaccinators. Dr. Bannerman writes:—"In 1893-94 the important step was begun of undertaking the systematic inspection of the whole range of each Deputy Inspector, with the result of revealing an amount of corruption beyond even what was expected to exist." He believes that, in consequence of the measures being adopted, "the department will gradually be purged of idlers and cheats, and that its statistics will in time afford some indication of the actual condition of the population in regard to its state of protection against small-pox."

7. Dr. Bannerman confirms the opinion expressed by us in our last Memorandum, regarding the use of vaccine lymph made into a paste with glycerine. Calf-to-arm and arm-to-arm vaccination always have

given, and probably always will give the best results. Although there are circumstances under which preserved lymph must necessarily be used, these are exceptional and with suitable arrangements might almost disappear. The practice of arm-to-arm vaccination, or the use of humanized lymph at all, is condemned by the Madras Government. In paragraph 8 of the Government review we find:—"It appears from paragraph 23 of the Report that humanized lymph has, notwithstanding the remarks made in paragraph 8 of Government Order, Nos. 1388, 1389 L., dated 8th August 1895, again been used," and, further on, "The Government trusts that effective steps will be taken by the Inspector to put a complete end to this objectionable state of things." We would like to know the grounds upon which the use of humanized vaccine lymph is so uncompromisingly condemned in Madras, and whether these grounds rest on conditions peculiar to that Presidency. In the adjoining Presidency of Bombay, as well as in other provinces of India, the use of humanized lymph is still the rule and the use of animal lymph the exception.

8. In paragraph 107 of his Report, the Sanitary Commissioner writes:—"With the prospect of special increase of small-pox following introduction from other Presidencies, it remains to be seen during 1896 how far Madras has been capable of resisting the invasion." The reader might gather from this, that risk to Madras lay in the greater prevalence of small-pox in the provinces surrounding it. But, as a matter of fact, the risk is all the other way. Taking the average of the previous five years, small-pox, as estimated by the deaths it caused, was five times more prevalent in the Madras Presidency than in Bengal, six times more than in the Central Provinces, and eight times more than in Bombay. If, therefore we adopt the practical test of immunity from small-pox as the measure of the efficiency of vaccination, it follows that the position occupied by Madras in the comparison with its neighbours is a somewhat humiliating one.

9. *Fevers* are credited with having caused 277,337 deaths, or 6,881 more than during the preceding year. In the existing state of death registration it is not easy to say whether this increase was due to greater prevalence of fever or the result of increased attention to registration.

10. *Sanitary works.*—The Sanitary Commissioner writes:—"Beyond the improvements effected under major works, advance in the all-important matter of improvement of water-supply has been less than could be wished." We gather, however, from the Annual Report of the Sanitary Engineer, that works were either in progress or were completed during the year, for the supply with water of six important towns, with populations ranging from 20,000 to 90,000 inhabitants. Besides these works, a number of other schemes for water-supply or drainage were under investigation.

11. Dr. King has hopes of being able to introduce into native households a system of sewage filtration, and believes that this would effect much good where no drains exist. He has devised an apparatus made up of a kerosine tin and a funnel which he thinks might answer the purpose of a domestic sewage filter. A modification of this, he says, allows "of forced aeration by a hand bellows and by the intermittent action of a syphon." The natives of Madras must be very much more intelligent and more appreciative of the value of sanitation than the natives of India generally get credit for, otherwise any such arrangement as that proposed would, from a combination of ignorance, apathy, and neglect, probably soon bring about an increase of the nuisance it was intended to abate. An account of Dr. King's scheme will be found in paragraphs 52 and 53 of his Report.

12. A want more pressing than that of domestic sewage filters is an adequate supply of sweepers to remove night-soil. "Indeed, in some districts, the prime difficulty as to night-soil disposal is the obtaining of this class of labour." Dr. King thinks that the difficulty can readily be overcome by local authorities importing sweepers from more favoured

localities, and guaranteeing them certain privileges as to huts and lands. This may be the case; but the occurrence of similar difficulties in other provinces would suggest that sweepers of the kind required may not be so readily induced to migrate into the Madras Presidency as Dr. King anticipates. But if scavengers cannot be got, the Sanitary Commissioner describes, in paragraph 77 of his Report, a method of conservancy which, if adopted at festivals and fairs, would render their services unnecessary. He had an opportunity of seeing this method worked on a large scale at the Tiruvannāmalai festival of 1895, and says:—"It is certainly the most expeditious, cleanly, economical, and sanitarily sound method yet used, and is much appreciated by natives." Yet, it is no invention of modern sanitary science, but in all essential details identical with that described in verses 12 and 13 of Chapter XXIII of Deuteronomy.

13. The Report has been greatly reduced in bulk as compared with its predecessor; and if the Sanitary Engineer's Report, which is combined in the same volume with that of the Sanitary Commissioner, is in future curtailed in accordance with the instructions of Government, a still further reduction of its bulk will follow next year.

29th May 1897.

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