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[Despatch Abstract.]

REPORT OF THE SANITARY COMMISSIONER WITH
THE GOVERNMENT OF INDIA FOR 1892.

Recording Proceedings, Military Department, communicating
memorandum by the Army Sanitary Commission on the----

91

BACK PAPERS.

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

FURTHER PAPERS.

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

Public Department
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To
THE PRINCIPAL MEDICAL OFFICER,
MADRAS ARMY,
&c., &c., &c.

Dated December, 18th.

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Sanitary—Reports and Returns.

Report of the Sanitary Commissioner with the
Government of India for 1892.—Memorandum
by the Army Sanitary Commission on the —, for-
warded by the Government of India, for remarks.

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MILITARY DEPARTMENT, 18TH DECEMBER 1894, No. 7776.

GOVERNMENT OF MADRAS.

MILITARY DEPARTMENT.

Sanitary—Reports and Returns.

Read the following paper :—

No. 153. *Despatch from the Right Honorable the Secretary of State for India, to His Excellency the Right Honorable the Governor-General of India in Council ; dated India Office, London, 16th August 1894, No. 2 (Statistics.)*

I forward, for the information of your Excellency's Government, 30 copies of a memorandum by the Army Sanitary Commission on the Report of your Sanitary Commissioner for 1892.

MEMORANDUM by the Army Sanitary Commission on the Report of the Sanitary Commissioner with the Government of India for 1892 ; dated 19th July 1894.

1. *Sickness and mortality in the European Army of India.*—The statistics of all sections of the community—the army, both European and Native, the prisoners, and the general population—are so fully discussed in this report that we shall, in order to avoid repetition, deal with figures as little as possible, and endeavour to confine what remarks we have to make, on the one hand, to the great facts of the year as compared with those of other years, and on the other to the conditions, both general and local, which are associated with them. To begin with the European troops which garrison India, we learn that, as regards both the sick and death rates, their sanitary history, as a whole, was by no means so favorable as that of former periods. For the purposes of comparison the averages of three different ten years are given, viz., from 1870—79, from 1881—90, and from 1882—91. In order to make the periods correspond with the times of the censuses, the year 1880 has been left out. It will be observed, also, that the two last decennial groups overlap one another. According to the foot-note to the opening abstract in para. 2, the reason for this would seem to be that the statistics from 1881—90 include the men in Afghanistan during 1881, and thereby include an element which might render the comparison faulty. As a matter of fact, the results of the two periods, 1881—90 and 1882—91, are almost identical, but as the years included are not the same in both, it may still be true that the statistics of the army in Afghanistan did introduce a very disturbing element which has been neutralized by the events of other years. We doubt very much the advantage to be derived from the construction of these averages over a series of years, except in a very simple form. The most valuable facts are apt to be lost sight of in them altogether. A period of ten years may, and judging by past experience certainly will, include several that were most unhealthy and others that were distinguished by an unusually small amount of sickness and mortality, but the average of the whole period will not tell us, or, in fact, give the smallest clue to the nature of the items of which the averages are composed. We should much prefer to have a few simple statistics of each individual year to the most elaborate statements regarding ten-year periods taken as a whole. But, looking at the figures as they are given, we learn that in 1892 the European troops throughout India suffered from sickness more than the average. The admission-rate (1,517) and constant sick-rate (84) were considerably higher than in 1891 or than the average of the ten-year periods with which they are compared, and the death-rate (17.07) was also the highest, excepting that of the ten years 1870—79, when it averaged 19.34. The invaliding rate (24) was low. Considering the very unhealthy character of the year and the great sickness and mortality which prevailed over most part of India, the results in the European army are more favourable than were to be expected.

2. *Comparison of Presidencies.*—In the European army of Bengal during 1892 the statistics of sickness and deaths closely resemble those already given for the European army of

India as a whole. Sickness was very prevalent. Both admissions into hospital (1,582 per 1,000) and the daily number constantly sick (87) were in a high ratio, and the mortality (19·81) was greater than that of former terms, with the exception of the average of the ten years 1870—79. In Madras the death-rate was much lower (12·32), and the admission-rate (1,236) was also lower than in the previous year, but the constant sick-rate (83) was higher. In the Bombay Presidency the admission-rate (1,593) was slightly in excess of that for Bengal, but the constant sick-rate (74) was considerably less than that of either of the other Presidencies, and the death-rate (12·90) was but slightly in excess of that of Madras. If, therefore, we compare the three Presidencies as respects admissions into hospital, they stand thus: Bombay, 1,593, Bengal, 1,582, and Madras, 1,236; as regards the constantly sick, Bengal, 87, Madras, 83, and Bombay, 74; and as regards mortality, Bengal, 19·81, Bombay, 12·90, and Madras 12·32.

3. *Statistics of the ten-year periods 1860—69 and 1870—79.*—In illustration of what we have said of the value of the statistics of single years as compared with the averages deduced from a series of years, it is of interest to note the annual items of which the averages for the ten-year periods quoted in this Report are composed. In the army of India, as a whole, the first such period available is for the ten years 1870—79, and for this period the average admission-rate is 1,474·8, but taking the individual years, as shown in Dr. Bryden's volume for that time, we find that the annual rate varied from 1,257·3 to 1,871·2. In the same way the constant sick-rate, which averaged 60 for the ten years, varied between 55 and 75 per 1,000, and the mortality, which averaged 19·34, fluctuated between 12·71 and 34·55. The mortality of one of the years was nearly three times that of another. The statistics of the earlier decade 1860—69 are available for the Bengal Presidency only, and here we have further illustrations of the imperfect, and indeed altogether erroneous, impressions which averages are apt to convey. For this period the constant sick-rate for European troops in Bengal averaged 67, but the range between one year and another of the series was from 52 to 83. The average admission-rate (1,754) fluctuated between 1,412 and 2,051, and the death-rate, which averaged 29·98, is composed of annual ratios ranging between 20·11 and 45·93. Similar examples might be given from the experience of the other two Presidencies, but enough has been said to show how important it is, for the right understanding of Indian health statistics, that the facts regarding individual years should be kept clear and distinct.

4. *Comparison of groups.*—A sketch-map has been added to this report, in which the boundaries of the several groups are shown, and this greatly facilitates the proper understanding of the statistics regarding them. In Table XVIII., full particulars appear regarding each group—the constant sick in every month, the ratio of admissions from all the chief diseases, and the death-rates also distributed according to causes. The Gangetic plain afforded the highest sick-rate (104), the Indus Valley and North-West Rajputana the largest admission-rate (2,008), and this group contributed also by far the highest mortality (31·81), the next highest being 22·01 in the Upper Sub-Himalayan group, the hill convalescent depôts, which compose the last group, being left out of the comparison for obvious reasons. In Decennial Table XVIII., similar information is given regarding each group for the antecedent ten years 1882—91, so that the results of 1892 may be compared with those of the preceding decade. Of the general population during 1892 we have little to add to the remarks made in our memoranda on the Provincial Sanitary reports, but we may notice here two points of interest. The first is that the distribution of the sickness and mortality among the European troops in 1892 bears testimony to the general accuracy of the facts recorded in the death registration during that year. The people, as a rule, suffered most in those parts where the exact statistics show that sickness was most prevalent. The other point is that, when the mortality among the people was in nearly all the provinces greatly in excess of that of ordinary years, the loss to the European army was comparatively small,—a fact which speaks well for the sanitary care which is taken of them.

5. *Comparison of stations.*—Statement No. XIX. is the first of the valuable series annually devoted to the statistics of stations. It deals separately with 117 distinct places in addition to troops marching, and is followed by others numbered XX. to XXVIII. which show the extent and nature of the sickness in each place and the mortality which it occasioned. In statement No. XXXII. there is a still more complete return of the causes of admissions into hospital and of deaths in and out of hospital in 145 separate places in the three Presidencies, every detachment, however small, being shown separately. Omitting very small bodies of men and convalescent depôts the maximum daily sick-rate was at Myingyan (154), and the lowest (27) at Port Blair. The highest admission-rate (2,524) was at Delhi, and the lowest (719) at Port Blair. The greatest mortality was 69·65 at Myingyan; at several places there were no deaths. In quoting these figures we have taken no account of places where the garrison was under 100 in strength, and which were occupied for only a small portion of the year. We shall revert again to the statistics of stations in connection with the account given of their sanitary or insanitary condition, but before coming to this important part of the report we must first glance at the general history of some of the more prominent diseases.

6. *History of more prominent diseases—Influenza.*—The following tabular statement continues the history of the influenza epidemic among troops and prisoners during 1892:—

Influenza among Troops and Prisoners.

	Strength.	Monthly Number of Admissions into Hospital.												Ratio per 1,000.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
<i>European Troops.</i>														
Bengal	42,198	49	26	255	208	47	2	28	8	...	...	...	...	14·8
Madras	13,227	...	16	98	33	10	2	4	...	...	...	...	...	12·3
Bombay	12,712	64	11	1	...	...	...	...	...	...	...	...	...	6·0
<i>Native Troops.</i>														
Bengal	65,594	388	203	374	123	16	3	...	...	...	...	...	...	17·0
Madras	25,963	1	8	67	10	...	...	...	7	...	...	...	...	3·6
Bombay	23,355	73	36	7	...	1	...	5	...	...	1	4	18	6·2
<i>Prisoners.</i>														
Bengal	103,159	539	806	2,947	1,059	223	89	60	65	38	12	7	6	56·7
Madras														
Bombay														

Comparing the figures with those in the similar statements contained in our memoranda on the reports of the Sanitary Commissioner with the Government of India for 1890 and 1891, it appears that, while not so prevalent in 1892, as it was in 1890, influenza was more so than it was in 1891, and this remark applies not only to the figures as a whole, but also to those concerning each section of the communities to which reference is made, with the sole exception of the Native troops in the Bombay Presidency, who suffered less in 1892 than in 1891. In each of the years there is marked evidence of the differing intensity of the epidemic. In 1890 the minimum admission-rate was 19·4 among the European troops in the Bombay Presidency, and the maximum 136·6 among the prisoners in the Madras Presidency. In 1891 the range was between 1 among Madras Native troops, and 19·0 among prisoners throughout India, while in 1892 the minimum, as above shown, is 3·6 among Madras Native troops, and the maximum 56·7 among prisoners. The epidemic affected a very large area. In December 1891, after considerable abatement, it showed decided signs of revival, it continued during the early months of 1892 with some severity, and then in August it almost disappeared. Among the European soldiers in the three Presidencies not a single case was recorded after that month. Among native troops serving in India the only exception to this same rule were 4 cases at Quetta in November and 17 in December,—an exception which is not to be accounted for on the supposition that the disease had only reached this distant part of the country thus late in the year, because a few cases had already been recorded there in the months of February, March, May and July.

7. *Cholera.*—It is gratifying to find that in a year when cholera was so widely prevalent over India the mortality which this disease occasioned among the European troops was only 2·42 per 1,000 in Bengal, 53 in Madras, and 94 in Bombay. The 167 cases which occurred among European troops in all three Presidencies were distributed over 33 different stations, the largest number in any one of them having been 27 at Ferozepore. Among Native troops throughout India the cholera deaths equalled 2·14 per 1,000, and the 424 admissions from this cause took place in 73 different cantonments, or bodies of soldiers on the march, the large number of 60 having occurred at Almorah and its out-posts. In the jails the disease was more prevalent. Sixty-eight of them were attacked and in several of these the mortality was serious, notably in Coimbatore, where of 127 cases 62 were fatal. We have already in our memoranda on the Provincial Sanitary reports for 1892 noted the principal facts regarding the incidence of cholera among the general population. In the report now under review the statistics of cholera in all the provinces have been collated, and the general result is that never has any cholera epidemic in India been known to be so destructive to human life. The total deaths aggregated 762,695, the largest number that has ever been recorded. An interesting question arises in connection with this severe epidemic, which, it will be remembered, was not limited to 1892, but had extended also over 1891, when the registered cholera mortality, already considerably less than that which followed in 1892, was still the heaviest that had occurred since 1877. The question is this, does such increased prevalence of cholera in India mean increased danger of the disease attacking other countries? In the recent International Sanitary Conference which assembled at Paris, we observe that it was sought to place such a

construction on the figures of recent cholera mortality in India, but it was based on purely theoretical grounds. No facts were adduced to show that extraordinary prevalence of cholera in India had been followed by the extension of the epidemic to European or other countries. The matter is deserving of further investigation, both as regards the past and the future, for it is one of much practical import. So far as we read the history of cholera, we believe that there are good grounds for concluding that prevalence of cholera within a given area and epidemic movement beyond that area are two entirely different things, and that the one is not to be regarded as the cause of the other, because they are by no means commonly associated. Much interesting information regarding cholera is contained in this report, but there are two points in regard to which we should like to have the facts in future more fully detailed. In para. 157 we read that among European troops in nine of the 38 outbreaks "cholera is said to have been imported," and in other seven "this was thought to have been the case." A similar remark follows regarding Native troops and prisoners. A mere counting of opinions on such a matter is of little value. The Sanitary Commissioner might with advantage examine the evidence in each case, and show how far the opinion is substantiated by the facts. Another matter of great practical importance is the effect of moving into camp. It is recorded that these were "generally satisfactory," but it would be very useful to know what appeared to be the reasons of failure where the move was not successful. Had it been delayed till too late, or was there some other cause—it may be some undiscovered cause,—why the disease was not arrested? A full account of what occurred in such outbreaks, for example, as those two already referred to among the Goorkhas at Almora, and in the Coimbatore jail, would help to furnish an answer to such questions. The statement that "48 parties were encamped from 19 jails, and 74 seizures we recorded subsequent to renewal," leads to the inference that removal into camp was not made so promptly in the case of prisoners as it ought to have been, for 897 cases of cholera occurred among them during the year. Of these all but 74 would seem to have occurred in the jails. There is no preventive against cholera which has proved so valuable as removal from the affected locality, but it requires careful watching to ensure its being carried out with the promptness which is essential to success.

8. *Malarial fever.*—In a year when, as evidenced by the mortuary statistics of the general population, fevers of a very severe type were unusually prevalent and fatal over great part of India, it is not to be wondered at that among the troops both admissions and deaths under this head show a decided increase over those of ordinary years. Under all three forms, of intermittent, remittent, and simple continued, this result is observed for the European army as a whole; but if the statistics of the Presidencies are separated, it will be seen that the fever prevalence was confined to Bengal and Bombay. Madras escaped, and in the south the year was remarkable for the small proportion of cases. The group which includes this part of the country returns only 131.0 admissions per 1,000, whereas in the Indus Valley group they equalled 1,097.6 per 1,000. There are discrepancies in the fever ratios between those of Table XVIII., and those of Table XXVI., which we are unable to reconcile. The fever ratios above quoted are the aggregate of the figures of Table XVIII., showing the admissions per 1,000 from intermittent, remittent, and simple continued fever, but in Table XXVI., the malarial fever cases appear as only 71.0 per 1,000 in the one group and 987.4 in the other. Similar differences appear in other groups. If we look at the details of Table XXVI., we see further evidence of the inequality of the fever distribution, and find it even in different cantonments within the same group. In the Upper Sub-Himalayan group the range is between 84 at Bareilly and 1,527 at Amritsar. There was also an increase of malarial fevers among Native troops during 1892. If we take the returns for the whole of India there is no great difference in their prevalence among them and among European troops, the admissions having equalled 550 per 1,000 in the one case and 504 in the other. A comparison of groups and stations shows the same marked extremes. In the station of Wuntho in Burma among a small body of men malarial fevers give the maximum admission-rate of 3,652 per 1,000, but even this high ratio is exceeded by the return of 3,781 in the Central jail at Lahore. In the jails of the Northern Punjab generally, and of the Upper Indus Valley, these fevers were extraordinarily prevalent; but for the prisoners throughout India as a whole the admission-rate, 526 per 1,000, did not differ much from that of the troops.

9. *Enteric fever.*—Enteric fever in the report is shown separately from malarial fevers, and this has been the practice for many years. It is, no doubt, desirable that this should be done, as this fever is characterized by a specific lesion, but it is still open to doubt whether the division between the two is strictly logical. The year under review, as we have already remarked, was one of remarkable fever prevalence over great part of India. So was 1891, and in both years the mortality from enteric fever among the European soldiers was very heavy. The usual experience as regards the greater liability of young and unacclimatised soldiers to this form of disease is again repeated. As to the cause to which these unsatisfactory results are due, no new light has been thrown. The Sanitary Commissioner observes: "The practical conclusion of the whole matter is an old one, that to protect the men of the army of India from enteric fever it is necessary to have soldiers clean and well-cared for in every respect, internally as well as externally, placed in clean surroundings, and to extend the area of cleanliness far

beyond cantonment limits,—in fact, ultimately throughout the length and breadth of India. It is a good thing to secure the cleanliness of the immediate environment of the troops, but they will never be safe as long as the Native population and its towns and villages are left uncleansed to act as a reservoir of dirt and disease." Such reforms are doubtless most desirable, but in endeavouring to ascertain the causes of any special disease we must not ignore the facts, and it is a very singular fact, which as yet admits of no explanation, that the Native population who live in the midst of this "reservoir of dirt and disease" do not suffer to any appreciable degree from this enteric fever which proves so fatal to British soldiers, especially during their early service in India. Of these we have decided evidence in para. 80, from the 20 years' records of the *post-mortem* examinations of fever patients in the Calcutta General Hospital, and from the testimony of Dr. Crombie, who, as the result of his long experience, "was not aware of ever having seen a case of enteric fever in a native of Bengal, though he had seen cases among Goorkhas and Burmans." The returns of both Native troops and prisoners fully bear out this remark. The statistics of 1892 show the death from enteric fever of 15 officers and 376 European soldiers. The reports of the medical officers might enter more fully into the antecedent circumstances. More might, we believe, be accomplished by a careful examination of the history of each case previous to attack, showing how far the disease may be accounted for by unusual exposure or fatigue, by indiscretion in diet, or any other special cause. This is already done in respect of cholera, and a similar summary of the evidence annually gathered regarding all the cases of enteric fever would be a valuable addition to the Sanitary Commissioner's report.

10. *Veneral diseases.*—Next to malarial fevers, venereal diseases continued to be the main cause of inefficiency in the European army as a whole. In Bengal, and in Bombay also, this was the case, but in Madras they occupy the first place, and account for 415 cases per 1,000, the proportion contributed by malarial fevers being only 239. For the last five years the general venereal ratios for the European army of India stand thus per 1,000 of strength:—

1888	...	...	...	...	...	...	...	...	...	370.6
1889	...	...	...	...	...	...	...	...	...	481.5
1890	...	...	...	...	...	...	...	...	...	503.5
1891	...	...	...	...	...	...	...	...	...	400.7
1892	...	...	...	...	...	...	...	...	...	409.9

The ratio for 1892 shows an increase of nine cases per 1,000 over 1891, but the rate for 1891, it will be observed, was nearly 100 per 1,000 less than it was in 1890. Still, even with this diminution as compared with 1890, it admits of no question that in 1892 venereal diseases prevailed among European soldiers in India to such an extent as to constitute a most serious cause of inefficiency. In a separate memorandum which we submitted in December 1893, we discussed this question at some length, and gave the reasons why we arrived at the conclusion that the evil had been very slightly mitigated in India under the lock hospital system, and that the re-introduction of this system on sanitary grounds could not be recommended. We need not pursue the subject further now, but it may be useful to reproduce here a statement which was appended to that memorandum, showing the statistics of venereal disease among the men serving in the United Kingdom for the six years during which the Contagious Diseases Acts were more or less in force, and the next six years when they had ceased to be in operation, and from which it will be seen that the ratio of admissions per 1,000 has decreased since the Acts were abolished:—

TABLE showing the admission and constantly sick rates for venereal affections in the United Kingdom during the 12 years 1881—92.

Year.	Ratio per 1,000.		Remarks.
	Admitted.	Constantly sick.	
1881	245.5	16.67	Contagious Diseases Acts in force.
1882	246.0	16.86	
1883	260.0	18.54	
1884	270.7	20.14	Contagious Diseases Acts partially repealed in May.
1885	275.4	19.34	
1886	267.1	19.29	
1887	252.9	19.10	Contagious Diseases Acts repealed in March.
1888	224.5	18.19	
1889	212.1	16.96	
1890	212.4	17.07	
1891	197.4	15.34	
1892	201.2	16.46	

These figures suffice to show how very little influence the Acts could have had in diminishing venereal disease, under conditions more favorable to their operation than those which exist in India.

11. *Local insanitary conditions.*—There are many other points of interest in connection with the health of the European soldier in India on which we might dwell, but we shall confine ourselves to a consideration of the causes of disease so far as they are set forth in this report. Of general causes, such as climate and the very unhealthy character of the year, we need not speak, as these are matters beyond control; but we may again note in passing, as a matter for congratulation, that in both 1891 and 1892, when sickness was so generally prevalent and severe, the mortality among the European troops was not greater. The ideal which the Royal Commission on the Sanitary state of the Army in India set before them was that, with an improved state of things, the death-rate among British soldiers in India might be reduced to 20 per 1,000, but, even in these two most unhealthy years which we have mentioned, the mortality was only 15·89 in the one and 17·07 in the other. There still remain many local causes of disease, and the great aim and object of the Sanitary Department is to endeavour to discover what these are, and, if possible, to apply a remedy. It was with this great and practical end in view that the annual Cantonment and Sanitary reports were instituted, and we turn to the abstract of these reports, commenced on page 182, for valuable information on this subject. We find, however, that these reports include only those cantonments which are in the Bengal Presidency. It is very desirable that those in the other two Presidencies should also be included, and that in every instance where sickness was prevalent, the local cause, if discovered, should be pointed out, and that, if not discovered, a remark to that effect should be made. In not a few of the reports mention is made of prevailing sickness, but nothing is said of insanitary conditions. We referred to these defects in our memorandum on the Report of the Sanitary Commissioners with the Government of India for 1891, but the subject is of so much importance that we have thought it right to refer to them again here.

12. *Sickness and mortality in the Native Army.*—In our remarks on European troops we have already referred to certain points connected with the health of the Native army. The general results of the year were that, owing to the prevalence of influenza and malarial fevers, there was an increase in the sick rates, but that the mortality was less than in the year previous. According to Presidencies, sickness was greatest in Bengal, 1,234 cases per 1,000; then comes Bombay with 1,130; and Madras with only 868. As regards mortality the order is different. Here, including deaths among men on leave, Bombay returns only 12·48 per 1,000, Bengal 19·70, and Madras 26·00,—a result due to Burma, the Native garrison of which is largely composed of Madras troops. In many of these Burman stations sickness was extremely prevalent. Among the small garrison of Wuntho the admissions into hospital attained the very high ratio of 4,575 per 1,000, and in 10 other stations of Burma they exceeded 2,007; but these unfavorable returns are more than neutralized, as regards admissions, by the small proportion of sickness among Native soldiers in other Madras stations. In nearly all the Burman stations the death-rate was heavy. Omitting very small bodies of men, there are eight stations in which the rate exceeded 30 per 1,000; among these the range is from 33 to 94 per 1,000. The summary of the sanitary sheets of Native corps, unlike the Cantonment Sanitary reports, includes all the three Presidencies, and notes every detachment separately. We thus have the means provided for comparing the extent of sickness and mortality in each locality with the condition of the place itself. As we have remarked in former memoranda, the information on this last point might be more full, and we still hope that in future reports endeavour may be made to make this practical part of the Annual Report as full as possible. Among the insanitary conditions which have been noted, one of the most common was overcrowding. As a rule this was only slight and temporary, but in other cases it was more serious and long continued. At Wuntho, for example, where, as we have already seen, sickness was at its height, there was "continuous overcrowding," and in other places it existed for months. Among other causes adduced to account for disease, we observe the following; insufficient clothing and diet while on field service, privations and hardships of former campaigns in unhealthy parts, damp and malaria, imperfect drainage, heavy duties, impure water, food of inferior quality, exposure to wet, defective conservancy, want of personal cleanliness, errors in diet, climatic conditions, defective ventilation, rank cultivation and irrigation in the immediate neighbourhood. Of these some are beyond control, but most of them are capable of being dealt with in such a way as to prevent their becoming causes of sickness. Overcrowding in particular is an evil which is attended with special danger.

13. *Sickness and mortality among prisoners.*—As might have been anticipated from the generally unhealthy character of the year, the statistics of both sickness and mortality among the prisoners throughout India during 1892 were not favorable. As so commonly happens when provisions are dear, there was a considerable increase in the jail population in several of the provinces, and more especially in Madras. It is not surprising, therefore, to find that the evil of overcrowding to which we have drawn attention in former years existed in very many of the jails during 1892. As usual, malarial fevers were the chief form of sickness, followed at a long interval by dysentery, diarrhoea, and respiratory diseases; the main causes of mortality being first dysentery, then respiratory diseases, next diarrhoea, and after that cholera. In table XV., an interesting comparison is made of the statistics of sickness and mortality in the different provinces, and in subsequent tables similar information is given regarding individual jails. The Sanitary Commissioner has already drawn special attention to those in each province

in which the death-rate was high, and we shall take a few of the figures he has extracted from the general tables and consider them in connection with the information contained in the sanitary sheets summarized at page 107. Of all the administrative areas, the Andaman islands presents perhaps the most unsatisfactory results as compared with former years, for in spite of their continued exemption from cholera which is so remarkable, the death-rate in 1892 rose to 50·78, the average of two former periods having both been under 30 per 1,000. The Andaman convict settlement is not included in the summary of sanitary sheets, and we would suggest that this omission should be rectified in future reports. In Burma there were seven jails in which the mortality varied between 48 and 102 per 1,000. In them, the insanitary conditions noted are various, such as unsuitable clothing, defective drainage, "climatic causes," defective ventilation, bad water, and some overcrowding. The Gauhati jail in Assam is selected for special notice on account of the very high death-rate of 133·33 per 1,000, but the sanitary sheet does not record the causes of this very fully. It says: "Drainage defective during heavy rains; water-supply unsatisfactory; the jail is between a Native bazaar and a filthy tank; dysentery due to malaria and exposure." In the North-West Provinces and Oudh, 22 jails are noted as having returned a death-rate above the average of the province as a whole, the rate in each varying between 30 and 75 per 1,000. In 13 of these there was more or less overcrowding. At Ghazipur the sickness and mortality are ascribed chiefly to "admission into jail of prisoners in a half-starved and broken-down condition of health consequent on the failure of crops in the preceding year." The same remark is made concerning Basti and Gonda, and although nothing is said of this cause of unfavorable results in the other jails on this list during 1892, even where, as in the jail at Aligarh, the admissions (1,846) and the mortality (60·61) were both very high, there can be no doubt that the dearth of provisions and the privations which the prisoners had in consequence suffered before incarceration must have exercised a very pre-judicial influence on the jail statistics during the year. In the Punjab, 15 jails were distinguished by excessive mortality and in many of them sickness was remarkably prevalent. We have already noticed the extraordinary admission-rate of 4,547 in the Lahore Central Jail. Although none of the others attained to this maximum, sickness was very prevalent in all of them, and the death-rate varied from 30 to 75 per 1,000. In several overcrowding is recorded as one of the insanitary conditions present, but, as a rule, the sickness is referred not to any local defects but to general causes operating over the whole district. At Shikarpur in the Bombay Presidency, where with only 732 admissions per 1,000 the deaths equalled 121·60 per 1,000, it is said there was "overcrowding throughout the year," but it is added that the "ventilation was excessive and warm clothing insufficient." We find, on reference to the tables of individual jails, that more than half of the deaths among the prisoners at Shikarpur were due to pneumonia. It is usual to ascribe such diseases to chill or cold, or want of sufficient clothing, but there is good reason to believe that the pneumonia which is so frequently observed among Indian prisoners, and which proves so fatal, is not due to such causes but to impure air acting on constitutions already debilitated by malarial fever. On this point we fully agree with the remarks made in his last report by Surgeon-Major Bate, Inspector-General of Prisons in the Punjab. We have said enough to show how important it is that in the case of each individual jail, the extent of sickness and mortality should be studied in immediate connection with its local conditions, and how much more complete information is desirable under this last head. Of the gaols in the other provinces it will suffice to note that more or less overcrowding was a common defect in Bengal proper, and also in Madras.

14. *Further researches on cholera.*—A very interesting paper which has been written by Brigade-Surgeon-Lieutenant-Colonel D. D. Cunningham, Special Assistant to the Sanitary Commissioner with the Government of India, is abstracted in the concluding paragraphs of this report. It contains the results of a long continued and careful investigation into the much-vexed question of the comma bacillus. Certain distinct forms of comma bacilli have been in continuous cultivation in the Calcutta Laboratory for four years, and various others for periods ranging from over three years to one year and a half; and the conclusion at which Brigade-Surgeon Cunningham arrives after an examination of all the evidence is, that there is no one specific choleraic comma bacillus, and that "any theory ascribing the choleraic condition to the action of any distinct species of intestinal organism which has yet been discovered comes to the ground."

15. *General conclusions on all the Indian Sanitary Reports for 1892.*—We have nothing further to add to what we have already noted in the memoranda on the Provincial Sanitary reports as regards the general population. We are gratified to find from a recent despatch* of the Government of India that most of the suggestions we have made in our previous memoranda, mainly concerning the Provincial reports, have been adopted, and we shall await with interest the results of the alterations proposed. We shall not make any further suggestions regarding these Provincial reports at present, but we would recommend, in respect of the Report of the Sanitary Com-

* No. 6 Sanitary, dated 28th February 1894.

missioner with the Government of India, that more definite information should be furnished every year on the following points :—

- (1) Regarding the Indian pilgrims proceeding to Mecca and returning therefrom. In our memorandum on the Report of the Sanitary Commissioner with the Government of Bombay, we have detailed the exact points on which data are wanted.
- (2) Regarding sanitary works in each Province, such as drainage and water-supply, as distinguished from money spent annually on conservancy and other establishments. It is very desirable to show by a comparative statement what every province is doing annually in this important matter.
- (3) It would be well to add to this a comparison of the statistics of mortality in those places where such improvements have been carried out, with their experience of former years, and also with that of other places where no improvements had yet been effected.
- (4) That Annual Cantonment Sanitary reports should be furnished from all cantonments and not only from those in the Bengal Presidency; and that in preparing them, and also the sanitary sheets of Native troops and jails, great care should be taken to make them as complete as possible.
- (5) That a sanitary sheet should be introduced for the Andaman Convict Settlement.
- (6) That, as regards cholera, an analysis should be given of the evidence adduced in those instances in which it is alleged that the disease was due to importation.
- (7) That, in all cases in which movement into camp has not been successful in arresting cholera outbreaks, a full account should be given of the circumstances, and of the causes which seem to account for the failure.
- (8) That a summary should be given of the antecedent circumstances, if there were any worthy of note, in the history of all European soldiers annually attacked with enteric fever.

No. 250 (Home Department-Sanitary).

Copy forwarded to the Military Department for information.

(By order.)

SIMLA,
17th September 1894.

(Signed) H. LUSON,
Under Secy. to the Govt. of India.

No. 5731-D.

Sanitary—Reports and Returns.

Copy of the foregoing and of its enclosure, forwarded to the Secretary to the Government of Madras, Military Department, for the information of the Governor in Council, and for favour of any remarks His Excellency in Council may desire to offer.

(By order.)

FORT WILLIAM,
10th December 1894.

(Signed) P. A. BUCKLAND,
Offg. Asst. Secy. to the Govt. of India.

No. 154. ORDER THEREON, 18th December 1894, No. 7776.

Communicated to the Commander-in-Chief for any remarks His Excellency may desire to offer.

(True Extract.)

[Signature]

Colonel,

Offg. Secretary to Government.

To the Principal Medical Officer, Madras Army.
" Quarter Master General, } for information.
" Public Department, }

Ed. T. K. Narayana Aiyangar.

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