

Annual sanitary report of the Province of Assam.

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ANNUAL SANITARY REPORT

OF THE

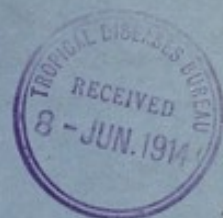
PROVINCE OF ASSAM

FOR THE YEAR

1912

BY

THE HON'BLE COL. R. N. CAMPBELL, C.B., C.I.E., I.M.S.,
SANITARY COMMISSIONER, ASSAM.



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PRINTED AT THE ASSAM SECRETARIAT PRINTING OFFICE.

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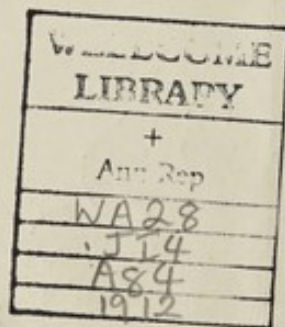
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ANNUAL SANITARY REPORT

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FOR THE YEAR

1912.

SECTION I.

METEOROLOGY.

The Director-General of Observatories has furnished the following brief summary of the chief meteorological features of the province for the year 1912 :—

The cold-weather period of January and February.—Only a few scattered falls of rain occurred in January, but in February there were six days of fairly general rainfall, and the combined rainfall of the two months was above the average at all stations, except Dhubri and Shillong.

Temperature, humidity and cloud were approximately normal.

The hot-weather period, March to May.—Dry weather prevailed up to the 24th March, when two winter depressions succeeding each other in quick succession passed across Northern India and occasioned a period of wet weather lasting up to the end of the month. Very low maximum temperatures from 10° to 20° below normal were recorded during the last four days of March. The total rainfall of the month was equal to the normal, but as it occurred chiefly during the last week, the monthly average of cloud and humidity was below the average. April was unusually cool, the mean temperature averages $4\frac{1}{2}^{\circ}$ in defect, and humidity and cloud were in excess, while rainfall was practically normal. In May, rainfall, humidity and temperature differed inappreciably from the normal, but the amount of cloud was much less than usual. The rainfall of the whole hot-weather period was in defect at Dibrugarh, Sibsagar and Cherrapunji, and in excess at the remaining stations.

The monsoon period, June to September.—Rainfall during the monsoon period was normal in June, in large excess in July, and in slight excess in August. In September the monsoon was very fitful and rainfall was nearly 25 per cent. in defect. For the whole monsoon period rainfall was somewhat in defect in the southern half of Assam, represented by Silchar, Shillong and Cherrapunji, and was in more or less excess elsewhere.

Humidity and temperature were practically normal.

The period, October to December.—Assam received slightly more rain than usual in October. In November the only rainfall of importance occurred on the 1st and 2nd, due to a storm from the bay and on the 23rd and 24th in connection with a storm from the Arabian Sea. The total rainfall of the month was, however, double the small amount usually received in November. The rainfall of December was very light, and was even less than usual.

Normal temperature and humidity conditions prevailed.

The average retail price of common rice varied from $9\frac{1}{8}$ seers per rupee in Sylhet to $11\frac{1}{8}$ in the districts of Nowgong and Sibsagar, and $11\frac{1}{8}$ in the Darrang district. The crops were generally reported to be up to the average.

Price of food-grains and their connection with vital occurrences.

SECTION II.

EUROPEAN ARMY.

No Remarks.

SECTION III.

NATIVE ARMY.

No Remarks.

SECTION IV.

JAILS.

No REMARKS.

SECTION V.

GENERAL POPULATION.

VITAL STATISTICS.

2. The population of the province according to the Census of 1911 is 7,059,857, including Manipur State. If we deduct from this the population of Manipur State, Khasi and Jaintia Hills, Naga Hills, Lushai Hills, Garo Hills and North Cachar Hills, the balance comes to 6,051,507, representing the population of the plains districts, of which 3,139,897 are males and 2,911,610 females. This is the population on which the ratios in this report are calculated.

The population of the Hill districts and Manipur State is 1,008,350, of which only 192,656 is under registration, Khasi and Jaintia Hills contributing 54,228, Lushai Hills 91,204, Garo Hills 44,801 and Naga Hills 2,423. The result of the registration in these areas has been shown separately in paragraph 10 of the report.

Statement comparing the birth-rate of Assam with that of other provinces of India.

	Birth-rate.		
	1906-1910.	1911.	1912.
1	2	3	4
Assam	31.59	31.98	32.16
Bengal	34.36	34.97	35.30
Bihar and Orissa	38.32	42.87	42.52
Central Provinces	52.68	49.47	48.24
Madras	32.2	30.40	30.9
Burma	33.96	32.64	32.13
Bombay	35.53	35.93	34.97
United Provinces	38.63	43.84	45.38
Punjab	41.6	43.88	45.3
North-West Frontier Province	43.2	35.08	37.07

The provincial birth-rate for the year was 32.16 per mille. It is slightly higher than that of the previous year and the average of the previous five years, (1906 to 1910). The birth-rate is higher than that of Madras and equal to that of Burma, while the rates in all other provinces are somewhat higher.

The following statement compares the death-rate in Assam with those of the other provinces :—

	Death-rate.		
	1906-1910.	1911.	1912.
1	2	3	4
Assam	27.68	23.61	25.04
Bengal	29.76	26.94	29.77
Bihar and Orissa	35.35	35.12	31.01
Central Provinces	40.14	34.67	42.34
Madras	24.9	23.10	20.3
Burma	27.99	25.07	27.04
Bombay	29.20	28.33	34.88
United Provinces	42.25	44.95	29.91
Punjab	43.6	34.05	26.63
North-West Frontier Province	30.4	23.20	23.39

The provincial death-rate for the year was 25·04 per mille. It exceeds the rate of the previous year, (1911), by 1·43 but is lower than the average of the five years, (1906—1910) by 2·64. It is higher than that of the North-West Frontier Province and Madras, but lower than that of any other province.

3. In Sylhet, Cachar and Goalpara, vital statistics are collected by the chaukidars, who report to the thana officers. They, in their turn, submit their returns to the

Birth registration—General.

Civil Surgeon's office, where the district return is compiled. In Kamrup, Darrang, Nowgong, Sibsagar and Lakhimpur, gaonburas report vital occurrences to the mauzadars, who submit a consolidated return for their mauzas to the Civil Surgeon.

The total number of births registered during the year was 194,676, or 32·16 per mille of population. The highest rate was recorded in the Goalpara district, 38·77, then come Darrang 33·52, Sylhet 32·79, and Sibsagar 32·34. The lowest rate was recorded in Nowgong, 27·71. This district was the one, which suffered the most severely from the epidemic of *kala-azar* in the "nineties," and its indigenous population has not yet recovered its vitality. *Kala-azar* is again beginning to make itself felt as an adverse influence on the health of the province, and this may also account for the fall in the birth-rate in Kamrup. Compared with the average of the previous five years, we find that while the provincial rates were almost equal, there was a fall of 5·09 in Kamrup, and 4·10 in Nowgong, and a rise of 5·91 in Sibsagar. The natural increase of population, i.e., excess of births over deaths per 1,000 of population, was 7·12. The increase was shared by all the districts, except Darrang. Although in the latter district an increased birth-rate over the previous year and over the previous quinquennium was recorded, the death-rate was comparatively high, mainly owing to an extensive epidemic of cholera and a greater prevalence of fever.

4. The ratio of births in urban areas was 27·69, which is 2·7 higher than that of 1911, and 3·46 in excess of the average of the previous five years.

Birth registration in urban areas.

Barpeta records the highest rate 55·03, and Manjaldai the lowest 10·63.

5. The birth-rate in rural areas was 32·26, which is ·07 over the rate of 1911, and ·20 over the quinquennial average. The highest rate, (60·83), was recorded in the Kanairghat thana of the Sylhet district. The next highest rates were 52·03 and 51·21 in the first and second circles of Sidli and Bijni Duar, respectively, in the Goalpara district.

Birth registration in rural areas.

The lowest rate was in Lumling thana, 10·65, which is probably due to defective registration.

6. The death-rate was 25·04, which is 2·02 over the quinquennial average. Of the 8 districts, there was an increase in two, viz., Goalpara 3·26, and Darrang 2·37, and a decrease in 6.

Death registration—General.

7. The death-rate for the year was 20·80, which is 1·40 less than the quinquennial average. The highest rate was in Nowgong 38·10, and the lowest was in Hailakandi 6·84.

Death registration in urban areas.

8. The rate for the year was 25·13, which is 2·03 less than the quinquennial average and 1·41 over the ratio of the previous year, (1911). The highest rate was recorded in the Paneri registering circle (91·16) of the Darrang district. Then follow third circle Sidli, 59·01, Chirang, 51·22, and Bijni Duar, 50·45, all in the Goalpara district.

Death registration in rural areas.

9. Hitherto no systematic action has been taken on the report of omissions to register births and deaths discovered by the vaccination inspecting staff. During the year under report, it has been ruled that every area, in which registration is compulsory, should be divided into convenient circles according to size and population, census circles and maps being utilized. The Inspector and Sub-Inspector of Vaccination in every month make a house-to-house enquiry in one of the above circles. By comparing his list of the residents of the circle with the entries in the Registrar's book, he should be able to ascertain readily the names of the defaulters. The corrected list is then to be signed both by the registering officer, and by the inspecting officer as a guarantee of its accuracy and submitted in duplicate to the Magistrate for action. At the conclusion of the hearing of the case against defaulters, the Magistrate is to return one copy of the list to the inspecting officer, after having noted against each defaulter his finding. The Inspector or Sub-Inspector submits his copy of the list to the Civil Surgeon for information and orders, and draws a reward of 4 annas for each conviction obtained.

Registration in compulsory areas—
Prosecutions under Act IV (B.C.)
of 1873.

* There were altogether 366 prosecutions and 182 convictions against 25 and 10, respectively, of the previous year. Of the 74 prosecutions in the town of Gauhati, the result has not yet been reported.

The largest number of prosecutions was reported in the town of Jorhat, 109. In Hailakandi, Karimganj, Maulvi Bazar, Habiganj, Sunamganj, Barpeta, Mangaldai, Nowgong, Sibsagar, Dibrugarh and North Lakhimpur, no prosecutions were reported.

10. Except in the North Cachar Hills where registration of vital statistics is not attempted, partial registration is carried out in all the hill districts, *viz.*, Khasi and Jaintia Hills, Naga Hills, Lushai Hills, and Garo Hills. The birth and death rates are shown below :—

	1912.		1911.	
	Birth-rate.	Death-rate.	Birth-rate.	Death-rate.
1	2	3	4	5
Khasi and Jaintia Hills	28.21	24.19	26.72	22.03
Naga Hills	32.19	18.98	32.60	21.04
Lushai Hills	37.58	32.03	41.16	28.85
Garo Hills	29.35	21.78	30.91	22.48

252 births and 200 deaths were registered in Shillong during the year against 345 and 212, respectively, of the previous year.

11. The following table shows the vital occurrences reported from tea gardens in 1912 :—

Registration in tea gardens.

	Birth-rate.	Death-rate.
1	2	3
Cachar	19.69	15.80
Sylhet	29.24	19.04
Goalpara	31.86	17.69
Kamrup	15.93	13.45
Darrang	23.42	30.16
Nowgong	14.80	17.17
Sibsagar	31.02	24.37
Lakhimpur	12.21	31.12
Total	27.22	23.64

The birth and death rates were 27.22 and 23.64, respectively, against 25.97 and 25.43, respectively, of the previous year.

12. 143 births and 323 deaths were registered on railways against 117 births and 223 deaths of the previous year.

Registration on railways.

13. Birth-rates were highest in the months of January, October, November and December, (cold weather), and lowest in the months of June and July, (rainy season).

Seasonal incidence of births and deaths.

Death-rates were higher in the months of January, May, June, July, October, November and December, (over 2 per thousand), than February, March, April, August and September, (over 1 per thousand).

14. As in the previous years, the death-rate was the highest, (179.57), among infants under one year, the next highest ratio, (48.94), was among persons of 60 years and upwards. The lowest rate, (10.2), was amongst persons between 10 and 15 years.

Mortality according to age, sex and class.

The mortality from all ages among males and females was 25·37 and 24·69, respectively, against 23·48 and 23·76, respectively, of the previous year.

The infantile mortality calculated on the registered births of the year was 205·61 for males and 187·11 for females, against 180·73 and 172·52, respectively, of the previous year.

Mortality according to class was for Christians 18·28, Hindus 23·93, Muhammadans 23·75, Buddhists 4·88 and other classes 37·19. The corresponding ratios of the previous year were 14·68, 22·9, 22·7, *nil*, and 32·04, respectively.

15. 51,601 births and 34,392 deaths were verified by the inspecting staff, against 54,524 and 41,416 of the previous year.
Inspection of village registers.

The percentage of omissions detected to the total number verified was 3·72, against 3·20 of the previous year. The percentage of omissions detected varies from 13·86 in Sibsagar to ·86 in Cachar. Registration of vital statistics in rural areas is still very imperfect and the figures are to be regarded as relative indications of vital happenings rather than as arithmetical statements of facts.

The great discrepancy between the provincial birth-rate of 50 per 1,000, as estimated by Mr. McSwiney, Superintendent of Census Operations in Assam, paragraph 61 of his report, and the recorded birth-rate of 32·16 as shown by the registration statistics, is worth pondering. Of the two figures, the balance of probability is in favour of the accuracy of the census estimate. The verification of vital statistics, which is carried on under the Sanitary Department by the vaccination inspecting staff, sheds some light on the problem, but the percentage of error detected by them does not supply the difference between 50 and 32·16 per 1,000, and the amount of omissions detected in different districts is more often an indication of the relative activities of the vaccination inspecting staff, than a comparison of the real accuracy of the figures.

In one district, where there is reason to believe that the verification has been performed with energy and care, omissions amounting to 13·86 of the total have been discovered, although there is nothing in the district returns to differentiate its vital statistical returns from those of adjoining districts. The average error is apparently a 10 per cent. defect, and in many areas it is considerably in excess of this. There is no doubt, therefore, that the details of vital statistics from rural areas must be accepted with great caution, and they must be interpreted upon very general lines. Efforts should be directed towards obtaining increased efficiency in this department of work, which is the ultimate basis of all public health administration.

Without recasting the whole system upon a new and expensive basis, the only remedies at present applicable are, (1) more energetic and constant checking of returns by the inspecting staff, (2) adequate punishment of defaulting chaukidars, (3) encouragement of good reporting by remissions of land revenue, and gifts of gold rings to gaonburas in districts, where the Assam system is in force.

Examples of exceptionally bad registration in rural areas, where improvement is required, are given in the following statement :—

Area.	Population.	Recorded birth-rate.	Recorded death-rate.	District birth-rate.	District death-rate.
1	2	3	4	5	6
Lumding ...	32,098	10·65	7·32	27·71	24·95
Sonari ...	40,837	10·54	11·33	32·34	20·83
Polashbari ...	102,957	19·06	12·5	27·76	23·99
Doomdooma ...	95,469	13·7	12·88	28·96	24·59
Raha ...	126,008	21·37	15·12	27·71	24·95
Derai ...	1,5,565	23·67	15·4	32·79	22·68

Lumding is a very sparsely populated area, where communications are bad and reporting difficult, but some nearer approximation to the truth about its vital occurrences should be obtainable. Sonari, Polashbari, Doomdooma and Raha are comparatively thickly populated areas, whose population is large enough to exclude statistical error, and the defect in these areas is obviously that of omission to report.

Deraï contains a large population and is a large and inaccessible area, where the reporting of vital occurrences is evidently seriously in defect.

SECTION VI. HISTORY OF CHIEF DISEASES.

17. Chief causes of mortality.

Diseases.	1902-1911.			1912.		
	Urban.	Rural.	Combined.	Urban.	Rural.	Combined.
1	2	3	4	5	6	7
Cholera	2.43	2.72	2.72	2.13	2.37	2.36
Small-pox ... ..	.63	.49	.49	.74	.77	.77
Plague ... ..	.02	...	.0005	...	...	...
Fevers	10.39	13.37	13.31	8.60	13.03	12.94
Dysentery and diarrhoea	3.08	2.29	2.30	2.47	2.18	2.19
Respiratory diseases ... ..	.42	.33	.33	.74	.57	.57
Injuries ... ..	.28	.30	.30	.50	.30	.31
All other causes	6.39	6.29	6.29	5.58	5.89	5.69
Total	23.86	25.81	25.77	20.80	25.13	25.04

The mortality from the chief diseases during 1912 shows no marked departure from the average of the preceding decade.

18. Cholera.

Districts.	Death-rate per mille.	
	1902-1911.	1912.
1	2	3
Cachar	2.07	2.46
Sylhet	2.76	1.41
Goalpara	2.14	2.01
Kamrup	4.25	4.28
Darrang	3.54	6.37
Nowgong	3.05	6.27
Sibsagar	2.39	1.80
Lakhimpur	1.26	.72
Total	2.71	2.36

The statement shows a high incidence of cholera in Darrang and Nowgong, and the disease was also prevalent in epidemic form, but to a less degree, in Kamrup, Goalpara and Cachar. The Civil Surgeon of Nowgong, Dr. Bancroft, in this connection calls attention to the simultaneous widespread incidence of cholera in widely separated areas, which are dependent for their water-supply on the slow-flowing Kallang river. While it must be remembered that the bulk of the population of Nowgong is to be found along the banks of this river, and that epidemic disease will tend to be most rife in the most populous areas, still there is little doubt that this river is extremely unsatisfactory as the water-supply of the population, and the rural water-supply of this district is urgently in need of improvement.

19. Three towns recorded a death-rate above 5 per mille, *viz.*, Nowgong, 10·67, Sibsagar, 5·89, and Dhubri, 5·33. The increase in Nowgong was due to contamination of the Kallang river, which is the main source of water-supply. Two epidemics of cholera occurred in the town of Dhubri, which may have been propagated by the defective water-supply and conservancy. No direct cause of the outbreak in Sibsagar town can be traced.

As regards rural circles, the Paneri circle of Darrang reported the highest death-rate, 25·83; then follow Nowgong, 15·52, Gauhati, 10·11, Kariapara (Darrang), 11·82, and Samaguri (Nowgong), 10·09. Only six circles reported no deaths.

20. The recorded death-rate from cholera in tea gardens during the year under report was 1·73 against 2·12 of the previous year. The highest rate was recorded in Darrang, 3·46, and the lowest in Nowgong, ·60.

21. Small-pox.

Districts.	Death-rate per mille.	
	1902—1911.	1912.
1	2	3
Cachar ...	·85	·008
Sylhet ...	·27	·99
Goalpara ...	·83	·69
Kamrup ...	1·37	1·89
Darrang ...	1·16	·50
Nowgong ...	1·22	·95
Sibsagar ...	·27	·09
Lakhimpur ...	·13	·006
Total ...	·49	·77

The mortality from small-pox was above the average for the previous decade in the districts of Sylhet, Goalpara and Kamrup, and below the average in the remaining districts. Small-pox was unduly prevalent in 1912 in certain thanas in Sylhet, especially Sylhet town and the following rural circles, Baniachang, Madhabpur, Sunamganj and Dharmapasa. The provincial death-rate has also risen from ·29 in 1911 to ·77 in 1912. The increase has been shared by Sylhet, ·14 to ·99, Goalpara, ·29 to ·69, Kamrup, ·97 to 1·89, and Nowgong, ·69 to ·95. Steps were taken to combat the spread of the disease by concentrating vaccinators in affected villages, and extra vaccinators were appointed in Sunamganj. The disease was also prevalent in the Assam Valley as well as in Sylhet, and it was not due to any local condition. In this connection, the Civil Surgeon of Kamrup notes that "an increased prevalence of small-pox occurred in the early months of the hot weather, which is surprising in view of the activity in vaccination work of late years."

On the whole the increase may be viewed as part of the waxing and waning movements of epidemic disease during a period of years, and as not due to any remission of activity of the vaccination staff.

An epidemic of small-pox is commonly followed by a demand for vaccination, while the comparative absence of the disease renders people more apathetic as to its prevention.

22. Of 19 towns, 7 reported deaths from small-pox. Gauhati, 2·88, and Sylhet,

2·49, reported the highest rates.

Among rural circles the first, second, third, fourth and fifth circles of Sidli in the district of Goalpara reported the highest death-rate of 5 per mille. The next highest rate was Nalbari, 4·51.

23. *Fever.*

District.						Death-rate per mille.	
						1902-1911.	1912.
1						2	3
Cachar	...	...	...	...	...	10.49	10.74
Sylhet	...	...	...	...	...	10.57	9.66
Goalpara	...	...	...	...	...	24.57	27.50
Kamrup	...	...	...	...	...	15.06	13.67
Darrang	...	...	...	...	...	20.19	19.58
Nowgong	...	...	...	...	...	14.99	13.08
Sibsagar	...	...	...	...	...	11.05	10.44
Lakhimpur	...	...	...	...	...	10.45	10.96
Total						18.31	12.94

No marked departure from the average of the previous decade was observed, and nothing in the nature of an epidemic of any sort of fever was reported.

Malaria.—Proposals for malaria investigation and anti-malarial work are kept pending the completion of the *kala-azar* survey of the province at present in progress, and the appointment of a special malarial research officer.

A few figures derived from a splenic census done by the Deputy Sanitary Commissioner in the course of vaccination inspections throughout the cold weather, are placed on record, as giving a preliminary sketch of the relative malariousness of the province.

Place.	Number examined.	Splenic enlargement.			Total.	Per cent.
1	2	3	4	5	6	7
<i>Sylhet.</i>	...	I. 1 finger's breadth.	II. 2 fingers' breadth.	III. 3 fingers' breadth.	...	...
Habiganj subdivision	52	...	...	...	...	Nil
Karimganj	167	...	...	...	...	Nil
North Sylhet	29	...	...	...	...	Nil
Total	248	...	...	...	...	Nil
<i>Cachar.</i>						
Sadar subdivision	76	...	...	...	...	Nil
Hailakandi	40	2	...	...	2	5
Total	116	2	...	...	2	1.7
<i>Sibsagar.</i>						
Khumtai	21	1	1	2	4	19
Dumjuria	28	...	...	...	Nil	Nil
Batiparia	34	...	...	...	Nil	Nil
Badlipar	98	5	1	...	6	6.1
Kaziranga	41	...	...	...	22	53.7
Total	222	6	2	2	32	14.4

Place.	Number examined.	Splenic enlargement.			Total.	Per cent.
1	2	3	4	5	6	
		I. 1 finger's breadth.	II 2 fingers' b. each.	III. 3 fingers' breadth.		
<i>Nawgong.</i>						
Birbebagia ...	26	1	2	...	3	11.5
Bagori ...	26	...	...	...	16	61.6
Ketari ...	26	...	...	...	11	42.3
Jaklabandha ...	15	...	...	...	3	20
Bhakatgaon Rupohi ...	20	3	3	4	10	50
Pachim Salmora ...	13	1	...	...	1	7.6
Charonpara Aujhari ...	16	4	6	3	13	81.2
Marigaon ...	27	...	...	...	2	7.4
Bhakatgaon ...	25	2	...	...	2	8
Total ...	194	11	11	7	61	31.4
<i>Goalpara.</i>						
Matia village ...	18	1	4	4	9	50
Dalgoma ...	27	1	...	...	1	3.7
Total ...	45	2	4	4	10	22.2
<i>Darrang.</i>						
Dalporbatia ...	26	1	...	...	1	3.9
Patidarrang ...	18	4	2	3	9	50
Mangaldai ...	25	1	...	1	2	8
Kerkoah ...	7	...	1	2	3	42.8
Sukhiapara ...	30	11	11	4	26	86.6
Kati ...	21	...	2	...	8	38.09
Total ...	127	23	16	10	49	38.5
<i>Kamrup.</i>						
Polasbari ...	68	...	...	...	...	Nil.
Upartalle ...	109	3	...	...	3	2.7
Total ...	177	3	...	...	3	1.6
Grand total ...	1,129	47	33	23	103	13.9

These figures, collected in the course of a cold-weather tour, primarily devoted to the supervision of a *kala-azar* survey, were only taken from villages in which *kala-azar* was known to be absent. They were for the most part derived from children brought up for vaccination inspection, and hence, the age of the children being approximately the same, the observations are comparable, one with the other. In some cases, the figures are small, but they represent all the children in the village.

The figures, in so far as they go, show the comparatively low incidence of malaria in the Surma Valley. This confirms the observations of Captain Scott, I.M.S., Civil Surgeon of Sylhet, who collected some figures, which showed that in 1911, amongst a very large number of children examined by himself and a Sub-Assistant Surgeon, the splenic index was under 1 per cent.

The places in the Assam Valley, in which a high splenic index prevails, are nearly all of the same type, namely, small remote villages in jungle clad country, at the foot of small hills, among surroundings known in India as "Terai," *e.g.*, Kaziranga Bazar, Kutari, Amguri, and the villages in Mangaldai. In open cultivated and more populous country, the prevalence of malaria among the indigenous population appears to be small, *e.g.*, the observations in Sibsagar. From these figures one might hazard the suggestion that perhaps an increase of the population and more cultivation of the land might prove the best anti-malarial measure for Assam.

A small anti-malarial scheme is in progress at Nongpoh, one of the halting stages on the cart road half way between Gauhati and Shillong. It is a hamlet consisting of a dâk bungalow, a dispensary, a police station and a serai with a few shops and houses. It is situated at an elevation of 1,700 odd feet, and is surrounded by thick jungle hills, from which hill streams drain into a large pond containing waterweed and fish.

The place is intensely malarious and, being a halting place upon one of the main arteries of traffic, it has been a means of propagating malarial fever by the infection of travellers, who have occasion to spend a night there. It was supposed that the condition was produced by the presence of the pond, and it was proposed to drain this as an anti-malarial measure.

Some observations carried out by the Deputy Sanitary Commissioner seemed to show—

1. that the pond did not breed any malaria-carrying mosquitoes,
2. that no anopheles of any description could be found sheltering in cow-houses, sheds or dwelling houses during the day,
3. that in spite of this apparent absence of carrier-mosquitoes, 5 specimens of a malaria carrier, *M. Listoni*, obtained entrance at night to the imperfectly adjusted net of the observer, who subsequently developed a mild attack of fever,
4. that these mosquitoes were found to be breeding in hill streamlets and sheltering in jungle.

At the recommendation of the Sanitary Board, the jungle is being cleared for a considerable radius round the village, and orange groves will take the place of jungle and undergrowth.

24. The highest rates were reported from the towns of North Lakhimpur 17.02, Nowgong 16.19, Golaghat 13.86, and Sibsagar 12.83.

High rate of mortality from fever in individual towns and rural areas.

Among rural circles, Paneri and Kalaigaon in Darrang, and the circles of Sidli, Chirang, Bijni Duar, Goalpara, Dudnai, North Salmara and Bilasipara in the Goalpara district reported death-rates between 30 and 50.

25. *Kala-azar.*

District.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.
1	2	3	4	5	6	7	8	9	10	11
Cachar ...	...	...	3	...	22	5	6	2	3	2
Sylhet ...	721	1,020	955	743	576	561	454	866	549	394
Goalpara ...	44	64	86	90	49	32	81	87	135	192
Kamrup ...	651	458	499	438	516	386	378	450	354	285
Darrang ...	2,657	1,611	1,106	898	845	649	643	627	679	563
Nowgong ...	960	555	379	215	208	146	140	221	286	308
Sibsagar ...	...	...	...	6	11	2	1	...	34	31
Lakhimpur ...	...	...	2	17	...	5	...	50	11	...
Total ...	5,033	3,748	3,030	2,407	2,227	1,786	1,703	2,303	2,051	1,875

The above table does not show any apparent increase in mortality from this disease as a whole.

There are, however, certain areas in which it is displaying increased activity. A survey under the supervision of the Deputy Sanitary Commissioner, aided by two Assistant Surgeons, has been in progress during the cold weather.

Fourteen Sub-Assistant Surgeons have been at work carrying out this survey. The complete results are not yet available, and they will be submitted on a separate report, but Captain McCombie Young notes that there appears to be a decided recrudescence of the disease in the Nowgong district, and considerable activity in certain parts of the Mangaldai subdivision, in the Gauhati subdivision and in Goalpara subdivision on the south bank of the Brahmaputra. The disease also exists, but with a minor degree of severity, in certain areas in the Sylhet district. The disease is showing a marked incidence upon children from 2—16 years of age, and appears to be attacking a more or less immune generation that has sprung up since the epidemic. Information was gathered from the elders of a considerable number of villages with the object of eliciting their opinion as to the existence of a tendency to recrudescence. In a considerable number of cases the consensus of opinion was to the effect that a large number of deaths had occurred in the "earthquake" epidemic, and that since then no cases had occurred until the last two years, when cases are reappearing.

There is undoubtedly some tendency towards a recrudescence of the activities of *kala-azar* in the lower Assam Valley. Until the completion of the survey, it is not possible to form recommendations as to how this tendency should be met, but the situation will require earnest consideration and effort.

The progress of the measures of control of *kala-azar* in the Golaghat subdivision shows an encouraging degree of success, and encourages the belief that, with sufficient funds and staff available, it is possible to deal effectively with the disease, by removal of infected families and persons from infected sites. In the area included within the scope of these operations, 55 families were believed or known to be infected last year. This year, only 13 families are believed to be infected, and of these only three are so classed on account of the occurrence of a fresh case. It appears that infection has only persisted in individuals, who had already acquired the infection before moving, or who had acquired the disease from some person, who had been infected upon the old site. While it is too soon to draw any deductions as to the ultimate success of the operations, the results obtained up to date appear encouraging, and are in line with the success obtained by similar measures of segregation carried on during the epidemic years.

It is much to be regretted that no specific or drug appears to be of value as a cure, and the absence of any useful remedy makes preventive measures difficult and uphill work.

26. *Dysentery and Diarrhœa.*

Districts.					Death-rate per mille.	
					1902—1911.	1912.
Cachar	...	...	...	...	2.35	2.72
Sylhet	...	...	...	...	1.84	1.72
Goalpara	...	...	...	...	.39	.49
Kamrup	...	...	...	...	1.37	.82
Darrang	...	...	...	...	3.95	4.39
Nowgong	...	...	...	...	2.03	1.21
Sibsagar	...	...	...	...	4.09	3.63
Lakhimpur	...	...	...	...	4.67	4.95
Total					2.30	2.19

The figures contrasting the mortality from diarrhœa and dysentery with those of the average of the preceding decennium show no marked departure from the average as a whole. The greatest incidence of these diseases is upon the population of tea estates.

Darrang tea estates	...	...	...	...	...	8.44
Lakhimpur "	...	...	...	...	...	8.34
Sibsagar "	...	...	...	...	...	7.7
Sylhet "	...	...	...	...	...	5.52
Nowgong "	...	...	...	...	...	4.35
Kamrup "	...	...	...	...	...	3.14
Goalpara "	...	...	...	...	...	1.77

The average for the general population is 2.19. While there are admittedly some fallacies in these returns, there appears to be little doubt that, in spite of the careful conservation of water-supplies practised upon tea estates and a supply of a drinking water and of food which is, in the vast majority of cases, the best obtainable, the incidence of bowel complaints upon the labour force in the tea industry is high. The past history of the country appears to show that bodies of foreign immigrants and invaders have always suffered severely from diarrhoea and dysentery in As-sam, to which diseases the indigenous population has a greater immunity, and it is probable that this difference in incidence cannot be entirely effaced. In this connection it may be noted that the Sanitary Department has no point of contact with the sanitary conditions prevailing upon tea estates, except through the consolidated returns furnished through Civil Surgeons, and hence more definite conclusions are at present impossible. It seems desirable that some change in the present arrangements might be effected by which the Sanitary Department should be brought into more direct relationship with the most important industry of the province.

The Civil Surgeon of the Naga Hills district, Major Gidney, I.M.S., reports the occurrence of a severe outbreak of dysentery almost amounting to an epidemic in certain areas, which prevailed during the months of August and September.

27. *Plague*.—There were no cases of plague reported during the year.

28. *Other causes*.—The death-rates due to respiratory diseases, injuries, and all other cases were .57, .31 and .5.89, respectively; the rates were almost the same as those of the previous year and need no comment.

SECTION VII.

VACCINATION.

[Published separately].

SECTION VIII.

SANITARY WORKS—MILITARY.

No remarks.

SECTION IX.

SANITARY WORKS—CIVIL.

General.

29. There are 11 Municipalities, 4 Unions, and 1 Station in the province.

30. The income of the Municipalities amounted to Rs. 6,60,258, against Rs. 3,94,298 of 1911. The large increase of Rs. 2,65,960 is mainly due to grants-in-aid from Government.

The expenditure of Municipalities on sanitation has increased by Rs. 2,18,227, i.e., from Rs. 2,25,680 to Rs. 4,43,907. From the subjoined statement, it will be seen that the only large increase is under the head "Water-supply." This is due to the construction of water-works in Jorhat and Shillong.

The average percentage of income spent on sanitation and sanitary works was 57.4, against 44.4 of the previous year. Four Municipalities spent over 60 per cent. of their income on sanitation, 3 over 40 per cent., 5 over 30 per cent. and 4 below 20 per cent.

Head of expenditure.	Total expenditure.		Difference.	
	1912.	1911.	Increase.	Decrease.
1	2	3	4	5
	Rs.	Rs.	Rs.	Rs.
1. Conservancy, including establishment, road-watering, latrines, etc.	1,11,762	1,08,455	3,307	...
2. Drainage	11,585	10,229	1,356	...
3. Water-supply	2,23,529	27,649	1,95,880	...
4. Disposal of the dead	132	331	...	199
5. Markets and slaughter-houses	8,530	5,081	3,449	...
6. Treatment of the sick	11,136	11,008	128	...
7. Vaccination	1,160	865	295	...
8. Other sanitary works	11,174	11,728	...	554
Total	3,79,008	1,75,346	2,04,415	753
9. Construction and maintenance of roads	64,899	50,334	14,565	...
Total, including roads	4,43,907	2,25,680	2,18,980	753

31. *Sanitary Works*—In the beginning of the year there were two non-recurring Imperial Sanitary grants of Rs. 52,000, being the balance of the previous year's grant of Rs. 2,50,000 after sanctioning a grant of Rs. 81,290 for the Shillong water-works and Rs. 1,16,316 for the Jorhat water-works, and Rs. 1,46,000 (sanctioned during the year), aggregating to Rs. 1,98,000 available for expenditure on sanitation with which the following sanitary works were financed or assisted :—

	Rs.
1. Silchar water-works	76,658
2. Golaghat water-supply	22,961
3. Tura " " " " " " " " " "	5,025
4. Shillong Police Bazar drain	4,000
5. Improving Dhobi ghat, Shillong	2,000
6. Septic tank latrine, Shillong	4,416
Total	1,15,060

SURMA VALLEY DIVISION.

A water-works scheme for the town of Silchar at a cost of Rs. 1,16,658 has been sanctioned, towards which Government has given a contribution of Rs. 76,658, and proposes to grant a loan of Rs. 40,000. The scheme is to provide a pipe water-supply for the town from an intake on the river Barak, and the water is to be filtered through mechanical filters of the Jewell pattern before distribution.

The conservancy system of this town is also under revision. The former method of disposal of night-soil proved unsatisfactory, and trenching grounds and removal plant are being acquired with financial assistance from Government.

Sylhet.—A scheme for a thorough revision of the conservancy system of Sylhet town at a cost of Rs. 16,200 has been drawn up and submitted to Government for approval. As this is the most urgent need of the town, further consideration of a drainage scheme for the town has been postponed.

A committee has been appointed by the Chief Commissioner to suggest measures for the improvement of the water-supply and drainage of Sylhet town. A rough estimate of the cost of a pipe water-supply for the town has been drawn up by Messrs. James Simpson & Co., as no Sanitary Engineer has hitherto been available, and the report is under consideration by the committee, who report direct to the Local Administration.

HILL DISTRICTS.

The question of constructing a reservoir at a cost of Rs. 720 in connection with a permanent spring at *Mokokchang* to improve the water-supply of the station was considered and sanctioned. The question of improving the water-supply of *Lungleh* in the Lushai Hills is under consideration.

Shillong.—The new water-works were completed during the year under review at a total cost of Rs. 81,290. The water-supply of Shillong is now derived from hill streams, which have been harnessed at their source in virgin rock and protected against any practical possibility of contamination, and delivered by gravity in pipes throughout the station. A regular analysis of the water is carried out at the Provincial Laboratory, which shows that the water-supply is one of exceptional purity.

Steps are now being taken to finish an incomplete *Dhobi* ghat, whose completion was postponed until the new water-works were put in operation. This will provide a perfectly pure washing water from a hill spring, with separate tanks, drying greens and shelter sheds, and should prove a considerable sanitary advance.

The construction of a tiled drain for the Police Bazar in Shillong at a cost of Rs. 4,000 has been sanctioned. The work is now in progress.

The following minor sanitary improvements are in operation in this district and elsewhere :—

- I. a scheme for improving the water-supply of the Cherrapunji bazar by a storage tank is under preparation by the Public Works Department ;
- II. the construction of a well at Nongpoh at a cost of Rs. 943 was sanctioned, and also a sum of Rs. 467 was sanctioned for clearing jungle and improving the drainage of that place ;
- III. a sum of Rs. 2,000 was sanctioned towards the improvement of the water-supply, drainage and conservancy of Jowai town

- IV. an experimental installation of a septic tank latrine for 200 users at a cost of Rs. 4,416, upon plans supplied by Major Clemesha, Sanitary Commissioner, Bengal, is now in progress. If the system proves successful after a thorough trial, it is proposed to extend it as far as possible with the object of reducing the expense and nuisance arising from removal of night-soil by carts ;
- V. a sum of Rs. 4,440 was sanctioned towards clearing jungle and improving the drainage of Haflong town ;
- VI. a scheme for remodelling the Kobima water-works is under preparation ;
- VII. a scheme for providing a pipe water-supply for the Chandmari *basti* and the Mission Compound at Tura at a cost of Rs. 5,025 was sanctioned.

ASSAM VALLEY DISTRICTS.

Dhubri.—A scheme for improving the water-supply of the town of Dhubri by improving the existing wells, adding new ones where needed, and providing adequate protection for both, has been drawn up and submitted to the Chief Commissioner, towards which a grant of Rs. 28,244 has been sanctioned. At the request of the residents of the town, it is now under consideration whether a small water-works installation is possible.

As Dhubri is the first river port of the province, and as no accommodation exists on the river between Goalundo and Dhubri for cholera patients, permanent and adequate accommodation for the reception of such cases was considered necessary, and a new cholera hospital at this ghat, at a cost of Rs. 12,250, has been sanctioned.

Gauhati.—An estimate for Rs. 16,500 was sanctioned for the renovation and improvement of the Gauhati water-works in accordance with the recommendations of a committee appointed by the Chief Commissioner to consider the question, and a grant of Rs. 6,500 has been given by Government for this purpose.

A drainage scheme of the town aimed at rectifying levels and providing masonry profiles, where needed, is also under consideration.

A small permanent cholera hospital for the town of Gauhati at a cost of Rs. 3,587 has been sanctioned.

Darrang.—A scheme for improving the water-supply and drainage of the town of Tezpur is receiving the attention of a committee appointed for the purpose. Proposals for setting up a small filter in connection with a tank at the subdivisional headquarters of Mangaldai, and of protecting it from pollution, are being submitted to Government.

Nowgong.—The recommendations of a local committee upon proposals for improving the water-supply and drainage of the town of Nowgong are being considered by the Local Administration.

Sibsagar.—A water-works scheme for Jorhat town at a cost of Rs. 1,16,316 was sanctioned in March 1912, and the work is now in progress. The whole cost was contributed by Government, the Municipality bearing only the maintenance charges.

A scheme for improving the water-supply of the town of Golaghat at a cost of Rs. 22,961 was sanctioned during the year. Part of a large pond, which exists in the centre of the town, is to be converted into a drinking water tank, adequately fenced and protected against pollution, and the remainder is to be filled up.

Dibrugarh.—A local committee appointed by the Local Administration sat to consider the introduction of a pipe water-supply for Dibrugarh.

A decision regarding a drainage scheme, which has been under consideration for some years, is now within sight.

The conservancy system of this town has been the subject of adverse comment on the part of the Sanitary Commissioner and his Deputy. Considerable efforts have been made to remedy the neglected condition of the sanitary arrangements of this Municipality to which reference was made in the last year's report, and still further progress may be expected.

Local Board expenditure on sanitation.—A sum of Rs. 96,308 was expended by Local Boards on sanitation, mainly on improvement of rural water-supplies by constructing and repairing tanks and wells. The largest sum was spent by the Gauhati Local Board (Rs. 13,943), then come Barpeta (Rs. 10,582), Habiganj (Rs. 7,023), Dibrugarh (Rs. 7,160), North Lakhimpur (Rs. 7,270), Sunamganj (Rs. 6,587), Sibsaagar (Rs. 7,149), North Sylhet (Rs. 4,573), South Sylhet (Rs. 4,262) and Tezpur (Rs. 4,040). The smallest sums were spent by Hailakandi (Rs. 407), Nowgong (Rs. 1,859) and Golaghat (Rs. 1,950).

An expenditure of Rs. 1,33,406 is reported to have been incurred by the Public Works Department on original sanitary works and Rs. 20,582 on repairs during the year under report.

SECTION X. GENERAL REMARKS.

32. Village sanitation.—Measures undertaken by the Sanitary Board :—

Following the policy of the Government of Eastern Bengal and Assam grants were made as in previous years by the Sanitary Board to the Local Boards towards the improvement of rural water-supply. A sum of Rs. 50,923 was distributed as below :—

<i>Surma Valley Division.</i>						Rs.
Silehar	Local Board	...	...	...	...	600
Hailakandi	" "	...	...	...	...	1,266
Karimganj	" "	...	...	...	...	814
Total						2,680

<i>Assam Valley Division.</i>						Rs.
Gauhati	Local Board	...	...	...	...	13,150
Barpeta	" "	...	...	...	...	13,248
Mangaldai	" "	...	...	...	...	10,000
Jorhat	" "	...	...	...	...	1,729
Sibsagar	" "	...	...	...	...	2,691
Tezpur	" "	...	...	...	...	2,307
Nowgong	" "	...	...	...	...	628
Goalpara	" "	...	...	...	...	1,750
Dibrugarh	" "	...	...	...	...	640
North Lakhimpur	Local Board	...	...	...	...	2,000
Total						48,243

Gauhati subdivision.—A scheme for improving the water-supply of the Gauhati subdivision was evolved in 1908. This area suffered much by the earthquake of 1897, when many tanks and wells were silted up. In this connection it was resolved :—

- (1) that re-excavation and repairs of all existing tanks and wells should be systematically undertaken ;
- (2) that experimental wells should be sunk in some of the Kachari villages, which lie between the Gohain Kamal Ali and the Bhutan Hills, to ascertain if water is obtainable ;
- (3) that a boring be sunk in the neighbourhood of Nalbari through a depth of clay to ascertain the existence of the water-bearing stratum.

A programme of work was drawn up and spread over a period of 5 years. The estimate of total cost was Rs. 1,50,000, of which Government contributed Rs. 62,500 and the Local Board provided Rs. 87,500 from their own revenues. Fifty-nine new tanks of different dimensions and five new wells each of four feet diameter have been constructed and 10 old tanks have been re-excavated and repaired. Work on 18 tanks is now in progress. The scheme is now approaching completion.

Barpeta subdivision.—A similar scheme for the Barpeta subdivision was drawn up and sanctioned in 1909. The estimated cost was Rs. 65,175, of which Government was to contribute Rs. 43,455 and the balance to be paid by the Local Board. It was also spread over 5 years.

Eighteen wells and eight tanks have already been constructed and work on others is now in progress.

The scheme is now passing through its 4th year.

Mangaldai subdivision.—In imitation of the foregoing schemes, a scheme for improving the water-supply of the Mangaldai subdivision has been sanctioned during the year under report. The total estimated cost is Rs. 75,000, of which Government will provide Rs. 50,000 and the Local Board Rs. 25,000. The work will be spread over 5 years, Government providing Rs. 10,000 and the Local Board Rs. 5,000 yearly. Seventy-eight tanks, and 11 wells will be constructed.

Under the orders of the Local Administration a conference, whose members represent all sections of the community, met, after the close of the year under report for the consideration of the problems of rural water-supply and sanitation; and as the result of their deliberations, substantial advances may be anticipated in this important line of work.

The Local Administration has inaugurated a system of issuing grants of money to villages to improve sanitation and general cleanliness with the object of awakening the interest of the people in the sanitary affairs of their homes. This experiment is carried on under the control of District and Subdivisional Officers and members of Local Boards, and is not controlled or inspected by the Sanitary Department.

33. *Sale of quinine.*—From the table subjoined it will be seen that a gratifying increase in the sales of quinine treatments has taken place throughout the year, the demand having increased by 50 per cent., and 20,360 more treatments were sold than in the previous year.

The largely increased consumption in the Khasi and Jaintia Hills is due to the activity of the Deputy Commissioner and the Civil Surgeon in pushing the sales in feverish areas, while the increased sales in Lakhimpur are due to a sudden demand for quinine among the wild tribes of the North-East Frontier recently brought under control.

The Postmaster-General reports that "the increase in the sale of treatments of quinine may be attributed to the appreciation of the greater efficacy of the new treatment."

It appears that the use of quinine is slowly but surely making its way into popular favour, and that the introduction of the "treatment" system has done much to increase its popularity.

District.	Treatment parcels sold in		Increase.	Decrease.
	1912.	1911.		
1	2	3	4	5
Cachar	438	273	165	...
Sylhet	1,130	1,150	...	20
Khasi and Jaintia Hills	1,001	415	586	...
Lushai Hills	59	220	...	161
Goalpara	576	405	171	...
Kamrup	629	310	319	...
Darrang	527	225	302	...
Nowgong	797	475	322	...
Sibsagar	265	313	...	48
Lakhimpur	600	200	400	...
Total	6,022	3,986	2,265	229

34. *Pilgrim traffic.*—There is no important centre of pilgrim traffic in this province.

35. *Railway camps.*—Railway construction was in progress in the following places:—Fenchugang-Sylhet Branch of the Assam-Bengal Railway, employing 2,500 coolies and in temporary camps upon the Haflong and Lumding districts. No returns have been received from the Eastern Bengal State Railway as to the work on the *Rangiya-Tangla* extension.

In the above quoted camps, the sanitary arrangements have been under the supervision of the Railway medical officers.

36. *Provincial Laboratory.*—A laboratory for the performance of analyses required in connection with the Public Health administration of the province was started with a small amount of apparatus received from a similar institution in Dacca. A complete set of apparatus has recently been received from England. The officer in charge is Assistant Surgeon Babu Ram Taran Sen, and the work is supervised by the Deputy Sanitary Commissioner.

The following table shows the tests performed during the year, with the material and apparatus available:—

Chemical analyses of water	...	...	...	50
Agglutination tests	...	...	...	2
Examination of blood films	...	...	...	3
Examination of sputum	...	...	...	14
Examination of food-stuffs	...	...	...	20

The laboratory is now in a position to undertake chemical analysis of water for those desiring it, and of blood films and sputum, if reference is first made to the officer in charge for directions as to the collection and forwarding of samples.

Persons desiring a bacteriological examination of a water-supply in addition to a chemical analysis, should communicate with the Deputy Sanitary Commissioner.

Examination of milk, ghee, butter, and other food-stuffs can also be similarly arranged.

37. Emigration.—During the year under report the total number of emigrants, who passed through Goalundo, was 53,398. These were despatched by the following routes:—

To the Assam Valley by steamer	...	...	...	22,120
To the Assam Valley by rail <i>via</i> Chandpur	...	...	...	23,307
To Cachar and Sylhet by steamer	...	...	...	95
To Cachar and Sylhet by rail <i>via</i> Chandpur	...	...	...	7,976

The health of emigrants was good. Five cases of infectious diseases amongst emigrants and sardars were admitted into the hospital—4 from cholera and 1 from small-pox—all cured and discharged.

On the separation of Assam from Eastern Bengal, the appointment of Travelling Inspector of Emigrants was assigned to Assam; and the present incumbent, Military Assistant Surgeon Mr. K. W. Blinkworth, has his headquarters at Dhubri. It is his duty to supervise the conditions under which emigrants travel, by constant journeys of inspection by steamer and rail along the routes by which emigrant labourers arrive in Assam. The care, which is devoted to this supervision by the Travelling Inspector of Emigrants, and the suitability of the arrangements at present in force, are evidenced by the very low incidence of disease among these emigrants while in transit.

38. Personal Proceedings.—*Sanitary Commissioner.*—I visited Dibrugarh, Jorhat, Tezpur, Nowgong, Gauhati, Goalpara, Dhubri, Sylhet, Silchar, Haflong, Karimganj, Sunamganj, Maulvi Bazar and Habiganj, also Shillong, Cherrapunjee and Nongpoh, and inspected the sanitary conditions. I also visited the emigration coolie depôts at Dhubri, Gauhati, Tezpur, Silghat and various *mukhs* up the Brahmaputra to Dibrugarh.

Deputy Sanitary Commissioner.—Captain T. C. McCombie Young, I.M.S., filled the post of Deputy Sanitary Commissioner and Secretary to the Sanitary Board. He spent the months of April and May on duties connected with the organisation of the Sanitary Commissioner's office, and in supervising the work connected with the completion of the new Shillong water-works and the sanitation of Shillong. Dhubri and Nowgong were visited in connection with cholera epidemics. During the monsoon tour in the months of June and July, the conditions producing malaria in Nongpoh were investigated, and the municipalities and towns of Tezpur, Dibrugarh, Jorhat, Nazira, Haflong, Silchar, Dhubri, and Gauhati were inspected, and in company with the Travelling Inspector of Emigrants the emigration arrangements on the Brahmaputra were inspected. During August, Dhubri and Sylhet were visited to attend meetings of the water-works committees.

In September, vaccination in the Khasi and Jaintia Hills received attention, and work in the Provincial Laboratory was started. In October, the working of the water-works in Gauhati was inspected, and a committee meeting was attended, while Dibrugarh was visited for a similar purpose. In the month of November, the Sanitary and Malaria Conference in Madras was attended.

In the month of December, the *Kala-azar* enquiry in the Surma Valley was inspected, committee meetings were attended in Sylhet and Silchar, the towns of Karimganj, Habiganj and Hailakandi were visited, and vaccination work in the districts of Sylhet and Cachar was inspected.

R. NEIL CAMPBELL, Colonel, I.M.S.,
Sanitary Commissioner, Assam.

SECTION XI.
ANNUAL REPORT OF THE SANITARY BOARD.

39. During the year a Sanitary Board was constituted. It consists of the following members:—

The Inspector General of Civil Hospitals, President.

Chief Engineer,
Divisional Commissioners, } Members.

Deputy Sanitary Commissioner, Secretary.

Two meetings of the Board were held during the year. The only executive function of this Board is the distribution of rural water-supply grants placed annually at its disposal.

Detailed proposals for the creation of a cadre of Sanitary Inspectors for the Province were drawn up and submitted to Government. These proposals have been accepted, and arrangements are now being made for the recruitment and training of Sanitary Inspectors for the municipal towns of the province.

The Board also acted as the expert adviser to Government regarding such of the sanitary schemes as were referred to it for consideration.

Very considerable delay occurred in the preparation of the schemes of the Board from the lack of a Sanitary engineer to deal with them. This want will be supplied in the coming year by the appointment of an engineer to aid in the preparation of sanitary schemes.

Proposals for the appointment of a malarial research officer have been submitted and are engaging the attention of the Local Administration.

T. C. McCOMBIE YOUNG, *Captain, I.M.S.,*
Secretary, Sanitary Board, and Deputy
Sanitary Commissioner, Assam.

STATEMENTS.

IMPERIAL STATEMENT No. I.—*Statement showing the births*

Number.	District.	Population according to the Census of 1911.			Number of births registered.		
		Male.	Female.	Total.	Male.	Female.	Total.
1	2	3	4	5	6	7	8
SURMA VALLEY.							
1	Cachar	246,205	223,962	470,167	7,628	7,131	14,759
2	Sylhet	1,268,469	1,204,202	2,472,671	42,091	39,008	81,099
	Total	1,514,674	1,428,164	2,942,838	49,729	46,139	95,868
ASSAM VALLEY.							
3	Goalpara	318,475	282,168	600,643	12,048	11,240	23,288
4	Kamrup	339,398	328,430	667,828	9,570	8,971	18,541
5	Darrang	198,581	178,733	377,314	6,464	6,186	12,650
6	Nowgong	154,938	148,658	303,596	4,349	4,068	8,417
7	Sibsagar	364,810	325,489	690,299	11,602	10,726	22,328
8	Lakhimpur	249,021	219,968	468,989	6,907	6,677	13,584
	Total	1,625,223	1,483,446	3,108,669	50,940	47,868	98,808
	Total for the Province ...	3,139,897	2,911,610	6,051,507	100,669	94,007	194,676

IMPERIAL STATEMENT No. II.—*Statement showing the births and deaths*

Number.	District.	Area, in square miles.	Average population per square mile.	Population (Census 1911).			Births.		Number of deaths registered.		
				Male.	Female.	Total.	Total number.	Births per 1,000 of population.	Male.	Female.	Total.
1	2	3	4	5	6	7	8	9	10	11	12
SURMA VALLEY.											
1	Cachar	3,565	132	246,205	223,962	470,167	14,760	31.41	5,891	5,399	11,290
2	Sylhet	5,388	458	1,268,469	1,204,202	2,472,671	81,099	32.79	30,179	25,771	55,950
	Total	8,953	323	1,514,674	1,428,164	2,942,838	95,868	32.57	36,070	31,170	67,240
ASSAM VALLEY.											
3	Goalpara	3,954	151	318,475	282,168	600,643	23,288	38.77	10,531	9,747	20,278
4	Kamrup	3,858	173	339,398	328,430	667,828	18,541	27.76	8,309	7,716	16,025
5	Darrang	3,418	110	198,581	178,733	377,314	12,650	33.52	7,440	7,094	14,534
6	Nowgong	3,843	79	154,938	148,658	303,596	8,417	27.71	3,859	3,717	7,576
7	Sibsagar	4,996	133	364,810	325,489	690,299	22,328	32.34	7,424	6,956	14,380
8	Lakhimpur	4,529	163	249,021	219,968	468,989	13,584	28.96	6,024	5,509	11,533
	Total	24,598	126	1,625,223	1,483,446	3,108,669	98,808	31.78	43,587	40,739	84,326
	Total for the Province	33,551	189	3,139,897	2,911,610	6,051,507	194,676	32.16	79,657	71,909	151,566

registered in the districts of Assam during the year 1912.

Ratio of births per 1,000 of population.			Number of males born to every 100 females born.	Excess of births over deaths per 1,000 of population.	Excess of deaths over births per 1,000 of population.	Mean ratio of births per 1,000 during previous five years.		
Male.	Female.	Total.				Male.	Female.	Total.
9	10	11	12	13	14	15	16	17
16.24	15.17	31.41	107	7.40	...	16.87	15.87	32.74
17.02	15.77	32.79	107	10.17	...	16.84	15.53	32.37
16.89	15.68	32.57	107	9.72	...	16.84	15.58	32.43
20.05	18.71	38.77	107	5.01	...	19.74	18.30	38.04
14.33	13.43	27.76	103	3.77	...	17.01	15.83	32.85
17.13	16.39	33.52	104	...	4.99	16.37	15.65	32.02
14.32	13.39	27.7	107	2.76	...	16.26	15.54	31.81
16.80	15.52	32.34	108	11.51	...	13.69	12.74	26.43
14.72	14.23	28.96	103	4.37	...	13.75	12.99	26.74
16.38	15.39	31.78	106	4.66	...	16.16	15.24	31.40
16.63	15.53	32.16	107	7.12	...	16.49	15.41	31.90

registered in the districts of Assam during the year 1912.

Number of deaths of males to every 100 deaths of females.	Deaths per 1,000 of population from—											Mean ratio of deaths per 1,000 during the previous five years.		
	Cholera.	Small-pox.	Plague.	Fever.	Dysentery and Diarrhoea.	Respiratory diseases.	Injuries.	All other causes.	All causes.			Male.	Female.	Total.
									Male.	Female.	Total.			
13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
109	2.46	.008	...	10.74	2.72	.68	.27	7.11	23.02	24.10	24.01	24.56	24.91	24.72
117	1.41	.99	...	9.66	1.72	.40	.38	8.02	23.79	21.49	22.62	26.12	25.38	25.76
115	1.58	.84	...	9.83	1.88	.44	.37	7.88	23.81	21.82	22.85	25.67	25.39	25.60
108	2.01	.69	...	27.50	.49	.08	.26	2.70	33.07	34.54	33.76	29.60	31.52	30.59
107	4.23	1.89	...	13.67	.82	.23	.24	2.84	24.48	23.49	23.99	26.73	25.83	26.31
105	6.37	.50	...	19.53	4.39	1.21	.31	6.13	37.46	39.69	38.51	35.37	37.01	36.14
104	6.27	.35	...	13.08	1.21	.21	.23	2.93	24.99	25.09	24.05	27.77	26.90	27.34
106	1.30	.69	...	10.44	3.63	.79	.15	4.39	29.35	21.37	29.83	25.06	26.79	25.67
109	.72	.006	...	10.96	4.95	1.83	.35	3.75	24.19	25.04	24.59	26.31	28.04	27.16
107	3.09	.71	...	15.88	2.48	.09	.25	4.01	29.81	27.46	27.12	28.93	29.96	28.45
110	2.36	.77	...	12.94	2.19	.57	.31	5.69	25.37	24.69	25.04	26.99	27.14	27.06

IMPERIAL STATEMENT No. III.—Deaths registered in the districts of

No.	District.				January.	February.	March.	April.	May.
1	2				3	4	5	6	7
SURMA VALLEY.									
1	Cachar	...	...	...	912	884	796	1,176	1,334
2	Sylhet	...	...	...	5,813	4,448	4,026	4,570	5,209
	Total	...	...	...	6,725	5,332	4,822	5,746	6,543
ASSAM VALLEY.									
3	Goalpara	...	...	...	1,770	1,158	1,205	1,711	1,680
4	Kamrup	...	...	...	876	790	1,172	1,183	1,551
5	Darrang	...	...	...	760	599	854	856	1,511
6	Nowgong	...	...	...	557	412	452	812	1,036
7	Sibsagar	...	...	...	991	673	907	846	1,198
8	Lakhimpur	...	...	...	776	645	668	780	845
	Total	...	...	...	5,670	4,277	5,258	6,188	7,821
	Total for the Province	...	...	...	12,395	9,609	10,080	11,934	14,364
	Ratio per 1,000	...	...	...	2.05	1.60	1.66	1.97	2.37

IMPERIAL STATEMENT No. IV.—Deaths registered according to age in the

No.	District.			Under 1 year.		1 and under 5.		5 and under 10.		10 and under 15.	
				Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
1	2			3	4	5	6	7	8	9	10
SURMA VALLEY.											
1	Cachar	...	...	1,504	1,205	874	856	436	359	304	187
2	Sylhet	...	...	9,175	7,293	3,796	3,296	1,958	1,454	1,237	871
Total				10,679	8,498	4,670	4,152	2,394	1,813	1,541	1,058
ASSAM VALLEY.											
3	Goalpara	...	...	3,033	2,785	1,611	1,526	745	645	377	319
4	Kamrup	...	...	1,929	1,687	1,603	1,719	942	760	438	296
5	Darrang	...	...	1,748	1,549	1,211	1,215	584	506	334	249
6	Nowgong	...	...	839	808	639	634	414	360	233	150
7	Sibsagar	...	...	1,567	1,381	1,178	1,042	565	465	413	298
8	Lakhimpur	...	...	994	882	839	919	432	340	226	195
Total				10,030	9,092	7,151	7,055	3,682	3,076	2,021	1,487
Total for the Province				20,699	17,590	11,821	11,207	6,076	4,889	3,562	2,545
Population				106,330	106,991	256,689	374,837	491,403	482,119	333,535	264,628
Ratio per 1,000				194.65	164.54	33.14	23.89	12.36	10.14	10.67	9.62

Assam during each month of the year 1912.

June.	July.	August.	September.	October.	November.	December.	Total.
8	9	10	11	12	13	14	15
1,104	739	955	773	804	899	914	11,290
4,379	3,982	3,687	3,893	4,670	4,939	6,334	55,950
5,483	4,721	4,642	4,666	5,474	5,838	7,248	67,240
2,168	2,088	1,470	1,485	1,487	1,766	2,290	20,278
1,684	1,392	1,168	1,375	1,429	1,547	1,858	16,025
2,293	1,702	1,296	1,175	1,327	1,175	1,035	14,534
1,156	695	477	560	557	476	386	7,576
1,436	1,367	1,486	1,312	1,542	1,388	1,234	14,380
971	1,311	1,047	1,326	1,057	1,047	1,000	11,533
9,708	8,555	6,944	7,233	7,409	7,399	7,864	84,326
15,191	13,276	11,586	11,899	12,883	13,237	15,112	151,566
2.51	2.19	1.91	1.96	2.13	2.19	2.49	25.04

districts of Assam during the year 1912.

15 and under 20.		20 and under 30.		30 and under 40.		40 and under 50.		50 and under 60.		60 and upwards.	
Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
11	12	13	14	15	16	17	18	19	20	21	22
271	366	531	806	595	576	499	371	385	284	492	389
1,186	1,580	2,448	3,369	2,848	2,430	2,295	1,698	2,235	1,545	2,881	2,244
1,457	1,946	2,979	4,166	3,443	3,006	2,894	2,069	2,610	1,829	3,573	2,633
339	533	908	1,129	978	856	862	572	707	626	951	756
299	325	608	824	614	657	574	501	564	461	678	486
281	322	729	1,020	865	953	711	598	468	461	359	481
153	192	318	483	393	358	300	241	265	68	305	241
373	509	665	1,062	798	883	712	544	646	435	551	316
164	232	736	1,008	1,100	989	733	429	519	259	311	235
1,629	2,104	3,964	5,556	4,863	4,696	3,826	2,876	3,199	2,450	3,155	2,347
3,086	4,059	6,541	9,722	8,311	7,792	6,792	4,945	5,839	4,279	6,528	4,989
251,893	245,076	526,427	563,035	591,836	599,477	503,554	324,199	167,715	136,717	120,495	114,630
13.30	16.52	13.19	17.26	16.56	19.28	22.37	22.05	24.81	31.29	54.17	43.44

IMPERIAL STATEMENT No. V.—Deaths registered according to

Number.	District.	Population according to Census of 1911.					
		Christians.	Hindus.	Muhammadans.	Buddhists.	Other classes.	Total.
1	2	3	4	5	6	7	8
SURMA VALLEY.							
1	Cachar	1,117	305,935	155,653	24	8,338	470,167
2	Sylhet	1,512	1,008,930	1,364,739	20	7,450	2,472,671
	Total	2,629	1,493,965	1,520,392	44	15,788	2,942,838
ASSAM VALLEY.							
3	Goalpara	5,252	334,720	211,562	955	48,154	600,643
4	Kamrup	2,535	459,327	64,627	574	140,865	607,838
5	Darrang	1,913	245,341	29,305	609	109,146	377,314
6	Nowgong	1,373	177,795	15,689	41	108,628	303,596
7	Sibsagar	5,410	595,266	29,718	1,064	57,941	690,299
8	Lakhimpur	4,789	367,990	13,419	5,648	77,143	468,989
	Total	21,272	2,180,339	355,320	9,791	541,947	3,168,669
	Total for the Province	23,901	3,594,324	1,875,712	9,835	557,735	6,051,507

IMPERIAL STATEMENT No. VI.—Deaths registered from different

Number.	District and town.	Population according to Census of 1911.	Cholera.	Small-pox.	Plague.	Fever.	Dysentery and diarrhoea.	Respiratory diseases.	Suicide.	
									Male.	Female.
1	2	3	4	5	6	7	8	9	10	11
DISTRICTS EXCLUDING TOWNS.										
SURMA VALLEY.										
1	Cachar	459,929	1,144	4	...	5,001	1,254	321	2	1
2	Sylhet	2,438,469	3,483	2,423	...	23,679	4,198	981	32	14
	Total	2,898,398	4,627	2,427	...	28,680	5,452	1,302	34	15
3	Goalpara	588,871	1,161	417	...	16,431	253	28	6	6
4	Kamrup	644,608	2,835	1,223	...	8,904	498	143	18	32
5	Darrang	371,305	2,382	188	...	7,343	1,641	436	14	10
6	Nowgong	296,163	1,847	289	...	3,884	339	29	2	...
7	Sibsagar	677,063	809	59	...	7,065	2,483	549	10	7
8	Lakhimpur	452,781	325	3	...	4,976	2,253	841	22	14
	Total	3,037,886	9,419	2,179	...	48,003	7,492	2,906	72	60
	Total for districts, excluding towns.	5,931,275	14,046	4,606	...	77,383	12,944	3,308	106	84

causes in the class in the districts of Assam during the year 1912.

Number of deaths registered						Ratio of deaths per 1,000 of population.					
Christians.	Hindus.	Muhammadans.	Buddhists.	Other classes.	Total.	Christians.	Hindus.	Muhammadans.	Buddhists.	Other classes.	Total.
9	10	11	12	13	14	15	16	17	18	19	20
6	6,318	4,108	..	858	11,900	5.37	20.71	26.33	...	102.90	24.01
14	24,161	31,128	3	644	55,930	9.25	21.99	22.90	150.	86.44	22.62
20	38,479	35,236	3	1,502	67,240	7.60	21.70	23.17	68.18	95.13	22.85
202	19,851	5,948	2	3,275	29,278	18.46	32.42	28.11	2.09	68.01	33.76
29	11,275	1,494	12	3,215	16,025	11.44	24.55	23.11	20.90	22.83	23.99
31	7,281	694	...	6,438	14,534	16.70	16.08	33.68	...	58.98	38.51
25	5,087	457	...	2,009	7,576	16.75	28.61	29.13	...	13.48	24.95
69	11,790	478	1	2,022	14,580	16.44	19.36	16.08	.50	34.80	20.53
43	8,918	258	20	2,284	11,533	8.98	24.23	19.22	5.31	29.60	24.30
417	55,202	9,319	45	19,243	84,326	19.90	25.36	26.22	4.59	35.56	27.12
457	85,781	44,555	48	20,745	151,566	18.28	23.93	25.75	4.83	37.19	25.04

causes in the districts and towns of the Province of Assam during the year 1912.

Injuries.			Ratio of deaths per 1,000 of population.													
Wounds or accidents.	Snakes and wild animals.	Total.	All other causes.	Total.	Cholera.	Small-pox.	Plague.	Fever.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	All other causes.	From all causes.		Number.	
													For the year.	Mean of previous five years.		
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
117	4	124	3,261	11,109	249	.008	-	10.87	2.73	.69	.27	7.09	24.15	24.94	1	
849	58	953	19,599	55,316	142	.99	...	9.71	1.68	.40	.39	8.03	22.68	25.86	2	
966	62	1,077	22,800	66,425	159	.83	...	9.89	1.88	.45	.37	7.88	22.91	25.71		
105	40	157	1,546	20,008	1.97	.71	...	27.90	.43	.06	.26	2.62	33.97	30.68	3	
58	48	151	1,826	15,580	4.39	1.89	...	15.81	.77	.22	.23	2.83	24.17	26.34	4	
57	37	118	2,282	14,090	6.41	.50	...	19.77	4.41	1.17	.31	6.14	28.74	36.14	5	
37	27	66	865	7,369	6.19	.97	...	13.02	1.20	.19	.22	2.90	24.71	27.36	6	
69	16	102	3,007	14,134	1.28	.08	...	10.43	3.66	.81	.15	4.44	20.87	25.93	7	
98	20	154	2,607	11,159	.71	.006	...	10.99	4.97	1.85	.24	5.75	24.64	27.28	8	
419	188	748	12,133	89,640	3.15	.71	...	16.02	2.47	.65	.24	4.00	27.24	28.54		
1,385	250	1,825	34,993	140,065	2.37	.77	...	13.03	2.18	.57	.30	5.89	25.13	27.16		

IMPERIAL STATEMENT No. VI.—Deaths registered from different causes

Number.	Districts and towns.	Population according to Census of 1911.	Cholera.	Small-pox.	Plague.	Fever.	Dysentery and Diarrhoea.	Respiratory diseases.	Suicide.	
									Male.	Female.
1	2	3	4	5	6	7	8	9	10	11
TOWNS.										
SURMA VALLEY.										
1	Silchar	8,735	13	...	...	46	28	...	1	...
2	Hailakandi	1,462	...	...	...	5	...	...	...	...
3	Sylhet... ..	14,457	15	36	...	103	35	6	...	...
4	Karimganj	2,365	14	...	...	36	14	...	...	...
5	Manvi Bazar	6,512	1	...	...	9	4	...	...	...
6	Habiganj	6,244	2	...	...	34	5	1	...	...
7	Senamganj	4,630	2	4	...	36	5	5	...	...
	Total	44,449	47	40	...	269	91	12	1	...
ASSAM VALLEY.										
8	Dhubri	5,898	31	...	...	27	21	8	...	...
9	Goalpara	5,964	17	1	...	63	14	7	...	...
10	Gauhati	12,481	23	36	...	112	24	9	...	...
11	Barpeta	10,739	5	9	...	117	27	3	2	...
12	Tezpur	5,355	22	1	...	41	17	24	...	...
13	Mangaldai	564	2	...	...	4	...	...	...	...
14	Nowgong	5,473	58	...	...	88	10	7	...	...
15	Sibsagar	5,764	34	3	...	74	11	1	...	...
16	Jorhat	6,231	1	...	...	42	11	...	...	...
17	Golaghat	2,236	...	...	...	31	2	1	...	...
18	Dibrugarh	14,563	17	...	...	139	66	18	3	...
19	North Lakhimpur	1,645	...	...	...	28	3	...	...	...
	Total	75,783	210	50	...	766	206	78	5	...
	Total of towns	120,232	257	90	...	1,035	297	90	6	...
	Total for the Province	6,051,507	14,333	4,696	...	78,318	18,241	3,458	112	84

in the districts and towns of the Province of Assam during the year 1912.

Injuries.				Ratio of deaths per 1,000 of population.														
Wounds or accidents.	Snakes and wild animals.	Total.	All other causes.	Total.	Cholera.	Small-pox.	Plague.	Fever.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	All other causes.	From all causes.		Number.			
													For the year.	Mean of previous five years.				
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27			
5	...	6	78	171	1.48	...	...	5.23	3.18	...	.68	8.87	19.46	15.03	1
...	...	...	5	10	...	...	...	3.42	...	...	...	3.42	6.84	14.36	2
11	...	11	138	342	1.03	2.49	...	7.12	2.42	.41	.76	9.40	23.65	21.72	3			
2	...	2	26	92	2.14	...	...	5.53	2.14	...	.30	3.99	14.11	14.89	4
3	...	3	3	20	.42	...	...	3.79	1.68	...	1.26	1.26	8.49	14.35	5	
4	...	4	51	97	.32	...	...	5.44	.80	.16	.64	8.17	15.53	19.05	6	
1	...	1	30	83	.43	.87	...	7.81	1.08	1.68	.21	6.49	17.96	19.91	7			
26	...	27	329	815	1.05	.90	...	6.05	2.04	.27	.60	7.40	18.33	18.10				
2	...	2	40	129	5.33	...	...	4.64	3.61	1.37	.24	6.88	22.21	17.73	8	
1	...	1	38	141	2.85	.16	...	10.56	2.34	1.17	.17	6.37	23.64	25.32	9			
...	1	1	20	225	1.84	2.88	...	8.97	1.92	.72	.68	1.60	19.92	20.49	10			
6	2	10	49	220	.47	.84	...	10.85	2.51	.28	.93	4.56	20.48	31.84	11			
...	...	...	30	135	4.10	.18	...	7.65	3.17	4.48	...	5.60	25.21	30.81	12	
...	...	...	3	9	3.54	...	...	3.54	...	...	...	5.31	15.95	24.82	13
3	1	4	40	297	10.67	...	...	16.19	1.84	1.28	.73	7.36	38.10	26.87	14	
4	1	5	7	135	5.89	.52	...	12.83	1.90	.17	.86	1.21	23.43	24.63	15			
1	...	1	7	62	.18	...	...	8.02	2.10	...	.18	1.31	11.85	17.20	16
...	...	...	15	49	...	...	...	13.86	.89	.44	...	6.70	21.91	30.41	17
6	...	9	81	330	1.17	...	...	9.54	4.53	1.23	.61	5.56	22.64	24.30	18	
1	...	1	12	44	...	...	...	17.02	1.82	...	.60	7.29	26.74	21.28	19
24	5	34	342	1,686	2.77	.66	...	10.10	2.71	1.03	.45	4.51	22.25	24.55				
59	5	61	671	2,501	2.13	.74	...	8.60	2.47	.74	.50	5.58	20.80	22.20				
1,435	245	1,886	35,664	151,566	2.36	.77	...	12.94	2.19	.57	.31	5.89	25.04	27.06				

IMPERIAL STATEMENT No. VII.—Deaths registered from Cholera in the

Number.	District.	Circles of Registration.		Villages.		January.	February.	March.	April.	May.
		Number in each district.	Number from which deaths from cholera were reported.	Number in each district.	Number from which deaths from cholera were reported.					
1	2	3	4	5	6	7	8	9	10	11
SURMA VALLEY.										
1	Cachar ...	8	7	494	160	64	50	130	289	338
2	Sylhet ...	22	21	8,998	798	492	211	505	764	746
	Total ...	30	28	9,492	958	556	261	635	1,053	1,084
3	Goalpara ...	20	17	2,234	187	18	12	21	5	193
4	Kamrup ...	9	9	1,952	35*	10	7	49	63	92
5	Darrang ...	12	11	1,537	386	5	5	28	50	266
6	Nowgong ...	7	6	1,495	36*	...	...	25	384	561
7	Sibsagar ...	10	8	1,276	212	14	3	12	47	74
8	Lakhimpur ...	7	7	1,702	12†	4	9	17	42	35
	Total ...	65	58	10,146	878	49	36	152	591	1,151
	Total for the Province ...	95	86	19,638	1,836	605	297	787	1,644	2,235

* Muzas.

† North Lakhimpur subdivision only.

IMPERIAL STATEMENT No. VIII.—Deaths registered from

Number.	District.	Circles of Registration.		Villages.		January.	February.	March.	April.	May.	June.	July.
		Number in each district.	Number from which deaths from small-pox were reported.	Number in each district.	Number from which deaths from small-pox were reported.							
1	2	3	4	5	6	7	8	9	10	11	12	13
SURMA VALLEY.												
1	Cachar ...	8	1	494	2	...	...	...	1	1	...	2
2	Sylhet ...	22	17	8,998	444	183	211	221	322	378	249	221
	Total ...	30	18	9,492	446	183	211	221	323	379	249	223
ASSAM VALLEY.												
3	Goalpara ...	20	14	2,234	96	25	38	43	68	55	40	36
4	Kamrup ...	9	9	1,952	30*	29	64	176	265	257	185	132
5	Darrang ...	12	10	1,537	127	...	2	8	12	43	41	15
6	Nowgong ...	7	3	1,495	20*	8	6	11	47	57	75	32
7	Sibsagar ...	10	7	1,276	24	1	...	...	10	6	30	7
8	Lakhimpur ...	7	2	1,702	10†	...	...	...	...	...	...	...
	Total ...	65	45	10,146	321	63	110	238	402	418	371	222
	Total for the Province ...	95	63	19,638	767	246	321	459	725	797	620	445

* Muzas.

† North Lakhimpur subdivision only.

districts of Assam during each month of the year 1912.

June.	July.	August.	September.	October.	November.	December.	Total.			Ratio of deaths per 1,000 of population.			Mean ratio per 1,000 of previous five years.	Number.
							Male.	Female.	Total.	Male.	Female.	Total.		
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
174	26	47	8	10	7	14	635	502	1,137	2.65	2.24	2.46	2.29	1
365	75	40	8	8	72	231	1,579	1,638	3,217	1.48	1.36	1.41	3.11	2
539	101	87	16	18	79	245	2,134	2,140	4,274	1.67	1.60	1.68	2.98	
285	138	11	37	11	218	330	602	607	1,209	1.89	2.15	2.01	1.45	3
134	100	130	302	403	728	840	1,438	1,405	2,843	4.29	4.27	4.28	2.65	4
725	564	247	147	285	56	30	1,197	1,309	2,406	6.62	6.76	6.67	2.81	5
636	157	8	38	53	38	...	916	989	1,905	5.91	6.65	6.27	3.02	6
50	28	26	96	201	268	85	481	423	904	1.31	1.29	1.30	3.00	7
47	60	27	27	58	9	7	168	174	342	.67	.79	.72	1.65	8
1,877	1,047	449	647	1,021	1,317	1,291	4,822	4,807	9,629	2.96	3.24	3.09	2.49	
2,416	1,143	536	663	1,039	1,394	1,537	7,356	6,947	14,303	2.34	2.39	2.36	2.68	

Small-pox in the districts of Assam during each month of the year 1912.

August.	September.	October.	November.	December.	Total.			Number of deaths among children.		Total ratio of deaths per 1,000 of population.			Mean ratio per 1,000 of previous five years.	Number.
					Male.	Female.	Total.	Under 1 year.	One to 10 years.	Male.	Female.	Total.		
14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
...	...	...	...	...	4	...	4	...	...	.02	...	.008	.01	1
100	132	78	135	233	1,290	1,073	2,463	143	253	1.09	.89	.99	.99	2
100	132	78	135	233	1,294	1,073	2,467	143	258	.92	.75	.84	.97	
23	16	10	14	45	232	165	418	36	176	.79	.58	.69	.89	3
42	69	22	8	28	617	631	1,248	419	846	1.32	1.33	1.39	1.64	4
7	13	3	13	32	87	162	189	88	96	.43	.57	.50	1.76	5
29	18	4	2	...	113	136	289	69	189	.99	.91	.95	1.68	6
...	7	...	1	...	31	31	62	15	16	.68	.99	.90	.44	7
...	...	...	1	2	2	1	3	...	...	.008	.004	.006	.18	8
106	114	39	39	107	1,142	1,067	2,229	637	1,314	.70	.73	.71	.93	
206	246	117	174	340	2,336	2,160	4,696	770	1,572	.60	.74	.77	.51	

IMPERIAL STATEMENT No IX.—Deaths registered from fevers

No.	District.	Circles of Registration.		Villages.		January.	February.	March.	April.	May.
		Number in each district	Number from which deaths from fevers were reported.	Number in each district.	Number from which deaths from fevers were reported.					
1	2	3	4	5	6	7	8	9	10	11
SURMA VALLEY.										
1	Cachar	8	8	494	411	382	412	325	449	516
2	Sylhet	22	22	8,998	6,965	2,254	1,695	1,510	1,631	2,953
	Total	30	30	9,492	7,376	2,636	2,117	1,835	2,080	2,569
ASSAM VALLEY.										
3	Goalpara	20	20	2,234	1,857	1,571	996	1,004	1,436	1,263
4	Kamrup	9	9	1,352	29*	647	550	764	698	1,904
5	Darrang	12	12	1,537	951	454	374	549	521	781
6	Nowgong	7	7	1,495	70*	414	311	300	302	333
7	Sibsagar	10	10	1,226	881	323	413	564	399	583
8	Lakhimpur	7	7	1,702	261†	324	303	378	346	393
	Total	65	65	10,146	4,040	3,918	2,948	3,539	3,722	4,458
	Total for the Province ...	95	95	19,638	11,416	6,554	5,165	5,374	5,802	7,027

* Maunna.

† North Lakhimpur subdivision only.

IMPERIAL STATEMENT No. X.—Deaths registered from

No.	District.	Circles of Registration.		Villages.		January.	February.	March.	April.	May.
		Number in each district.	Number from which deaths from dysentery and diarrhoea were reported.	Number in each district.	Number from which deaths from dysentery and diarrhoea were reported.					
1	2	3	4	5	6	7	8	9	10	11
SURMA VALLEY.										
1	Cachar	8	6	494	190	119	66	86	14?	153
2	Sylhet	22	22	8,998	2,693	39?	283	277	337	408
	Total	30	28	9,492	2,283	511	349	363	479	561
ASSAM VALLEY.										
3	Goalpara	20	17	2,234	112	14	5	9	27	28
4	Kamrup	9	8	1,352	15*	20	27	31	38	57
5	Darrang	12	10	1,537	400	59	62	87	10?	189
6	Nowgong	7	7	1,495	45*	42	13	20	21	29
7	Sibsagar	10	9	1,226	903	138	81	10?	133	25?
8	Lakhimpur	7	7	1,702	101†	114	95	88	141	181
	Total	65	58	10,146	1,576	387	283	337	462	741
	Total for the Province ...	95	83	19,638	3,859	898	632	700	941	1,302

* Maunna.

in the districts of Assam during each month of the year 1912.

June.	July	August.	September.	October.	November.	December.	Total.			Ratio of deaths per 1,000 of population.			Mean ratio per 1,000 of previous five years.	No.
							Male.	Female.	Total.	Male.	Female.	Total.		
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
487	381	502	401	343	392	462	2,636	2,416	5,052	10.70	10.78	10.74	11.92	1
1,920	1,923	1,853	1,866	2,267	2,178	2,557	13,114	10,783	23,897	10.23	8.95	9.66	11.75	2
2,407	2,304	2,355	2,267	2,610	2,570	3,069	15,750	13,199	28,949	10.39	9.24	9.83	11.77	
1,641	1,676	1,347	1,281	1,267	1,337	1,683	8,529	7,992	16,521	26.78	28.32	27.50	26.16	3
1,082	902	744	715	712	585	730	4,857	4,276	9,133	14.31	13.02	13.67	17.26	4
951	648	610	578	613	689	648	3,825	3,563	7,388	10.26	10.93	10.58	19.86	5
345	386	332	344	318	301	255	2,051	1,921	3,972	13.23	12.92	13.08	12.88	6
722	707	803	649	665	556	623	3,784	3,428	7,212	10.37	10.33	10.44	12.44	7
410	576	448	691	449	439	445	2,708	2,435	5,143	10.87	11.06	10.96	12.31	8
5,150	4,895	4,194	4,258	4,024	3,889	4,384	25,754	23,615	49,369	15.84	15.92	15.88	17.39	
7,157	7,199	6,539	6,525	6,634	6,459	7,483	41,504	36,814	78,318	13.21	12.64	12.94	14.65	

dysentery and diarrhoea in the districts of Assam during each month of the year 1912.

June.	July.	August.	September.	October.	November.	December.	Total.			Ratio of deaths per 1,000 of population.			Mean ratio per 1,000 of previous five years.	No.
							Male.	Female.	Total.	Male.	Female.	Total.		
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
164	97	83	89	106	111	75	661	621	1,282	2.68	2.77	2.72	2.37	1
401	331	250	321	357	396	508	2,265	1,896	4,261	1.86	1.57	1.72	1.97	2
565	428	333	401	463	507	583	3,926	2,517	5,543	1.99	1.76	1.88	2.03	
59	49	27	18	16	25	16	159	134	293	.49	.47	.49	.38	3
108	66	51	38	54	35	24	234	255	549	.86	.77	.82	1.32	4
312	186	166	155	130	121	89	951	707	1,658	4.78	3.95	4.39	5.12	5
54	30	19	50	42	26	23	293	166	369	1.31	1.11	1.21	1.97	6
298	314	254	247	292	222	180	1,440	1,067	2,507	3.94	3.27	3.63	.74	7
279	355	235	231	211	290	163	1,245	1,077	2,322	4.99	4.39	4.65	5.23	8
1,110	1,000	752	719	745	659	509	4,792	3,406	7,698	2.64	2.29	2.48	3.05	
1,675	1,478	1,085	1,129	1,206	1,168	1,636	7,318	5,923	13,241	2.33	2.03	2.19	2.56	

IMPERIAL STATEMENT No. XI.—Deaths registered from

No.	District.	Circles of Registration.		Villages.		January.	February.	March.	April.	May.
		Number in each district.	Number from which deaths from respiratory diseases were reported.	Number in each district.	Number from which deaths from respiratory diseases were reported.					
1	2	3	4	5	6	7	8	9	10	11
SURMA VALLEY.										
1	Cachar	8	5	404	69	36	28	23	34	34
2	Sylhet	22	19	8,998	187	101	76	89	107	65
	Total	30	24	9,402	256	137	104	112	141	99
ASSAM VALLEY.										
3	Goalpara	20	10	2,234	22	4	2	6	...	1
4	Kamrup	9	7	1,932	12*	15	14	15	14	11
5	Darrang	12	8	1,537	122	38	30	39	42	53
6	Nowgong	7	5	1,495	22*	7	4	9	1	5
7	Sibsagar	10	8	1,226	313	38	33	34	41	27
8	Lakhimpur	7	6	1,702	1†	106	67	61	68	56
	Total	65	44	10,146	492	208	150	164	166	153
	Total for the Province	95	68	19,638	748	345	254	276	307	252

* Manas.

† North Lakhimpur subdivision only.

IMPERIAL STATEMENT No. XII.—Deaths registered from plague

No.	District.	Circles of Registration.		Villages.		January.	February.	March.	April.	May.
		Number in each district.	Number from which deaths from plague were reported.	Number in each district.	Number from which deaths from plague were reported.					
1	2	3	4	5	6	7	8	9	10	11
SURMA VALLEY.										
1	Cachar	8	...	404	...	...	...	...	...	...
2	Sylhet	22	...	8,998	...	...	...	...	...	...
	Total	30	...	9,402	...	...	...	...	...	...
ASSAM VALLEY.										
3	Goalpara	20	...	2,234	...	...	...	...	...	...
4	Kamrup	9	...	1,932	...	...	...	...	...	...
5	Darrang	9	...	1,537	...	...	...	...	...	...
6	Nowgong	7	...	1,495	...	...	...	...	...	...
7	Sibsagar	10	...	1,226	...	...	...	...	...	...
8	Lakhimpur	7	...	1,702	...	...	...	...	...	...
	Total	65	...	10,146	...	...	...	...	...	...
	Total for the Province	95	...	19,638	...	...	...	...	...	...

APPENDIX II.

PROVINCIAL.

Statement showing details of registration in compulsory areas.

Compulsory registration area.			Population according to Census of 1911.	Estimated births at 256 per 1,000 married women between the ages of 15 and 40.	Number of births registered during the year.	Estimated birth-rate per mille.	Registered birth-rate per mille.	Number of deaths registered during the year.		Death-rate per mille.		Number of prosecutions under Act, IV (B.C.) of 1873.	Number of convictions.
								Including deaths in dispensary.	Excluding deaths in dispensary.	Including deaths in dispensary.	Excluding deaths in dispensary.		
1			2	3	4	5	6	7	8	9	10	11	12
Silchar	...	...	8,785	296	218	33.09	24.81	171	118	19.46	20	16	14
Hailakandi	...	...	1,402	45	20	30.78	13.68	10	8	6.84	5.47	...	...
Sylhet	...	...	14,457	582	458	40.26	31.63	342	312	23.65	21.58	4	3
Karimganj	...	...	2,369	260	119	39.92	18.27	92	81	14.11	12.31	...	...
Maulvi Bazar	...	...	6,512	77	36	32.50	15.19	20	15	8.49	6.33	...	...
Habiganj	...	...	6,244	222	126	35.55	20.17	97	90	15.23	14.41	...	...
Sunamganj	...	...	4,620	145	92	31.38	19.91	83	75	17.96	16.73	...	...
Dhubri	...	...	5,808	191	151	32.83	25.99	129	91	22.21	15.67	24	22
Goalpara	...	...	5,964	197	185	33.63	31.01	141	122	23.64	20.45	27	13
Gauhati	...	...	12,481	409	221	32.77	17.70	225	139	19.02	11.13	74	†
Barpeta	...	...	10,739	482	591	44.88	55.03	220	220	20.48	20.48	...	...
Tezpur	...	...	5,355	167	65	31.18	12.13	135	89	25.21	16.62	79	45
Mangaldai	...	...	464	*	6	*	10.63	9	2	15.95	3.54	...	...
Nowgong	...	...	5,433	185	209	34.05	38.47	207	166	38.10	30.55	...	...
Sibangar	...	...	5,764	213	200	36.95	34.69	155	112	23.43	19.43	...	...
Jorhat	...	...	5,231	192	189	36.70	36.13	62	32	11.85	6.12	109	60
Golaghat	...	...	2,236	88	85	39.35	38.01	49	33	21.91	14.75	33	25
Dibrugarh	...	...	14,563	543	303	37.28	20.80	320	191	22.64	13.11	...	...
North Lakhimpur...	...	...	1,645	*	55	*	33.43	44	28	26.74	17.02	...	...
Total	...	...	120,232	4,301	3,329	35.77	27.69	2,501	1,924	20.80	16.00	366	182

* Not available.

† Result not yet available.

READ—

The Sanitary Report for the year 1912.

RESOLUTION.

The recorded birth-rate of the Province, excluding the hill districts in which registration is imperfect, was 32·16 per mille, which represents a slight improvement over that of the previous year and the quinquennial average. The death-rate rose from 23·61 to 25·04 per mille, but was 2·64 less than the quinquennial average. The natural increase (7·12) in the population, *i.e.*, the excess of births over deaths, though 1·25 less than that of the preceding year, was greater than the average of the five previous years. The lowest birth-rate is recorded in Nowgong and is ascribed to the fact that the indigenous population of that district has not yet recovered its vitality after the severe epidemic of *kala-azar* which it passed through in the 'nineties.'

2. *Collection of vital statistics.*—A system was introduced during the year, by which the accuracy of the registration of vital statistics, in areas where it is compulsory, is periodically tested and defaulters are regularly dealt with, with the result that the number of prosecutions and convictions increased from 25 and 10 to 376 and 182 respectively. The Chief Commissioner regrets, however, to find that registration in rural areas is still very imperfect, and that in the hill districts generally little is done in this direction, whilst in the North Cachar Hills nothing is even attempted. He desires to lay stress upon the importance of this department of work, and proposes to take up seriously the question of its improvement. The areas of exceptionally bad registration reported by the Sanitary Commissioner in paragraph 15 of the report will receive special attention.

3. *Mortality from the chief diseases.*—The death-rate from cholera was lower than the average of the previous decade, but severe outbreaks were reported from Darrang and Nowgong. The high mortality in Nowgong was due to contamination of the Kallang river, along the banks of which the bulk of the population is to be found. The Chief Commissioner intends to take up immediately the water-supply of the Kallang river area, and to give a considerable grant this year and in future till the water-supply of the Nowgong district is improved. The improvement of the water-supply in a portion of the Darrang district has been taken in hand, a scheme for the provision of new tanks and wells and the renovation of old ones in the Mangaldai subdivision of that district at a cost of Rs. 75,000 having been sanctioned towards the end of the year under report. In connection with a cholera epidemic at Dhubri, the Deputy Sanitary Commissioner visited the town in order to devise measures for relief. A scheme for the improvement of the water-supply of the town by improving the existing wells, adding new ones and providing for the protection from contamination at a cost of a little over Rs. 28,000 is now under consideration, and the necessary funds have been placed by the Local Administration at the disposal of the municipality. Since the close of the year, however, the question of a pipe supply for this town has been raised and will be carefully considered.

Small-pox claimed a rather larger number of victims than in the immediately preceding years. The mortality from dysentery and diarrhoea showed no marked departure from the average of recent years, and the greatest incidence of these diseases occurred, as usual, amongst the population of the tea estates. A reference will be made to the Tea Association with a view to bringing the Sanitary Department into more direct relationship with the tea industry.

The highest mortality was caused, as in previous years, by fever; no epidemic, however, was reported, and the death-rate from this cause was below the average of the previous decade.

The Chief Commissioner has taken steps for the appointment of a Malarial Research Officer. At present malarial fever and *kala-azar* are very often confused, and the Chief Commissioner hopes that the *kala-azar* survey now in operation will clear the ground and be of considerable assistance to the Malarial Research Officer to be

shortly employed. The figures of the splenic census undertaken by the Deputy Sanitary Commissioner are interesting. These indicate (what might also be deduced from the vital statistics) a comparatively low incidence of malaria in the Surma Valley, and they corroborate the popular idea that this disease is most common in the jungly tracts at the foot of the lower hills. The prevalence of malaria in open and more populous country is low, and the Sanitary Commissioner is inclined to think that an increase of population and of cultivation may prove the best anti-malarial measure for Assam.

Kala-azar operations.—Sir Archdale Earle learns with regret that *kala azar* is again beginning to make itself felt as an adverse influence on the health of the province, and he is keenly watching the research operations now being carried out by Captain Mackie, I.M.S., under the orders of the Government of India in connection with the etiology of the disease. In addition to those operations, a provincial survey of the disease is being carried out by a staff of two Assistant Surgeons and 14 Sub-Assistant Surgeons under the supervision of the Deputy Sanitary Commissioner, on the completion of which it is hoped that it will be possible to formulate a plan of campaign. The most encouraging feature in connection with this disease is the success which has attended the measures of control in the Golaghat subdivision.

The enquiry started in the latter part of the previous year into the prevalence of leprosy in Goalpara was completed and a report has been received. It shows that the prevalence of leprosy on the North bank of the Brahmaputra in the Goalpara subdivision is undeniable, and it is probable that the disease is equally prevalent in the surrounding country. A project for the construction of an enlarged leper asylum at Sylhet has been administratively sanctioned and is being undertaken. When this is completed, it will be possible to send to this asylum all the patients who desire modern treatment, which holds out a reasonable hope of cure for early cases and arrest of the disease in more advanced stages.

4. *Sale of quinine.*—Satisfactory progress has been made in popularising the quinine treatments, the sale of which increased by 50 per cent. during the year.

5. *Sanitary projects.*—The new water-works for Shillong were completed during the year at a cost of Rs. 81,290, and those for Jorhat, estimated to cost Rs. 1,16,316, are in progress. A water-works scheme for Silchar at a cost of Rs. 1,16,658 has been sanctioned.

A number of other schemes for municipal water-supply and drainage have been initiated as the result of the Chief Commissioner's tours, but the progress made with them hitherto has not been as great as Sir Archdale Earle could have desired. He trusts, however, that the recent appointment of a Sanitary Engineer will effect an immediate improvement in this respect.

Towards the improvement of the rural water-supply the Local Boards spent Rs. 96,398. Out of the grant at the disposal of the Sanitary Board, the Local Boards in the Surma Valley Division received Rs. 2,680 and those in the Assam Valley Rs. 48,243. The five years' programme of work for the improvement of rural water-supply at a total cost of Rs. 1,50,000 in the Gauhati subdivision is approaching completion; a similar programme for the Barpeta subdivision involving an expenditure of Rs. 65,175 is being carried out; and another such scheme for the Mangaldai subdivision estimated to cost Rs. 75,000 has been sanctioned. As a result of the Conference on water supply and sanitation lately held in Shillong, it has been decided, as an immediate measure, to allot two lakhs of rupees to Local Boards for expenditure on rural water-supply during the current year 1913-14, and to require every Board to prepare a comprehensive programme of the work of this nature which it can undertake to complete with the financial assistance of Government within the five years commencing from 1914-15. The experiment of making grants to Village Committee for expenditure on rural sanitation and the general cleanliness of villages has been successful, and the Chief Commissioner has decided to continue it on a larger scale.

6. The Chief Commissioner desires to thank the Hon'ble Colonel Campbell and the Members of the Sanitary Board for the valuable assistance rendered by them during the year. The services of Captain T. C. McCombie Young, Deputy Sanitary Commissioner, also deserve special mention.

By order of the Chief Commissioner of Assam,

A. W. BOTHAM,

Offg. Second Secretary to the Chief Commissioner of Assam.

