

Annual sanitary report of the Province of Assam.

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ANNUAL SANITARY REPORT

OF THE

PROVINCE OF ASSAM

FOR THE YEAR

1915.

BY

MAJOR T. C. McCOMBIE YOUNG, M.D., D.P.H., I.M.S.,
SANITARY COMMISSIONER, ASSAM.



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PRINTED AT THE ASSAM SECRETARIAT PRINTING OFFICE.

1916.

Price Twelve Annas.]

[Price One Shilling.





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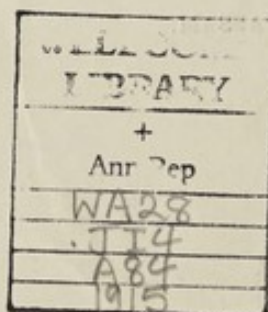
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FROM

MAJOR T. C. McCOMBIE YOUNG, M.D., D.P.H., I.M.S.,
SANITARY COMMISSIONER, ASSAM,

TO

THE SECOND SECRETARY TO THE CHIEF COMMISSIONER
OF ASSAM.

Dated Shillong, the 1st May 1916.

SIR,

I HAVE the honour to submit herewith the Annual Sanitary Report of the
Province of Assam for the year 1915.

I have the honour to be,

SIR,

Your most obedient servant,

T. C. McCOMBIE YOUNG, *Major, I.M.S.,*

Sanitary Commissioner, Assam.

Enclosures :—

1 Report.

13 Statements.

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CONTENTS.

SECTION I.

METEOROLOGY.

	PARA.	PAGE.
Meteorological conditions—Relation to the price of food-grains and vital statistics.	1	1

SECTION V.

GENERAL POPULATION—VITAL STATISTICS.

General Census figures ...	2	2
Birth registration, General ...	3	3
Birth registration in urban areas ...	4	3
Birth registration in rural areas ...	5	4
Death registration, General ...	6	4
Death registration in urban areas ...	7	4
Death registration in rural areas ...	8	4
Registration in compulsory areas ...	9	5
Registration in Hill Districts ...	10	6
Registration in Tea Gardens ...	11	7
Registration on Railways ...	12	7
Seasonal incidence of births and deaths ...	13	7
Mortality according to age, sex, and class ...	14	7
Inspection of village registers of vital statistics ...	15	7
General accuracy of vital statistics and improvements effected during the year.	16	8

SECTION VI.

HISTORY OF THE CHIEF DISEASES.

Chief causes of mortality ...	17	8
Cholera ...	18	9
High rates of mortality from cholera in individual towns and rural areas.	19	9
Cholera on tea gardens ...	20	10
Small-pox ...	21	10
High rates of mortality from small-pox in individual towns and rural areas.	22	10
Fevers ...	23	11
High rates of mortality from fevers in individual towns and rural areas.	24	11
<i>Kala-azar</i> ...	25	12
Dysentery and diarrhoea ...	26	13
Plague ...	27	14
Other causes of mortality ...	28	14

SECTION IX.

SANITARY WORKS—CIVIL.

General ...	29	14
Municipal expenditure on sanitation ...	30	14
Sanitary works ...	31	16

SECTION X.

GENERAL REMARKS.

				Para.	Page.
Village sanitation	...	...	...	32	19
Sale of quinine	...	...	...	33	20
Pilgrim traffic	...	...	...	34	20
Railway camps	...	...	...	35	20
Laboratory ...	...	...	...	36	21
Emigration	...	...	...	37	21
Personal proceedings	38	22

SECTION XI.

Report of the Sanitary Board	39	23
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ANNUAL SANITARY REPORT

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PROVINCE OF ASSAM

FOR THE YEAR

1915.

SECTION I.

METEOROLOGY.

THE Director General of Observatories has furnished the following brief summary of the chief meteorological features prevailing in the province during the year 1915 :—

" I. *The cold weather period.*—In the plains the weather was unusually dry in January and abnormally wet in February ; while at the hill stations of Shillong and Cherrapoonjee there was more rain than usual in both months. There was on the mean of the season more than the customary amount of cloud, and temperature, particularly at night, was somewhat above the normal. Humidity was, on the whole, average.

" II. *The hot weather period, March to May.*—Owing to a marked prolongation of the winter rains over north-west India the establishment of the conditions favourable to thunderstorms in Assam was materially retarded and the rainfall of March and April was in consequence appreciably in defect of the normal. In May, on the other hand, there was a strong influx of damp air across the Bengal coast and unusually heavy rain fell in all parts of the provinces. At Cherrapoonjee a total fall of 128" was recorded in place of the usual 32". The cloud proportion was about the average in March, markedly low in April and high in May. Humidity and temperature corresponded closely with the normal.

" III. *The monsoon period.*—The monsoon was fully up to its normal strength in June and August, unusually active in July and somewhat weaker than usual in September, in the last week of which month there was an almost entire suspension of rainfall over the province.

Between July 6th and 9th there was a burst of very heavy rainfall in the Sylhet and Cachar districts and in the Khasi and Jaintia Hills ; this is reported to have caused destructive floods.

The aggregate rainfall of the period June to September over the province as a whole was in excess, but it was unevenly distributed, being within 10 per cent. of the normal at Sibsagar, Shillong and Cherrapoonjee, in slight defect at Tezpur and Dhubri and appreciably above the average at Dibrugarh, Gauhati, Silchar and Srimangal. Humidity and temperature conditions of the period differed little from the normal, but there was a marked deficiency of cloud at Dhubri and Silchar.

" IV. *The retreating monsoon period.*—In October frequent rain fell during the first twenty-three days and the total for the whole month was in excess at Dhubri, Dibrugarh and Shillong. The November rainfall was barely half the small normal amount while in December there was scarcely any. Temperature was about 3° higher than usual in October and November, but humidity and cloud were not far removed from the normal."

Common rice was sold at 7 seers per rupee on the average during the year 1915.

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

In July there were heavy floods in almost all the plains districts. In some areas the floods adversely affected the harvest and caused a temporary rise in the price of food which had an untoward effect upon the health of those who experienced the scarcity.

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 that of the State of Manipur. The population of the plains districts is 6,051,507, of which 3,139,897 are males and 2,911,610 females. The ratios throughout this report have been calculated on the census population of 1911 and not on the population corrected for an intercensal year.

General census figures. Provincial birth and death-rates. Comparison with other provinces.

Registration is only partially carried out in the hill districts. These areas under partial registration comprise a population of 194,823, of which 54,228 is contributed by the Khasi and Jaintia Hills, 91,204 by the Lushai Hills, 44,801 by the Garo Hills and 4,590 by the Naga Hills. Registration was introduced in the North-East Frontier district during the year but as the population of the district is not available, ratios cannot be calculated. The resultant figures of registration in these hill districts and in the North-East Frontier district are shown separately in paragraph 10 of this report, and they are not included in the general statistics which refer only to the plains districts and their population.

The following statement compares the birth-rate in Assam with that of other provinces in India :—

Provinces.	Birth-rate.		
	1909-1913.	1914.	1915.
1	2	3	4
Assam	32·01	32·94	33·60
Bengal	35·02	33·86	31·80
Bihar and Orissa	40·9	42·38	40·4
Central Provinces	50·80	51·37	47·95
Madras	32·0	33·5	31·2
Burma	33·75	35·40	35·13
Bombay	35·77	37·43	37·10
United Provinces	42·24	44·93	43·48
Punjab	42·8	46·28	43·60
North-West Frontier Province	35·26	32·7	31·73

It is noteworthy that Assam is the only province in India in which the birth-rate for 1915 exceeds that for 1914.

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

Provinces.	Death-rate.		
	1909-1913.	1914.	1915.
1	2	3	4
Assam	27.00	24.66	50.86
Bengal	28.78	31.57	32.83
Bihar and Orissa	32.2	28.32	32.2
Central Provinces	37.05	36.69	35.91
Madras	23.1	25.0	22.0
Burma	26.97	24.13	27.99
Bombay	29.51	29.48	26.12
United Provinces	37.14	33.46	30.04
Punjab	31.1	31.96	36.33
North-West Frontier Province	24.25	25.8	23.61

3. The total number of births registered in the province during 1915 was 203,336 as compared with 199,343 of the previous year, thus showing an increase of 3,993 births over the number of the previous year and an increase in the birth-rate to 33.60 from 32.94, the quinquennial average being 32.39. As in the previous year, the highest birth-rate, 39.71 was recorded by the district of Goalpara. The next highest rates, *viz.*, 35.42 and 34.24, were recorded by the districts of Darrang and Sylhet, respectively. The districts of Sibsagar and Lakhimpur recorded almost the same rate *viz.*, 30.18 and 30.17, respectively, these districts showing the lowest birth-rates for the plains districts for the year in question. The increase in the birth-rate of Sylhet from 32.34 in 1914 to 34.24 in 1915 may be due to the absence of any widespread epidemic disease in 1914, while the fall in the birth-rate of Sibsagar from 33.16 in 1914 to 30.18 in 1915 may be due to the prevalence of cholera in epidemic form in that district during 1914. Compared with the mean ratio of births during the previous five years, there was an increase of 1.21 per mille during the year under report. The increase has been shared by six districts, the highest increase, 2.54, being contributed by the district of Nowgong, which is apparently recovering from the depopulation caused by kala-azar, although the improvement in the registration effected under the supervision of the Civil Surgeon,—an improvement whose results are always more marked in regard to births than deaths,—cannot be entirely ignored as a possible factor in producing part of the increase.

The birth-rate exceeded the death-rate in all districts except in Goalpara, in which the death-rate exceeded the birth-rate by 1.20.

4. The total number of births registered in urban areas during the year 1915 was 3,556, giving a ratio of 29.77 per mille of population. The corresponding figures of the preceding year were 3,272 and 26.64, respectively. The increase is mainly due to more complete registration being carried out in most towns as the result of better arrangements and more attention, although improved health conditions also contribute to the result. The highest rate 56.57 was recorded in the town of Mangaldai. Barpeta recorded a birth-rate of 56.42 and Maulvi Bazar, Golaghat, Nowgong, Tezpur, Nazira, North Lakhimpur, Jorhat and Goalpara follow in sequence with rates between 30 and 40. The birth-rate of 26.67 for Hailakandi is low, and so also are the figures for Karimganj of 20.31 and for Sunamganj of 25.1. These figures are of doubtful accuracy and the system of registration and of returns in these towns seems to require attention. Quite a different set of figures were furnished by the Civil Surgeon and the figures quoted were obtained by asking the Chairman to explain the obvious inaccuracies of the original report. There is a considerable improvement over the conditions denoted by the figures submitted last year, which showed a birth-rate of 5.98 in Karimganj, 10.33 in Sunamganj and 9.57 in Hailakandi.

5. The total number of births registered in rural areas during the year was 199,780 or 33.67 per mille of population as compared with 196,071 and 33.07, respectively, in 1914.

The highest rate of 62.20 was registered in the first and second circle of Sidli in the district of Goalpara. The rates were between 50 and 60 per mille in the circles of Raha and Nalbari in the district of Kamrup, in Ripu, Bijni Duar, third circle of Sidli and Santal Colony circles of the district of Goalpara, and in the Kanaighat circle of the district of Sylhet. The rates were between 40 and 50 in six circles in the district of Goalpara, in four circles in Darrang and in one circle each in the several districts of Cachar, Sylhet, Nowgong and Sibsagar. The lowest rate 9.75 was registered in the Chirang circle in the district of Goalpara, but as the population of this circle is only 410, the figure does not call for discussion. The rates were 12.26 and 16.18 in the Doomdooma circle in Lakhimpur and Sonari circle in Sibsagar, respectively. Registration in Polashbari and Lumding circles has been further improved during the year, the rates having increased from 24.18 and 23.11 in 1914 to 26.48 and 31.12, respectively, in 1915. The improvement in the former is due to a special investigation which was carried there in 1914, in consequence of which the method of collection has been somewhat improved and in the latter, it is due to the energetic action taken by the Deputy Commissioner and the Civil Surgeon in investigating the work of the Gaonburas in regard to registration. No special enquiry could be conducted in the defective circles of Sonari and Doomdooma or elsewhere for want of funds for the employment of a special staff.

6. The total number of deaths recorded in 1915 was 186,778 as compared with 149,244 in 1914, showing an increase of 37,534,—the death-rates being 30.86 and 24.66, respectively, as against the quinquennial average of 26.18.

Death registration—General.

The increased mortality during the year, as compared with that of the preceding year and the quinquennial average, was due to an unusual prevalence of cholera coinciding with the subsidence of the floods which were a feature of the month of July in the districts of Sylhet and Cachar, and in parts of Goalpara. These floods produced a good deal of privation and distress for which measures of relief had to be organised. In regard to Sylhet, Mr. J. E. Webster, I.C.S., Deputy Commissioner, notes as follows:—

"In Sylhet, the year started very healthy with a highly prosperous population. The floods were unusually early and unusually high and the last two months were exceptionally dry and the water level fell more rapidly than usual, the hardships which a large proportion of the population had to endure, made them more susceptible than usual to cholera.

"In my opinion the hardships a larger proportion of the population had to endure, made them more susceptible than usual to cholera, just as the cattle fell easy victims to the usual epidemics. People who usually were well off in many cases felt the pinch of want; water-lily seeds and other inferior food was eaten largely and I venture to think these conditions at least aggravated the cholera and dysentery."

There can be little doubt that the unusual meteorological features of the year coupled with the adverse economic conditions produced by the floods, increased the mortality attributed to fevers in the above-mentioned districts. In Nowgong cholera broke out in epidemic form, and as usual this was presumably caused by the pollution of the water-supply.

7. The total number of deaths registered in urban areas during 1915 amounted to 3,586 as compared with 2,726 in 1914, the corresponding ratios being 30.02 and 22.19, respectively. The increase is partly due to the prevalence of cholera in many towns, especially in those in the Surma Valley, and to an outbreak of small-pox in epidemic form in the town of Barpeta which recorded the high rate of 67.41. The highest death-rate that of 91.74 was recorded in the town of Mangaldai from "fever". The towns of Silchar and Gauhati reported death-rates below 20 per mille. These low rates may be accepted as fairly correct and are a satisfactory index of the freedom of these towns from serious epidemics during the year in question.

8. The deaths registered in rural areas during 1915 numbered 183,192 as compared with 146,518 in 1914. They represent the annual ratios of 30.88 and 24.71, respectively, the quinquennial average being 26.23.

Death registration in rural areas.

As in the preceding year the highest rates were recorded in certain circles of the Goalpara district, *viz.*, Guma, Sidli, Santal Colony, Ripu and Lakhimpur and were chiefly due to the prevalence of cholera and fever, the death-rates being in excess of the birth-rates in these circles. The Civil Surgeon was asked to make a special enquiry into the registration of the Guma and Bijni Circles. This has not yet received attention as the Inspector of Vaccination who should have undertaken it had to go on leave and was unable to attend to it. The Civil Surgeon states that the enquiry will be conducted as soon as the vaccination season is over.

Mortality rates of between 40 and 45 per mille were reported in the circles of South Salmara, Bijni Duar, and Forest village circles in the Goalpara, and in the Paneri and Kalaigaon circles in Darrang in which kala-azar is somewhat active. Rates below 20 per mille were reported from the Doomdooma circle (10.13) in Lakhimpur, Sonari (14.88) and Golaghat (19.52) in Sibsagar, Chirang (17.07) in Goalpara, Kariapara (18.10) in Darrang and Gauhati (19.36) and Rangia (16.90) in Kamrup.

It is always difficult to say whether any factors other than bad registration are operative in producing these low death-rates. Where the recorded birth and death-rates are both abnormally low in a population of normal constitution, bad registration may be suspected as the usual and most probable cause of deficiency; Doomdooma and Sonari probably come within this category. On the other hand, the Golaghat, Gauhati and Rangia circles which report a fairly high birth-rate with a low death-rate are probably areas in which the health conditions during the year have been satisfactory.

9. The vaccination inspecting staff was employed in testing the accuracy of registration of vital statistics in urban areas during the non-vaccination season.

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

The subjoined table shows the result of their enquiry.

Municipalities.	Unregistered vital occurrences detected during 12 months from October 1914 to September 1915.		Recorded vital occurrences during 12 months from October 1914 to September 1915.		Percentage of omissions.	
	Births.	Deaths.	Births.	Deaths.	Births.	Deaths.
1	2	3	4	5	6	7
Filchar	19	5	117	85	13.97	5.55
Hailakandi	4	3	33	23	10.81	11.53
Sylhet	49	46	245	140	16.66	24.73
Karimganj	13	4	52	48	18.75	7.69
Maulvi Bazar	7	3	79	55	8.13	5.17
Habiganj	8	7	155	95	4.90	6.86
Sunamganj	69	31	34	4	66.69	88.57
Dhubri	4	2	267	120	1.47	1.63
Goalpara	4	4	173	72	2.25	5.26
Gauhati	31	8	270	75	10.29	9.63
Barpeta	9	9	480	522	1.84	1.69
Tezpur	7	2	65	53	9.72	3.63
Mangaldai	18	10	23	26	43.90	27.77
Nowgong	21	14	174	151	10.76	8.48
Sibsagar	22	4	89	43	19.81	8.51
Nazira	46	9	61	50	42.99	15.25
Jorhat	59	26	117	101	33.52	20.47
Golaghat	11	2	40	28	21.66	6.66
Dibrugarh ... ..	...	...	305	166	...	...
North Lakhimpur ... ..	...	...	44	32	...	...
Shillong	62	12	316	156	16.40	7.14
Total	452	201	3,439	2,045	12.82	8.94

These figures show how inaccurate the registration would be, even in compulsory areas under the present conditions, were it not for these investigations. It is probable, however, that in most of our compulsory areas, few vital occurrences now

escape record either voluntarily or as the result of these investigations, and except in the cases commented upon elsewhere, there is reason to believe the sum of these activities, as represented in the birth and death returns, is practically correct.

On several occasions, the attention of trying Magistrates was drawn during the year to the inadequacy of the fines inflicted for failing to report births and deaths.

Two hundred and ninety-six persons were convicted during the year and fined Rs. 274-10-0. The average fine has been raised from annas 10 in 1914 to Re. 1 during the year under report. I would again refer to the advisability of inflicting deterrent penalties rather than a merely nominal fine of a few annas. Some irregularities in the conduct of these cases by a Sub-Inspector of Vaccination in the town of Sylhet have come to light and are under investigation. In this town 95 omissions were reported, only 41 cases were prosecuted and 20 convictions obtained.

During the non-vaccination season the Sub-Inspector of Vaccination made a house-to-house enquiry in Shillong to discover omissions of births and deaths and he found that 62 cases of births and 12 cases of deaths had not been registered. All of the defaulters were warned by the Magistrate to whom they were handed over for prosecution. This lenient treatment is of doubtful expediency as it is likely to defeat the object of prosecutions.

10. There was no further extension of registration area in hill districts during the year. The births and deaths were partially registered in the North-East Frontier district.

The subjoined table shows the recorded birth and death-rates in the hill districts compared with those of the year 1914 :—

Districts.	1915.		1914.	
	Birth-rate.	Death-rate.	Birth-rate.	Death-rate.
1	2	3	4	5
Khasi and Jaintia Hills	24.76	18.38	25.18	18.31
Naga Hills	26.36	15.68	27.65	18.98
Lushai Hills	46.27	29.45	40.91	32.84
Garo Hills	26.07	27.94	30.78	23.87

The total number of births and deaths registered in the Shillong Municipality in 1915 was 348 and 172, which yielded ratios of 25.51 and 12.61, respectively, against 19.35 and 10.99, respectively, in the preceding year.

From the increased birth-rate and decreased death-rate, it appears that the health of the Lushai Hills was comparatively good. The Sub-Inspector of Vaccination inspected 54 villages and checked 991 entries of births and 635 entries of deaths and detected only 8 births unregistered. The registration in this district, if these figures can be accepted, must be considered to be satisfactory and it would be interesting to have it tested more fully, as if it is as good as it seems, the system under which these results are obtained is worthy of study and imitation. Eight cases of cholera, which were reported during the year, were found on investigation to be a bad type of diarrhoea.

As the figures in the above table show the general health of the Garo Hills was far from satisfactory. There were two acute outbreaks of cholera during the year, one in the month of April which lasted till July and a second outbreak in the month of October which continued till December. The incidence was mainly on the plains portion of the district and the disease is said to have been imported from the neighbouring plains districts. The Civil Surgeon observes that the disease was kept up by an evil practice which obtains among the Garos, who throw cholera corpses into the rivers, the water of which is used for drinking purposes. Whenever any outbreak of cholera was reported, Sub-Assistant Surgeons with necessary medicines were deputed to treat the cases and suggest preventive measures.

Two hundred and forty-one births and 274 deaths were reported from the North-East Frontier district during the year. The population of this district will not be available till the next census and no ratios can be calculated.

11. The table below shows birth and death rates reported from tea estates during the year 1915 :—

Registration in tea gardens.						Birth-rate.	Death-rate.
Districts.							
1						2	3
Cachar	...	...	...	...	...	18.62	15.85
Sylhet	...	...	...	...	...	24.50	20.25
Goalpara	...	...	...	...	...	47.78	93.80
Kamrup	...	...	...	...	...	8.07	10.54
Darrang	...	...	...	...	...	25.05	32.11
Nowgong	...	...	...	...	...	19.15	23.78
Sibsagar	...	...	...	...	...	30.50	32.69
Lakhimpur	...	...	...	...	...	31.77	31.99
Total						26.27	26.47

Sufficient attention has not been given in the past to the collection and compilation of the monthly returns from which these ratios are calculated. It appears that many gardens fail to submit their monthly returns, and that others submit them in an incomplete and inaccurate form. The subject is being investigated and proposals for improvement will shortly be submitted. The receipt of accurate returns from the tea industry is a matter of considerable scientific interest, on account of the unusual accuracy with which under a satisfactory system these returns could be collected. It would also be in the best interest of the tea industry that accurate returns should be available. The tea industry has nothing to hide in respect to the health conditions of its labour force and in courting publicity it would stifle criticism.

12. The total number of births and deaths registered within railway limits during 1915 were 90 and 415, respectively, as compared with 86 and 351, respectively, in 1914.

13. The birth-rate was the highest in the months of January, October, November and December when it was above 3 per mille. In the remaining eight months of the year the rate was practically the same, *i.e.*, 2 per mille.

The highest death-rate, *viz.*, 4.04, was recorded in the month of November, the next highest rates being recorded in the months of October and December, these high rates of mortality being chiefly produced by cholera. The lowest death-rates were recorded in the months of February, March and April when the rates were 1.68, 1.77 and 1.90, respectively.

14. For the details of registration under age, sex and class, see the Statements

Mortality according to age, sex and class. II, IV, and V appended to this report.

As usual, the death-rates were highest among infants under one year of age, 192.52, and lowest among persons between 10 and 15 years of age, 12.37. The death-rate was higher both among males and females compared with that of the preceding year, being 31.26 for males and 30.44 for females against 25.15 and 24.13, respectively, in the previous year, and for every 100 females who died, there were 110 deaths among males.

During 1915 the mortality amongst Christians was 29.58, Hindus 28.52, Muhammadans 34.61, Buddhists 13.93, and other classes 33.67, the corresponding rates of the preceding year being 19.03, 24.82, 23.12, 7.52 and 29.32, respectively.

15. The Vaccination Inspecting Staff verified 51,671 entries of births and deaths in village registers and discovered that 1,943 such occurrences were not entered. This represents a ratio of 3.76 per cent. The corresponding figures of the preceding year were 62,961 and 3.42, respectively. The percentage of omissions detected varies from 2.76 in Sylhet to 11.16 in Sibsaagar.

The number of vital occurrences tested in Sibsaagar district was only 807 and should be increased, and in Kamrup and Goalpara more activity is also required.

16. No change has been made during the year in the agency for the collection and registration of vital statistics in rural areas. In those

General accuracy of vital statistics and improvements effected during the year.

urban areas to which Sanitary Inspectors have been appointed, they have been made Registrars of Births and Deaths. These areas are the Municipalities of Silchar, Sylhet, Dhubri, Goalpara, Gauhati, Barpeta, Tezpur, Jorhat, Dibrugarh and Shillong, and in them registration is now fairly accurate.

As in the previous years, vital statistics were collected in the rural areas of Sylhet, Cachar and Goalpara by Police chaukidars and in Kamrup, Darrang, Nowgong, Sibsagar and Lakhimpur by gaonburas. The former report to thana officers, and the latter, including also the chaukidars of the khas mahals in Goalpara, report to mauzadars, who in their turn submit their returns to the Civil Surgeons, in whose office district returns are compiled. No test enquiry was made during the year in any area in the province.

The proposals which were submitted in last year's sanitary report for the improvement of rural registration received careful consideration by district officers and by Government, and it appears that for various reasons these proposals cannot be put in operation. From the review of the question seen from these various aspects, we are driven to conclude that the present system of collection by gaonburas is incapable of substantial improvement, that the statistics so collected are inaccurate, and that if Government requires reliable figures, it must be prepared to pay for better collection by a separate agency.

In regard to the subject-matter of this section of the report which deals with vital statistics, therefore, one feels bound to safeguard one's reputation for arithmetical veracity by a caution against being misled by the appearance of accuracy conveyed by the calculation of ratios to the second place of decimals. These ratios do not represent arithmetical facts, they are for the most part cryptic statements, statistically expressed, in which are contained, indications of vital happenings. They must be interpreted with considerable caution and with local knowledge, and must not be compared with other apparently similar ratios with which they are in reality not comparable.

SECTION VI.

HISTORY OF CHIEF DISEASES.

17. The subjoined table compares the chief causes of mortality in 1915 with those of the average of the previous ten years :—

Chief causes of mortality.

Diseases.	1905-1914.			1915.		
	Urban.	Rural.	Combined.	Urban.	Rural.	Combined.
Cholera ...	2.53	2.94	2.94	3.15	4.48	4.48
Small-pox ...	.78	.50	.51	3.49	.61	.67
Plague ...	...	...	...	...	...	...
Fever ...	9.97	13.80	13.73	8.46	15.29	15.16
Dysentery and Diarrhoea ...	2.99	2.44	2.45	4.07	2.63	2.66
Respiratory diseases ...	.65	.49	.49	1.79	.76	.78
Injuries ...	.42	.30	.31	.46	.36	.36
All other causes ...	5.87	5.97	5.97	8.57	6.72	6.76
Total ...	23.27	26.44	26.41	30.02	30.88	30.86

A more accurate system of registration in urban areas has effected an apparent reduction in the fever mortality, many cases which were formerly grouped under this head, being now included, by better classification in such headings as "All other causes," "Dysentery and Diarrhoea," and "Respiratory diseases". The rise in the urban ratio for small-pox is due to an epidemic of this disease in the town of Barpeta. The general unhealthiness as revealed by these figures of the year must however be admitted as a fact, and it may not unreasonably be attributed in part to the unusual meteorological conditions of the latter half of the year, and the resulting effects on the public health.

18. Cholera.

District.	Death-rate per mille.	
	1905-1914.	1915.
Cachar	2.34	3.27
Sylhet	2.77	5.02
Goalpara	2.30	7.55
Kamrup	4.80	3.19
Darrang	4.07	1.81
Nowgong	3.56	10.75
Sibsagar	2.87	3.02
Lakhimpur	1.32	.62
Total	2.94	4.46

The cholera death-rate for the year was higher than the average of the preceding decennium, the incidence being greatest in Sylhet, Nowgong and Goalpara.

19. Only one town, *viz.*, Golaghat, was free from cholera during the year 1915, as compared with three in the preceding year. The ratio was highest in Dhubri (12.74), but when the number of cases which died in the emigration cholera hospital has been deducted, the corrected rates for the town itself is 4.47. There were two outbreaks in this town, one in the month of March and the other in September and October. Both the epidemics are believed to have had their origin in the contamination of the water-supply but as the conservancy system of the town is imperfect, fly convection may also have played an important part in their propagation. The installation of a pipe water-supply now in progress will, it is hoped, somewhat reduce the liability of the town to epidemic invasion. The towns of Sunamganj, Karimganj and Maulvi Bazar in the district of Sylhet also suffered to a certain extent from cholera, the infection being introduced into these towns from the surrounding rural areas in which cholera was present in epidemic form after the autumn floods. The rate of 6.11 for the town of Mangaldai is also high but the population is very small, and the actual number of deaths were 4. The towns of North Lakhimpur, Nowgong, Goalpara and Dibrugarh recorded rates between 3 and 4, but no wide spread epidemic was reported from any of these towns. All precautionary measures were promptly taken at the appearance of the disease.

A few cases of cholera occurred in Shillong in the months of August and September and prompt and successful measures were taken to check its spread.

In considering the cholera deaths recorded in Dhubri, Gauhati, Tezpur and Dibrugarh, it must be noted that emigration cholera hospitals exist in these towns, into which cholera-infected emigrant labourers for the tea estates are admitted. The inclusion of these figures swells the cholera mortality returns of these towns, and gives an appearance of an unhealthiness which does not actually prevail.

After deducting outside cases the corrected ratios are :—

Dhubri	4.47
Gauhati ... ..	.64
Tezpur	2.98
Dibrugarh	2.47

The rural areas in the district of Sylhet and Cachar suffered somewhat severely from cholera during the year, the increase being associated with the abnormally high floods of July, and the districts of Nowgong and Goalpara also suffered from this disease. The high temperature and absence of rain which were a feature of the months of October and November in these districts may be mentioned as

circumstances which may have determined the comparatively greater virulence and ubiquity of the comma bacillus. In Sylhet the epidemic doctors employed by the Local Boards were sent on cholera duty and Government Sub-Assistant Surgeons were sent to supplement their efforts. Sub-Assistant Surgeons in charge of dispensaries were also ordered to treat all cases of cholera occurring within a three-mile radius of their dispensaries. Pamphlets explaining the precautions which should be taken to avoid infection in times of epidemic, were distributed. In Cachar, Goalpara, and Nowgong where the epidemic was not so wide-spread, similar measures were taken. In Nowgong the epidemic was as usual spread by the contamination of the "Kallang" river which forms the source of drinking water-supply for many villages. Wells in sufficient number are in course of construction in these areas, and when they are completed there should be some diminution in the severity of these outbreaks if the people will only make use of the well water, but the conservatism and apathy of the Nowgong villagers in preferring the polluted water of the river is disappointing. The highest rates in individual circles were reported from Sidli, Ripu and Lakhipur circles in Goalpara, Raha in Nowgong, and Kanaighat in Sylhet.

It must regretfully be admitted that with the limited staff, funds, and powers of administrative control which are determined by the financial resources of the country and the ignorance of the populace, the Sanitary Department is powerless to do much that is really effective to control cholera in rural areas. The wonder is not that many people get cholera, but that so many escape it, considering the habits of the rural population and the innumerable opportunities of infection which their ways afford. The germs of future measures aimed against cholera can best be grown and tended in the primary schools in which the ideas and ways of the next generation are being formed, but the main difficulty in doing so lies in finding teachers who themselves believe the gospel they are expected to preach. The gradual multiplication of protected sources of water-supply in rural areas in the tanks and wells which Local Boards are constructing under the control of the Sanitary Board, with funds mainly provided by Government will, as years go on and the scheme proceeds, have an increasingly beneficial effect in reducing cholera mortality.

20. The total number of deaths from cholera registered in tea estates during the year was 1,659 which yielded a ratio of 2.36 per mille, the corresponding figures of the preceding year being 769 and 1.09, respectively.

21.—*Small-pox.*

Districts.						Death-rate per mille.	
						1905-1914.	1915.
1						2	3
Cachar	...	...	...	...	...	.01	.008
Sylhet	...	...	...	...	...	.20	.06
Goalpara	...	...	...	...	...	.50	1.07
Kamrup	...	...	...	...	...	1.83	3.10
Darrang	...	...	...	...	...	1.26	.61
Nowgong	...	...	...	...	...	1.02	.25
Sibsagar	...	...	...	...	...	.27	1.22
Lakhimpur	...	...	...	...	...	.13	.06
Total	...	...	...	...	...	.51	.67

Compared with the decennial average there was an increase in three districts and a decrease in five. Kamrup has the highest death-rate from this disease.

22. Out of twenty towns, nine were free from the disease against eleven of the preceding year. The highest ratio (35.33) was reported from Barpeta in which town there was a serious outbreak of small-pox during the year. The inhabitants of this town are for the most part 'Mahapurushias,' a sect which has religious scruples in regard to vaccination. These convictions were, however, severely shaken by the seriousness of the outbreak, and the influence of the educated members of the community, guided by the Commissioner, the Hon'ble Lieutenant-

High rate of mortality from small-pox in individual towns and rural areas.

Colonel P. R. T. Gurdon, C.S.I., I.A.,—to whose great personal influence much of the reform is due,—led to the introduction of the Compulsory Act, the Imperial Act XIII of 1880 being selected for the purpose. This was extended to the town in October 1915 and, in accordance with its provisions, a considerable number of vaccinations have been carried out.

This disappearance of "conscientious objection" as the result of personal acquaintance with the disease would be, for the English anti-vaccinator, a hard nut to crack. It is only a country in which there is no small-pox as the result of vaccination for generations, that can afford the luxury of "conscientious objection".

A few cases occurred in each month from April to September in the town of Nazira, and preventive measures were taken. The Compulsory Act is now being extended to this town and vaccination is receiving more attention than formerly.

As regards rural circles, sporadic cases were reported throughout the year from the districts of Kamrup, Goalpara and Sibsagar. The highest rate 10·41, was reported from the Sontal Colony circle in Goalpara. The reported death-rates from the Bartola circle (6·35) in Sibsagar, and Nalbari (5·95) and Barpeta (5·21) in Kamrup, were high. In four circles in Sylhet, in three in Goalpara and in Cachar and in one in Nowgong and Darrang, no small-pox deaths were reported.

23.—Fever.

Districts.						Death-rate per mille.	
						1905-14.	1915.
1						2	3
Cachar	...	...	...	...	...	11·02	11·77
Sylhet	...	...	...	...	...	10·69	13·40
Goalpara	...	...	...	...	...	26·51	29·77
Kamrup	...	...	...	...	...	15·28	14·07
Darrang	...	...	...	...	...	19·35	18·83
Nowgong	...	...	...	...	...	15·26	14·96
Sibsagar	...	...	...	...	...	11·79	11·70
Lakhimpur	...	...	...	...	...	11·22	12·88
Total						13·73	15·16

This death-rate is a conglomerate of very varied composition, of which malaria is probably the predominant element. Two districts which have a bad health record for the year, *viz.*, Sylhet and Goalpara, swell the figures, which would otherwise be much the same as in previous years.

24. The highest rate 39·75 was reported from the town of Mangaldai. In all towns

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

in which Sanitary Inspectors with medical qualifications have been appointed as Registrars of Vital Statistics, the death-rates from fevers were lower than those of the preceding year, except in Silchar where the rate was almost the same as before, and in Dibrugarh where it was higher. As already noted in paragraph 17, this decrease is largely due to better diagnosis. No town in the province suffered from an epidemic of fever during the year.

As for rural circles, two out of eight districts, namely Goalpara and Darrang, returned a death-rate higher than the provincial average of the year under review (15·16). In Goalpara the circles affected were those of Guma, Bijni, Golakganj, Sidli, North Salmara, Lakhimpur, Ripu, Bilasipara, Dhubri, South Salmara, forest villages, Dudnai and Goalpara. The circles of Paneri, Kalaigoan, Mangaldai and Tezpur were those most affected in the district of Darrang. Sub-Assistant Surgeons in charge of dispensaries rendered all possible medical help, and where necessary extra Government Sub-Assistant Surgeons were also placed on duty and attended to malaria cases.

During the year the conditions producing the extreme malariousness of the railway centre at Lumding were investigated in collaboration with the local medical officers of the Assam-Bengal Railway at the request of the Chief Medical Officer of that railway.

This scheme would have been worked out in detail by Lieutenant-Colonel S. P. James, I.M.S., who for a very brief period terminated by the war held the appointment of Malaria Research Officer in Assam. On his recall to military duty, it was decided to attempt to work out the condition producing the malariousness of the station upon general lines. One or two surveys were made, following on the work of earlier observers, Captain J. F. James, I.M.S., Dr. Murray and others; and the railway medical officer, Dr. A. B. Fry, was advised how to carry out a series of observations on the breeding ground of mosquitos during the malarial period of the year. These, when completed, and added to my own observations, supplied the necessary data to enable me to turn the case over to the Sanitary Engineer for the preparation of a scheme for the engineering measures necessary to deal with the condition. In framing this scheme, it was assumed that, only the breeding grounds of known malaria carrying anopheles need be abolished, and that potential breeding grounds, which had been shown to be devoid of carrier larvæ, might be neglected.

This narrowed the issue to the breeding grounds of *M. Culicifacies*, *M. Listoni*, *N. Fuliginosus* and *N. Maculatus*, as determined by Dr. Fry and myself in our observations.

These mosquitos breed in the following situations :—

- I. The drains of the station.
- II. An old brick-field.
- III. The Haru Langpher river.

The cost of laying down pucca drains and of draining or filling up borrow pits in the brick-field was estimated by the Sanitary Engineer to amount to Rs. 1,68,420.

Permanent works on the river, such as canalisation or pitching, were found to be impracticable, and a permanent larvicidal staff under adequate supervision was recommended. The action which will be taken upon our recommendations is at present being considered by the Assam-Bengal Railway Board, but there can be no doubt that work on the lines indicated would very largely reduce the malaria of the station of Luming.

No further anti-malarial operations or research has been carried on, owing to the withdrawal of the Malaria Research Officer, as the absence of any data based on previous observations and the curtailment of funds owing to war exigencies has prevented us from framing any comprehensive measures aimed at the reduction of malaria. The sale of quinine treatments at a price below their market value, to which reference is made in paragraph 33, is however a useful and encouraging anti-malarial measure which deserves mention in this connection.

25. *Kala-azar*.

Disriets.	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1913.	1914.	1915.
1	2	3	4	5	6	7	8	9	10	11
Cachar ...	...	22	5	6	2	3	2	8	...	2
Sylhet ...	743	576	561	454	866	549	394	444	203	159
Goalpara ...	90	49	32	81	87	135	192	206	138	55
Kamrup ...	438	516	386	378	450	354	385	294	215	283
Darrang ...	898	845	649	643	627	679	553	399	317	310
Nowgong ...	215	208	146	140	221	266	308	417	393	419
Sibsagar ...	6	11	2	1	...	34	31	29	24	5
Lakhimpur ...	17	...	5	...	50	11	...	1	8	...
Total ...	2,407	2,227	1,786	1,703	2,303	2,051	1,875	1,798	1,298	1,233

During the year, our observations on the behaviour of this disease were carried out by our travelling dispensaries. The war somewhat curtailed our energies, as it was not found possible to maintain our full staff for the whole period and hence the

work had to be more perfunctory than was originally intended. Under the supervision of Assistant Surgeon Suresh Chandra Majumdar, five of these travelling dispensaries have been at work for longer or shorter periods and a good general idea of the present situation has been obtained. The pony transport equipped with military pack saddles has proved successful in solving the difficulty of procuring carts and coolies to carry equipment to remote villages.

The figures returned by these dispensaries show a smaller number of infected villages and a smaller number of kala-azar patients than were found last year, but these returns cannot be unreservedly accepted at their face value, owing to the smaller number of observers who were at work. The disease still remains *in statu quo* in the endemic centres which we know. From the general tenor of the reports however, there is little doubt that the disease during the year in question has tended to decrease and that in no particular area was there any sign of more than endemic virulence.

While a travelling dispensary, whose stay in any one place is short, can have but a limited sphere of curative usefulness, at the same time it is worthy of note that 4,857 persons received treatment for "all causes" during the year, malaria and skin diseases being probably the most numerous of the cases of diseases under treatment.

In Golaghat our measures have been continued with unceasing vigilance. One of our travelling dispensaries under a Sub-Assistant Surgeon is permanently posted in this area. He attends to the sick, regularly visits all infected or suspected houses and reports the result of his observations to me. Only in three villages, nominally separate but practically contiguous, are there any remaining signs of activity. If no new factors arise to vitiate our results, we may look for the extinction of the disease in this area within a year or two.

The statistics in the above table, showing the recorded mortality from kala-azar, are in line with these observations. The total number is somewhat less than that of last year. The figure for Nowgong remains at a higher level than has been reached in the last ten years, a fact which is probably associated with the increasing birth rate in this district and the greater incidence of the disease among children, while Kamrup shows an increase over last year.

26. Dysentery and diarrhæa.

Districts.	Death-rate per mille.	
	1905-1914.	1915.
1	2	3
Cachar	2.48	2.42
Sylhet	2.01	2.76
Goalpara ... ..	.46	.47
Kamrup	1.34	1.10
Darrang	4.32	4.01
Nowgong	1.92	1.54
Sibsagar	4.41	4.29
Lakhimpur	4.85	4.62
Total	2.45	2.66

In these figures there is no deviation from the decennial average which calls for special comment. As in the previous years, the three upper Assam districts, *viz.*, Darrang, Sibsaagar and Lakhimpur, return the highest rates.

The table below shows the incidence of dysentery and diarrhoea in tea estates during 1915 :—

Goalpara	...	...	...	...	...	24.77
Darrang	...	...	...	...	...	9.99
Sibsagar	...	...	...	...	...	8.70
Lakhimpur	...	...	...	...	...	8.50
Sylhet	...	...	...	...	...	4.70
Nowgong	...	...	...	...	...	3.85
Cachar	...	...	...	...	...	3.70
Kamrup	...	...	...	...	...	2.24

The figures of Goalpara are misleading, referring as they do to a very small tea-garden population of 565.

During the year, advice in regard to the preparation of several water-supply schemes for tea gardens has been offered, and the schemes were referred to Mr. A. T. Duguid, Special Officer on duty for sanitary schemes, who has several of these schemes in hand. No serious efforts have as yet been made by the tea industry to attack the dysentery mortality through the improvement of the conservancy arrangements of their lines. Until the leaders of the industry are convinced of the need of this, and effective action is taken, no substantial reduction in the dysentery mortality need be expected, as no other substantial reform is generally required.

The difficulty lies in inducing the primitive aboriginal peoples, who form the bulk of the labourers on tea estates, to conform to the customs associated with a conservancy system. The difficulty is a real one, but it will be surmounted when the benefits to be obtained are realised.

Plague.

27. No case of plague was reported during the year 1915.

28. The total number of deaths due to "Respiratory diseases," "Injuries of all sorts" and "All other causes" amounted to 4,732, 2,205 and 40,925 which yielded ratios of .78, .36 and 6.76, respectively, as compared with .66, .30 and 5.75, respectively, in 1914.

Other Causes.

SECTION VII.

VACCINATION.

[Published separately.]

SECTION VIII.

SANITARY WORKS—MILITARY.

[No remarks.]

SECTION IX.

SANITARY WORKS—CIVIL.

29. The Municipal institutions of the province consist of 14 Municipalities 6 Unions and 1 Station, of which two Unions, *viz.*, those of Mangaldai and North Lakhimpur, were created during the year under report.

General.

30. The total income of these urban local bodies, excluding that of North Lakhimpur, for which the figures have not been furnished, amounted to Rs. 9,74,820 during the year 1915, against Rs. 8,56,613 in the previous year, showing an increase of Rs. 1,18,207. This increase is for the most part derived from Government grants given in aid of large improvement schemes. The aggregate expenditure on sanitation during 1915, excluding the expenditure on roads, amounted to Rs. 2,69,071 against Rs. 2,29,238 of the preceding year. The expenditure on account of "treatment of the sick" is not now shown as expenditure on sanitation, having been eliminated from this head by Government orders. Of the total income of Municipalities, 27.60 per cent. was spent on sanitary works, original and recurring, as compared with 28.58 per cent. in the previous year. The expenditure on the construction and maintenance of roads

fell from Rs. 1,25,191 in 1914 to Rs. 95,703 in 1915. The following table shows in sequence the percentage of income spent on sanitation by each local authority :—

1. Maulvi Bazar Union	...	...	...	63.66
2. Dhubri Municipality	...	...	...	58.93
3. Dibrugarh Municipality	...	...	...	52.67
4. Gauhati Municipality	...	...	...	49.17
5. Mangaldai Union	...	...	...	45.48
6. Shillong Municipality	...	...	...	43.44
7. Jorhat Municipality	...	...	...	43.38
8. Goalpara Municipality	...	...	...	37.44
9. Habiganj Municipality	...	...	...	37.44
10. Nowgong Municipality	...	...	...	34.97
11. Sunamganj Municipality	...	...	...	30.05
12. Katimganj Municipality	...	...	...	26.15
13. Sib-sagar Station	...	...	...	24.21
14. Hailakandi Union	...	...	...	19.24
15. Golaghat Union	...	...	...	18.02
16. Barpeta Municipality	...	...	...	16.57
17. Tezpur Municipality	...	...	...	16.39
18. Silebar Municipality	...	...	...	11.85
19. Sylhet Municipality	...	...	...	7.09
20. Nazira Union	...	...	...	3.62

There has been an increase in the expenditure under all the important heads of expenditure, especially on conservancy.

During the year many distinct improvements have been effected in urban sanitation. Water-supplies have been pushed some stages further on the road to completion and better supervision over most spheres of municipal sanitary activity has been attained by the appointment of Sanitary Inspectors in the larger towns. It is unfortunate that the financial limitations of the war prevent us at present from increasing our cadre to provide Sanitary Inspectors for some of the newer and smaller Municipalities.

Some improvement of conservancy in the direction of increasing the staff and plant available, has been achieved in some of our towns, but efforts to induce Municipalities to insist on the improvement of private latrines have been unsuccessful, except in Jorhat where under the guidance of Lieutenant-Colonel A. Playfair, I.A., the Municipal Commissioners have been successful in having practically the whole of the private latrines of the town reconstructed upon a sanitary pattern.

In vain has the example of this town been held before the eyes of other Municipalities, and plans and estimates of the cheap Jorhat pattern of latrine circulated to them. Some towns put us off with assurances that "some" latrines have been reconstructed, others issue notices for reconstruction upon which no action is taken or enforced, others refer the question to a sub-committee which deliberates inconclusively at infrequent intervals, and others again refer the Jorhat plans and estimates to the Municipal Overseer, who proves to the satisfaction of the Commissioners that the sum specified in the estimates must be very largely exceeded. The difficulty which appears to be common to all seems to lie in the unwillingness of unofficial Chairmen and Commissioners to incur an unpopularity with the electorate which may blight their hopes of civic advancement. In such cases, it is desirable that Government should strengthen the hands of local authorities by compelling them to take action, for it is absurd to assume that all is well and to talk about the "sanitation" of towns in which the majority of the privies are hopelessly insanitary, objectionable, and uncleanable.

No question of finance, or of paucity of funds is involved, as the onus of constructing the privy falls upon the householder. If each Ward Commissioner interests himself in the circumstances of individual householders, ascertaining who among them may be granted a reasonable extension of the time in which the construction should be completed, and finding out the few, very few, persons who are too poor to afford a latrine at all, the reform can be carried out without hardship to individuals. The reform when completed is by no means unpopular, as householders find themselves in possession of a decent cleanly structure which does not require the frequent repairs of the temporary abomination it has replaced, and is probably cheaper in the long run. It is curious that this primitive and obvious reform should prove a matter of such difficulty, but such is sanitation in its beginnings in the towns of Assam.

The table below shows the total Municipal expenditure on different heads of sanitation during 1915, as compared with 1914:—

Heads of expenditure.	Total expenditure.		Difference.	
	1915.	1914.	Increase.	Decrease.
1. Conservancy, including establishment, road-watering, latrines, etc.	Rs. 1,61,123	Rs. 1,37,441	Rs. 23,682	...
2. Drainage ... ..	...	...	...	...
3. Water-supply	20,125	15,962	4,163	...
4. Disposal of the dead	70,943	63,324	7,619	...
5. Markets and slaughter-houses	489	317	172	...
6. Vaccination	11,694	5,732	5,962	...
7. Other sanitary works	1,434	1,336	98	...
	3,263	5,126	...	1,863
Total	2,69,071	2,29,238	41,696	1,863
8. Construction and maintenance of roads	95,703	1,25,191	...	29,488
Total including roads	3,64,774	3,54,429	41,696	31,351

31. The balance of the Imperial Sanitary grants, recurring and non-recurring, was Rs. 68,000, and out of this the following grants were made in 1915-16:—

	Rs.
1. Transferred to the Public Works Department budget for the improvement of water-supply at Kohima	2,500
2. Grant made to the Jorhat Municipality to meet all liabilities in connection with the cost of testing the water-works and other small expenses	1,282
3. Additional grant made to the Gauhati Municipality for the clearance of the Dighli tank	458
4. Grant made to the Shillong Municipality for repairing and strengthening septic tank latrine	417
5. Pay and allowance of the ten Sanitary Inspectors	9,700
Total	14,357

SURMA VALLEY DIVISION.

Cachar.—A pipe water-supply scheme for the town of Silchar, the detailed estimates for which amount to Rs. 1,32,768, is now in course of construction. The work has been entrusted to the firm of Messrs. James Simpson & Co., Calcutta, who are carrying out the work under the supervision of the Sanitary Engineer. The expenditure incurred up to date is Rs. 36,768.

A scheme for draining the town of Hailakandi is under investigation by the Public Works Department.

Sylhet.—A pipe water-supply scheme for the town of Sylhet costing Rs. 2,00,882 has been sanctioned and the tender of Messrs. James Simpson & Co. for the construction has been accepted. The site for the pumping station has been acquired, but some delay in the inception of the work has occurred owing to the difficulty experienced by the Municipality in arranging for the performance of its share of the work. The conservancy arrangements of the town have been considerably improved during the year by the provision of more public latrines and night-soil depôts and additional removal plant. Quarters for the sweepers' staff at convenient places have also been constructed. The scheme is still in progress.

In Karimganj a rough project for the town-planning scheme was drawn up and subsequently detailed plans and estimates amounting to Rs. 70,268 were prepared by the Sanitary Engineer. A part of the scheme has been executed by the Municipal Commissioners out of Municipal funds and Government grants. The Municipal Commissioners applied to Government for a grant of Rs. 30,000 and a loan of Rs. 30,000 to complete the scheme, which includes the improvement of the water-supply, conservancy, communications, markets and of the general amenities of the town. In view of the present financial stringency imposed by the war, Government is unable to give either grants or a loan. The Municipality is proceeding with the scheme out of their own funds as far as possible, but no rapid progress with this scheme can be expected until Government grants are available.

ASSAM VALLEY DIVISION.

Goalpara.—The pipe water-supply scheme for the town of Dhubri which was administratively sanctioned in the previous year is now in progress. The construction of the water-works is in the hands of the Public Works Department, the wells from which it is proposed to pump the water are being sunk, and pipes and machinery have been purchased.

The Chief Engineer prepared two alternative schemes for the improvement of the water-supply for the town of Goalpara—one with its intake in the river Brahmaputra, and the other for pumping water from a boring for which a trial bore would have to be made on the hill above the town. The river scheme has been estimated to cost Rs. 78,750 and the well scheme to Rs. 69,300. As the estimated cost of the experimental bore would be between Rs. 4,300 and Rs. 7,500 owing to the lack of boring tools, the Sanitary Engineer has now advised the Municipality that the river scheme may be adopted, as from the boring experiment no favourable result might be obtained, whereas no uncertainty attaches to the river scheme. A scheme for the reorganisation of the conservancy system of the town has also been drawn up, and as Government is at present unable to assist the Municipality with funds, the Municipality has been advised to complete the scheme gradually from its own resources.

Kamrup.—No decision has as yet been made as how to finance the scheme for the drainage of the town of Gauhati, which was drawn up in the previous year. Various other schemes are pending in this town and little activity has been displayed in considering them. The water-works of the town are now in satisfactory order, except for the absence of scour valves for the filter beds, an omission which adversely affects the quality of the water supplied, as has been revealed by the monthly bacteriological analysis. This defect is being remedied.

During the year a scheme for the improvement of the sanitation of the town of Barpeta has been drawn up by the Municipality. It includes the provision of more wells, public latrines and a burning ghat. No Government grant being available in the present circumstances, the Municipality has been asked to finance the scheme from the additional funds which can be made available from enhanced taxation, if the Municipality is reconstituted under Act III (B. C.) of 1884.

Darrang.—A piped water-supply project for the town of Tezpur, which was administratively approved for Rs. 99,998 in 1914-15, is in progress. The work of construction has been entrusted to Messrs. James Simpson & Co. of Calcutta under the general supervision of the Sanitary Engineer. The site for the pumping station has been acquired and work is in progress. Some additions to the Municipal market have been made during the year.

The preliminary stages of the construction of one of the three 4' diameter wells, which are required for the drinking water-supply of the town of Mangaldai, have been taken in hand by the Public Works Department. The project for the improvement of the drainage of the town at a cost of Rs. 9,097 has been postponed, as Government is unable to make any grant to the Union for this purpose.

Nowgong.—The drainage of the town of Nowgong is receiving the attention of the Public Works Department. Two sluice gates were to be provided, one at Dapajan and the other at Nazirjan. A sum of Rs. 3,500 was transferred to the Public Works Department budget from the sanitary grant for the construction of one at Dapajan. The Sanitary Engineer now proposes to keep the Nazirjan permanently bunded. Plans and estimates for a Municipal market has been drawn up, but as no Government help is available, further action has been postponed and the available resources of the Municipality are being utilised in financing the conservancy scheme of the town which has been drawn up in accordance with the suggestions of the Sanitary Commissioner.

Sibsagar.—During the year under report, the pipe water-supply for the town of Jorhat has been completed and handed over to the Municipality. There appears to be a considerable amount of leakage from the tank from which the water is drawn, but it is hoped that as time goes on the tank will become more water-tight. A drainage scheme for the town at an estimated cost of Rs. 14,948 has been prepared, but further consideration of it has been put off till the return of more prosperous times when Government may be able to give assistance. The conservancy of the town has been greatly improved with funds provided by the Municipality from its own resources. With a good water-supply and a progressive policy of conservancy improvement, the sanitary condition of this town is now better than the average.

The scheme for the improvement of the water-supply of the town of Golaghat by the provision of two tanks properly fenced with unclimbable fencing, and provided with a pump for drawing water, has been finished, with the exception of some necessary earthwork and the adjustment of a satisfactory type of pump. The remaining portion of the drainage scheme of the town, which was in progress, has been completed. No progress has been made in providing a conservancy system for the town, as the maintenance of roads appears to absorb all the available funds of the Union. This from the point of view of public health is an unfortunate and misguided apportionment of its financial resources.

A scheme for a pipe water-supply for the town of *Sibsagar* is under preparation by the Sanitary Engineer.

The financial arrangements in connection with the improvement of water-supply of *Nazira* town by means of two protected tanks have been concluded and arrangements are now being made to take up the work in the next cold weather.

Lakhimpur.—Two schemes were simultaneously under consideration in the town of *Dibrugarh*, one being a pipe water-supply scheme and the other a surface drainage and the town improvement scheme. In considering the relative urgency of these two schemes, the Municipal Commissioners assigned priority to the drainage scheme, although the majority of the members of the Sanitary Board are in favour of the water-supply scheme. The following extract from the Annual Sanitary Report of *Lakhimpur* district by Lieutenant-Colonel A. Leventon, I.M.S., fully explains the case:—

"The question of a pipe water-supply has not materialised. Government offered a generous grant-in-aid, but against my advice the Municipality preferred to adopt a drainage scheme. I believe the objection is on the ground of higher taxation and the fact that most of the houses in *Dibrugarh* have their own wells, some good, some indifferent and some very bad, there is also the contention that the pipe supply would be unfiltered and no better than their own. I am merely stating the arguments. My recommendations will always be for a controlled piped supply. I do not see what useful purpose the drainage scheme will serve. When the river is low, the present system serves as well as any, but when the river is high nothing will prevent it from flooding the town. Control flood gates on the principal drains have not been effective and cannot be, as there are many openings through which the water can back up. Floods occur at a time when heavy rains are falling with the result that when the flood gates are closed, we may have several inches of rain which cannot get out. It is no use contending with such floods as the *Brahmaputra* brings down, it is best to accept the position and utilise them by having the town drains made *pucca*, a good flood will then clean them thoroughly. As long as *Dibrugarh* is where it is, seasonal floods will occur, and leaving the town drains unpaved is a grave mistake."

It is to be hoped that the Municipal Commissioners will at an early date see the error of their ways in preferring a drainage scheme to a protected water-supply and rescind their unfortunate decision. *Dibrugarh* is the one remaining town of any size in the province in which a protected water-supply is not in course of construction, and its water-supply is at present open to dangerous pollution.

Proposals for making a survey of the drains and for dealing with insanitary tanks in the town of *North Lakhimpur*, in which a Union was constituted during the year were considered. The Sanitary Engineer visited the town and pointed out the principal defects in the drainage system and how to remedy them. He has recommended that a survey of the drains should be made by the Sub-Divisional Officer, Public Works Department, and this is being done. As regards the proposal of the committee appointed by the Local Administration to fill up the insanitary tanks, the Sanitary Engineer is of opinion that the filling up of these tanks is not as urgent as the general improvement of the drainage. He recommends that the tanks may be kept cleared of jungle until funds are available both for this and for the drainage improvements.

HILL DISTRICTS.

Khasi and Jaintia Hills.—A small pipe water-supply scheme for *Cherrapunji* has been satisfactorily completed and the *Dhobighat* in *Shillong* has now been opened for use.

Naga Hills.—The water-supply of the town of Kohima was improved by the Public Works Department. A sum of Rs. 2,500 was sanctioned for the purpose.

Lushai Hills.—A project amounting to Rs. 20,651 for the improvement of water-supply in the town of Lungleh has received the administrative approval of Government, but its execution is postponed for the present for want of funds.

Manipur.—The sums of Rs. 7,000 and Rs. 2,000 were allotted to the Political Agent, Manipur, in 1914-15, for the improvement of the large Imphal Bazar and for the drainage of the British Reserve and for conservancy. A revised estimate amounting to Rs. 33,709 has been prepared for completing certain additional items of this work in Imphal, but in view of the present financial stringency, the consideration of the project has been deferred for the present.

North-East Frontier district.—A committee was held in Sadiya in the month of March under the presidency of Lieutenant-Colonel H. W. G. Cole, C.S.I., I.A., to frame a town-planning scheme which included a pipe water-supply and a small sewerage system. Further consideration of these schemes has necessarily been deferred. A water-supply scheme for the town of Pasighat is under consideration and three samples of water from Pasighat have been examined in the Laboratory and found on analysis to be potable.

An expenditure of Rs. 1,37,668 is reported to have been incurred by the Public Works Department on sanitary improvements during 1915 in the province, against Rs. 1,08,563 of the previous year.

SECTION X.

GENERAL REMARKS.

32. The Local Boards' programmes for the improvement of drinking water-supply, which have been spread over a period of five years commencing with the year 1915-16, have been approved, and necessary funds for financing the first year's programme amounting to Rs. 1,40,113 were placed at the disposal of each Local Board. The above sum represents the Government contribution of two-thirds of the estimate, the remaining one-third being found from local funds. The construction of tanks and wells in accordance with the plans approved by the Sanitary Board is in progress in each subdivision. There is, however, some reason to doubt whether these plans and instructions especially in regard to tanks are being carefully followed in all districts. There is a tendency to omit the completion of the jetty, which is by some considered an unnecessary expense. It should be remembered that in dealing with human beings and the pollution of water, a fencing with a gap in it is equivalent to no fencing at all and the money spent on fencing is wasted, if access to the water through a gap is possible. The fencing should be complete, intact and impenetrable, or else it should be entirely omitted.

A special scheme for the improvement of the water-supply has been in progress in Nowgong and the construction of 31 wells, in areas where the polluted water of the Kallong river is believed to be chief cause of spread of cholera in this district, has been taken in hand under this scheme. Fifteen of these wells have already been completed excepting the platforms, and work on others has advanced.

It has been observed that "the people have yet to learn that they should take scrupulous care to avoid anything which would tend to sully the water of their tanks. In Kamrup the Deputy Commissioner has already appointed local committees in some cases to deal with the matter, and where village organisations have been formed he has entrusted the village council with the duty of seeing that the protection of these tanks is maintained intact. As it will be some time before regular village organisations are formed in the Assam Valley Division generally, it is suggested that local officers should appoint local committees for the purpose of protecting these tanks. In the Surma Valley, village panchayats should be entrusted with this duty, pending the formation of village organisations."

Some such arrangement is most necessary. The local committees should be responsible for preventing damage to fencing, etc., and for reporting it at once when it occurs. It is also essential that the Local Board Sub-Overseer should be charged with the duty of carrying out all necessary repairs immediately and without any of the delay arising from the circumlocution which is a common feature of such operations unless satisfactory arrangements are made.

The nineteen Local Boards in the province incurred a total expenditure of Rs. 1,13,037 on rural water-supply and other minor schemes of village sanitation, against Rs. 2,24,388 of the preceding year.

33. The subjoined table shows the quantity of quinine sold in each district in

Sale of quinine.

1915, as compared with that in 1914 :—

District.	"Treatment" parcels sold in		Difference.	
	1915.	1914.	Increase.	Decrease.
1	2	3	4	5
Cachar	976	825	151	...
Sylhet	3,623	2,079	1,544	...
Khasi and Jaintia Hills	1,748	1,318	430	...
Naga Hills	111	101	10	...
Lushai Hills	631	250	381	...
Goalpara	1,960	1,103	857	...
Kamrup	969	794	175	...
Darrang	876	714	...	38
Nowgong	957	950	7	...
Sibsagar	831	907	...	76
Lakhimpur	328	222	106	...
Total	12,810	9,263	3,661	114

The growing popularity of quinine 'treatment' as a cure for malaria is evinced by the larger sales of the drug by postmasters and other agents who are employed as vendors. During the year a number of schoolmasters were enlisted as agents for the sale of quinine and the result of this experiment is being watched. On the sale of quinine through postmasters, the Deputy Postmaster General, Bengal and Assam observes as follows :—

During the calendar year 1915, quinine was on sale at 413 post offices in the province of Assam and the number of quinine 'treatments' sold was 66,304, the corresponding figures of the preceding year being 48,748. The sale of 'treatments' of quinine through the agency of the post office during the year 1915 has exceeded that of preceding year by 17,556. The increase in the sale is attributed to the greater appreciation of the efficacy of the medicine, introduced perhaps by the new attractive advertisement posters supplied to all offices in November 1914.

The opinion of the Deputy Postmaster General regarding the effect on the quinine sales of the somewhat grotesque but striking poster issued during the year, which was designed and issued to arrest the attention of the ignorant villager, is of interest. These posters have been widely distributed, they obtrude themselves upon the attention in all places where men congregate for travel or business, and they appear to be having the effect which a striking advertisement usually exercises on the sale of a drug, whether it be a patent medicine, or an honest remedy like quinine.

34. There is no important pilgrim traffic in this province. As in previous years, the usual sanitary arrangements were made for the Sidheswari Mela in the district of Cachar. There were no outbreaks of epidemic diseases and no death occurred. The Mela lasted for a fortnight and the people assembled were nearly 15,000.

35. There were four coolie camps under the Assam-Bengal Railway, the population of which varied from 350 to 610. The sanitary arrangements provided were on the whole satisfactory. In one of the camps there were cases of cholera, which subsided when remedial measures were taken.

33. The provincial laboratory under Assistant Surgeon Ram Taran Sen continued to fulfil a useful function and the subjoined table shows the details of the work performed :—

				1914.	1915.
1				2	3
Chemical analysis of water	...	...	...	111	98
" " of sewage	...	...	...	60	10
Examination of <i>ghee</i> and fats	...	...	...	1	20
" of milk	...	...	...	15	110
" of mustard oil	...	...	...	...	18
" of other foodstuffs	...	...	...	2	5
" of urine	...	...	...	58	132
" of stool	...	...	...	47	13
" of intestinal parasite	...	...	...	1	...
Bacteriological Examination of water	...	...	...	66	66
" " of blood films	...	...	...	182	133
" " of hepatic and splenic smears	...	...	...	2	...
" " of pus and other discharges	...	...	...	9	13
" " of sputa	...	...	...	28	18
" " of throat swabs	...	...	...	9	...
" " of urine	...	...	...	7	5
" " of sewage	...	...	...	25	5
Agglutination tests	...	...	...	22	42
Miscellaneous	...	...	...	16	14
Blood count and colour index	...	...	...	13	9
Section cutting	...	...	...	4	2
Vaccine	...	...	...	1	1
Silt	...	...	...	83	133
Total				762	847

An investigation of the quality of the milk supply of the province was undertaken, samples being collected and forwarded for analysis by the Sanitary Inspectors of the towns in which they are posted.

// The best samples were obtained from Dibrugarh, where sophistication seems less common than elsewhere. The degree of adulteration is not generally very serious. Most of the milk sold in the towns of Assam seems to consist of buffalo milk or mixed buffalo milk and cow's milk, with that proportion of water added to it which brings the amount of fat present in the milk to a proportion equal to that present in normal cow's milk, and reduces the figure for the total solids and specific gravity to below the standard of an unadulterated cow's milk in this respect. The milk as it is sold after adulteration thus contains about as much cream as ordinary cow's milk, but less of the other food constituents, but as milk fat is always considered to be the most valuable constituent of milk, the adulteration does not appear to be a very serious one.

In the present state of the law, prosecutions are unsatisfactory and there is no very strong public opinion in the matter which calls for action.

The analysis of mustard oil has also received attention; out of 18 samples forwarded for analysis on suspicion, 17 were found to be adulterated.

The Shillong tap water was analysed weekly and continued to give excellent results. The Gauhati tap water was analysed monthly and certain flaws were revealed in the method of filtration which had already been indicated as probable on account of the absence of scour valves for the filter beds.

37. The Sanitary Commissioner as Superintendent of Emigration is responsible for the sanitation of the tea-garden labour emigrants while in transit both by rail and by steamer within the province, and also for the route as far as Goalundo by river and as far as the Ganges by rail. The opening of the Hardinge bridge and the expected diversion of much of the coolie traffic into the Eastern Bengal Railway route may require some future readjustment of these arrangements in regard to which proposals are under preparation. The details of the arrangements are inspected by the Traveling Inspector of Emigrants who is constantly on the move and on the alert to discover flaws in the sanitary arrangements or contraventions of the rules.

The number of emigrants that passed through Goalundo to the labour districts in Assam in 1915 was 79,987 against 50,018 in 1914. During the year under report, 2,326 emigrants passed to these districts by rail route *via* Naihati and Amingaon between August and December 1915.

The emigrants from Goalundo were despatched by the following routes :—

To the Assam Valley by steamer	42,256
To the Assam Valley by rail <i>via</i> Chandpur	21,109
To Cachar and Sylhet by rail <i>via</i> Chandpur	16,622

During the year, 25 cases of infectious diseases (22 from cholera and 3 from small-pox) amongst emigrants were admitted into the Goalundo charitable hospital. On steamers there were 68 deaths among emigrants, of which 36 were from cholera and 32 from other causes against 8 and 5, respectively, of the previous year. There were 160 cases of cholera on steamers during the year. The health of the emigrants en route left a good deal to be desired and the causes of the unusual mortality received careful attention. No signs of relaxation in the sanitary precautions could be detected and the information which is now available from observation and enquiry enables us to decide that the probable cause of the increased incidence of mortality was the unusual influx of famine-stricken labourers from districts in which a scarcity of food-stuffs prevailed, while the larger number of emigrants also tended to swell the relative amount of disease and death.

At present the arrangements made by the steamer companies for the safety and comfort of the emigrants are satisfactory. The sanitary control of this route is complete, and various improvements in medical equipment are under consideration. During the year the Hill section of the Assam-Bengal Railway having been closed, the greater part of the coolie traffic was diverted to the river route between Goalundo and Gauhati. The authorities of the Assam-Bengal Railway have maintained their system of supplying hot meals to emigrants at Lumding and of providing a prescribed minimum of accommodation, water-supply and conveniences, but the Eastern Bengal Railway have not, up till the present, completed their arrangements equally satisfactorily.

38. During the first six months of the year, the Hon'ble Colonel H. E. Banatvala, I.M.S., held the post of Sanitary Commissioner with myself as Deputy Sanitary Commissioner. The creation of a separate Sanitary Commissionership was sanctioned with effect from July 1st and I received the appointment.

In January of the year under review, I visited Haflong, Hailakandi, Silchar, Habiganj, Maulvi Bazar, Karimganj and Sylhet and from thence proceeded to Lumding to investigate the malarial conditions of that station, thereafter returning to Shillong.

In February Gauhati and Nowgong were visited, the work of the kala-azar dispensaries in the latter district was inspected and a visit was paid to the kala-azar infected garden of Salona.

The kala-azar operations in the Golaghat area were then visited and from thence I proceeded to Jorhat and then to Sadiya.

In March a tour through the North-East Frontier district was undertaken, Pasighat was visited and the Municipalities of Dibrugarh and Tezpur were inspected. The month of April was spent in preparation of the draft of the Sanitary Report and another visit was paid to Lumding.

In May I was engaged in the preparation of the draft of the Vaccination Report and in June a detailed inspection of the Municipality of Shillong was carried out.

In July the towns of Gauhati and Dhubri were inspected and the arrangements for coolie traffic on the river were inspected as far as Goalundo.

August, September and October were for the most part spent at headquarters and a series of lectures on Home Hygiene were delivered and Ambulance and Nursing classes examined.

Touring was recommenced in November and Gauhati, Dhubri and Goalpara were inspected. In December the Cherrapunji water-works were visited and the Municipality of Nowgong inspected.

T. C. McCOMBIE YOUNG, Major, I.M.S.,

Sanitary Commissioner, Assam.

SECTION XI.

ANNUAL REPORT OF THE SANITARY BOARD.

39. The Sanitary Board of the province has been re-constituted during the year as follows :—

The Inspector General of Civil Hospitals	...	...	<i>President.</i>
The Chief Engineer	}	...	<i>Members.</i>
The Commissioners of Divisions concerned		...	
The Sanitary Commissioner	...	...	<i>Member and Secretary.</i>

Mr. A. T. Duguid, Temporary Engineer on special duty ... *Member.*

There was no formal meeting of the Sanitary Board during the year and all business of the Board was transacted by the circulation of files.

All the schemes referred to in paragraph 31 of the report were considered by the Board.

The function of the Board remained the same as in the previous year, *viz.*, that of advising Government on larger sanitary schemes.

Mr. Duguid, the Special Public Works Department Officer, under the Chief Engineer, filled the place of a Sanitary Engineer during the year and he has supplied the following note regarding his work :—

“ The following are the principal works on which I have been engaged during the year :—

CACHAR.

Silchar Water-works.—Working drawings and general supervision of construction.

Hailakandi Drainage.—Report with outline of scheme.

Tea gardens.—Reports with outline of the schemes for the water-supply of 3 tea gardens.

SYLHET.

Sylhet Water-works.—Working drawings and general arrangements for starting constructions.

Jaintia Pargana.—Report with outline of Bori junction, scheme for bonificazione.

Karimganj.—Report on town improvement, drainage of Hail Hoar, etc.

GOALPARA.

Dhubri Water-works.—General supervision of construction of water-works.

Goalpara Water-works.—Report and rough estimate for water-works.

DARRANG.

Tezpur Water-works.—Working drawings and general arrangements for starting construction.

LAKHIMPUR.

North Lakhimpur Drainage.—Report and outline of scheme for drainage.

SIBSAGAR.

General supervision of water-supply works for *Jorhat and Golaghat.*

Sibsagar.—Report and rough estimate for water-works, and drainage of Kayaputti bhill.

Tea garden.—Report with outline of scheme for water-supply to one tea garden.

NAGA HILLS.

Kohima.—Report with outline of scheme for improvements to water-works.

MANIPUR.

Report and revising scheme for drainage of British Reserve at Imphal.

LUSHAI HILLS.

Revising scheme for water-supply to Lungleh.

KHASI AND JAINTIA HILLS.

General supervision of construction of water-works at Cherrapunji with outline of scheme for sewage disposal of Welsh Mission.

NORTH-EAST FRONTIER.

Outline of scheme for water-supply and sewage disposal of Sadiya and water-supply of Pasighat.

LOCAL BOARDS.

Examining water-supply schemes of 5 years' programmes.

On account of the want of establishment, no commencement has been made in this year of the preparation of general drainage plans for different towns in Assam."

T. C. McCOMBIE YOUNG, Major, I.M.S.,

Secretary Sanitary Board, Assam.

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	7,590	7,280	14,870
2	Sylhet	...	...	1,268,469	1,204,202	2,472,671	44,012	40,667	84,679
	Total	...	...	1,514,674	1,428,164	2,942,838	51,602	47,947	99,549
ASSAM VALLEY.									
3	Goalpara	...	...	318,475	282,168	600,643	12,227	11,628	23,855
4	Kamrup	...	...	339,398	328,430	667,828	11,247	10,522	21,769
5	Darrang	...	...	198,581	178,733	377,314	6,876	6,490	13,366
6	Nowgong	...	...	154,938	148,658	303,596	4,963	4,843	9,806
7	Sibsagar	...	...	364,810	325,489	690,299	10,745	10,094	20,839
8	Lakhimpur	...	...	249,021	219,968	468,989	7,366	6,786	14,152
	Total	...	...	1,625,223	1,483,446	3,108,669	53,424	50,963	103,787
	Total for the Province	...	...	3,139,897	2,911,610	6,051,507	105,026	98,910	203,336

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

Number.	District.	Area, in square miles.	Average population per square mile.	Population (Census of 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	...	1,839	246,205	223,962	470,167	14,870	31.63	6,160	5,837	11,997
2	Sylhet	...	5,388	1,268,469	1,204,202	2,472,671	84,679	34.24	41,978	38,024	80,002
	Total	...	7,247	1,514,674	1,428,164	2,942,838	99,549	33.83	48,138	43,861	91,999
ASSAM VALLEY.											
3	Goalpara	...	3,954	318,475	282,168	600,643	23,855	39.71	13,184	11,291	24,575
4	Kamrup	...	3,836	339,398	328,430	667,828	21,769	32.59	9,052	7,923	16,975
5	Darrang	...	3,418	198,581	178,733	377,314	13,366	35.42	6,511	6,159	12,661
6	Nowgong	...	3,843	154,938	148,658	303,596	9,806	32.29	5,903	4,572	9,575
7	Sibsagar	...	4,696	364,810	325,489	690,299	20,839	30.18	9,636	8,636	18,322
8	Lakhimpur	...	4,329	249,021	219,968	468,989	14,152	30.17	6,623	6,048	12,671
	Total	...	28,598	1,625,223	1,483,446	3,108,669	103,787	33.39	50,969	44,770	94,779
	Total for the Province	...	31,845	3,139,897	2,911,610	6,051,507	203,336	33.60	98,147	88,631	186,778

registered in the districts of Assam during the year 1915.

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
16.14	15.48	31.62	101	6.11	...	16.35	15.50	31.85
17.79	16.44	34.24	108	1.89	...	16.98	15.59	32.57
17.53	16.29	33.83	107	2.57	...	16.88	15.68	32.46
20.35	19.35	39.71	105	...	1.20	20.20	19.02	39.22
16.84	15.75	32.59	106	7.18	...	15.80	14.82	30.63
18.22	17.20	35.42	105	1.87	...	17.27	16.59	33.87
16.34	15.95	32.29	102	.76	...	15.13	14.62	29.75
15.56	14.62	30.18	106	3.64	...	16.07	14.97	31.05
15.70	14.46	30.17	108	3.16	...	14.47	13.79	28.26
17.18	16.20	33.39	106	2.90	...	16.62	15.70	32.33
17.35	16.24	33.60	106	2.74	...	16.75	15.64	32.39

registered in the districts of Assam during the year 1915.

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
105	3.27	.008	...	11.77	2.42	.84	.40	6.78	25.01	26.06	25.51	23.63	23.83	23.72
110	5.62	.06	...	13.40	2.76	.74	.41	9.92	33.09	31.57	32.35	26.52	25.31	25.94
109	4.75	.06	...	13.14	2.71	.75	.41	9.42	31.78	30.71	31.26	26.05	25.69	25.85
115	7.55	1.07	...	29.77	.47	.14	.45	1.44	41.39	40.36	40.91	31.44	31.64	31.53
114	3.19	3.10	...	14.07	1.10	.31	.31	3.30	29.67	24.12	26.41	25.25	24.02	24.64
105	1.81	.61	...	16.83	4.01	1.36	.35	6.55	32.78	34.40	33.55	33.04	24.91	33.93
109	10.75	.25	...	14.96	1.54	.20	.29	3.53	32.29	39.72	31.53	25.91	24.84	25.39
110	3.02	1.22	...	11.70	4.29	.94	.23	5.11	26.41	26.68	26.54	27.04	23.36	22.66
109	.62	.06	...	12.88	4.62	2.07	.24	6.48	26.19	27.49	27.01	24.18	25.44	24.77
111	4.18	1.25	...	17.06	2.65	.80	.31	4.24	30.77	30.18	30.49	26.59	26.93	26.75
110	4.96	.67	...	15.16	2.66	.78	.36	6.76	31.26	30.44	30.86	26.33	26.03	26.18

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	...	...	...	758	677	600	744	795
2	Sylhet	...	...	...	6,116	4,587	3,789	3,839	4,008
	Total	...	...	...	6,874	5,264	4,389	4,583	4,803
ASSAM VALLEY.									
3	Goalpara	...	...	...	1,363	1,023	1,488	1,468	1,763
4	Kamrup	...	...	...	1,192	803	1,073	1,214	1,848
5	Darrang	...	...	...	712	691	814	936	1,347
6	Nowgong	...	...	...	580	592	993	1,188	763
7	Sibsagar	...	...	...	1,263	1,152	1,140	1,309	1,468
8	Lakhimpur	...	...	...	804	683	838	821	770
	Total	...	...	...	5,914	4,943	6,346	6,936	7,959
	Total for the Province	...	...	...	12,788	10,207	10,735	11,519	12,762
	Ratio per 1,000	...	...	...	2.11	1.68	1.77	1.90	2.10

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	...	...	1,422	1,230	781	740	499	433	279	197
2	Sylhet	...	...	10,397	8,599	5,056	4,795	3,050	2,370	1,665	1,033
	Total	...	...	11,819	9,829	5,837	5,535	3,549	2,803	1,944	1,230
ASSAM VALLEY.											
3	Goalpara	...	...	3,060	2,502	1,939	1,731	1,251	1,074	677	541
4	Kamrup	...	...	2,127	1,923	1,471	1,433	984	731	519	316
5	Darrang	...	...	1,552	1,477	873	841	411	367	237	139
6	Nowgong	...	...	890	781	765	733	559	439	385	251
7	Sibsagar	...	...	1,644	1,452	1,376	1,379	705	649	416	315
8	Lakhimpur	...	...	1,025	932	1,076	1,043	500	446	221	191
	Total	...	...	10,318	9,067	7,505	7,180	4,410	3,706	2,455	1,773
	Total for the Province	...	...	22,137	18,896	13,342	12,715	7,959	6,509	4,399	3,003
	Population	...	...	106,330	106,901	356,689	374,837	491,403	482,110	333,555	264,628
	Ratio per 1,000	...	...	208.19	176.94	37.40	33.92	16.17	13.50	13.18	11.34

Assam during each month of the year 1915.

June.	July.	August.	September.	October.	November.	December.	Total.
8	9	10	11	12	13	14	15
1,007	821	1,010	925	984	1,863	1,813	11,097
4,688	4,615	6,281	8,581	11,584	11,719	10,195	80,002
5,695	5,436	7,291	9,506	12,568	13,582	12,003	91,999
2,554	2,279	2,063	1,951	2,218	3,808	2,598	24,575
1,575	1,486	1,184	1,300	1,634	1,920	1,636	16,975
1,263	1,175	1,131	1,217	1,075	964	1,336	12,061
546	830	734	779	800	1,041	729	9,575
1,595	1,639	1,720	1,662	1,753	1,832	1,789	18,322
1,090	1,232	1,234	1,419	1,366	1,306	1,108	12,671
8,623	8,641	8,066	8,328	8,906	10,871	9,246	94,779
14,318	14,077	15,357	17,834	21,474	24,463	21,254	186,778
2'36	2'32	2'54	2'95	3'54	4'04	3'51	30'86

districts of Assam during the year 1915.

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
208	310	697	979	748	716	533	353	400	293	633	537
1,004	2,289	4,137	6,324	4,413	4,190	3,504	2,371	3,160	2,270	5,032	3,783
1,812	2,645	4,744	7,303	5,161	4,906	4,037	2,724	3,560	2,563	5,685	4,329
595	704	1,120	1,422	1,539	1,061	1,145	751	904	652	1,224	953
295	311	695	811	805	759	694	510	664	508	798	621
158	252	651	925	876	869	746	592	555	464	447	354
244	284	476	627	581	527	424	357	343	267	336	286
317	431	1,047	1,404	1,203	1,297	1,028	687	919	544	891	528
183	233	713	1,021	1,024	950	827	531	589	345	474	336
1,702	2,215	4,702	6,210	5,918	5,463	4,864	3,538	3,965	2,720	4,170	3,078
3,514	4,863	9,446	13,513	11,079	10,269	8,901	6,062	7,525	5,283	9,855	7,308
231,893	245,076	526,427	563,035	501,836	399,477	303,534	224,199	167,715	136,717	120,495	114,639
15'15	19'84	17'94	24'00	21'07	25'05	29'32	27'03	44'06	38'64	81'78	64'53

IMPERIAL STATEMENT No. V.—Deaths registered according

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	305,035	155,653	24	8,333	470,167
2	Sylhet	1,512	1,098,950	1,364,739	20	7,450	2,472,671
	Total	2,629	1,403,985	1,520,392	44	15,783	2,942,838
ASSAM VALLEY.							
3	Goalpara	5,252	334,730	211,562	955	48,154	600,643
4	Kamrup	2,535	459,227	64,627	574	140,865	667,828
5	Darrang	1,913	245,341	20,305	609	109,146	377,314
6	Nowgong	1,373	177,795	15,689	41	108,698	203,596
7	Sibsagar	5,410	595,266	29,718	1,064	57,941	690,299
8	Lakhimpur	4,789	367,090	13,419	5,648	77,143	468,989
	Total	21,272	2,180,339	355,320	9,791	541,947	3,108,669
	Total for the Province ...	23,901	3,584,324	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.	In-	
									Suicide.	
									Male.	Female.
1	2	3	4	5	6	7	8	9	10	11
DISTRICTS EXCLUDING TOWNS.										
SURMA VALLEY.										
1	Cachar	459,920	1,517	4	...	5,494	1,095	388	6	1
2	Sylhet	2,441,929	12,329	164	...	32,934	6,637	1,792	42	30
	Total	2,901,849	13,846	168	...	38,428	7,732	2,180	48	31
ASSAM VALLEY.										
3	Goalpara	598,871	4,439	643	...	17,944	239	47	12	11
4	Kamrup	644,698	2,098	1,639	...	9,138	692	163	35	29
5	Darrang	371,305	665	230	...	7,068	1,483	480	15	8
6	Nowgong ^b	298,163	3,340	76	...	4,510	449	54	5	4
7	Sibsagar	674,485	2,076	825	...	7,892	2,915	642	28	16
8	Lakhimpur	452,781	238	28	...	5,848	2,034	952	7	6
	Total	3,030,213	12,756	3,491	...	52,300	7,853	2,338	102	74
	Total for districts, excluding towns.	5,932,062	26,602	3,659	...	90,728	15,635	4,518	150	105

to class in the districts of Assam during the year 1915.

Number of deaths registered.						Ratio of deaths per 1,000 of population.					
Christians.	Hindus.	Mulammadans.	Buddhists.	Other classes.	Total.	Christians.	Hindus.	Mulammadans.	Buddhists.	Other classes.	Total.
9	10	11	12	13	14	15	16	17	18	19	20
16	6,778	4,539	...	664	11,997	14.32	22.22	29.16	...	79.63	25.51
15	32,681	46,491	1	814	80,002	9.92	29.73	34.06	50.00	109.26	32.35
31	39,459	51,030	1	1,478	91,999	11.79	28.10	33.56	22.72	93.61	31.26
382	12,031	9,739	3	2,420	24,575	72.73	35.94	46.03	3.14	59.25	40.91
16	12,410	1,710	...	2,839	16,975	6.31	27.02	26.45	...	20.15	25.41
68	7,259	793	2	4,539	12,661	35.54	29.58	39.05	3.28	41.58	33.55
25	5,851	709	1	2,989	9,575	18.20	32.90	45.19	24.39	27.49	31.53
77	14,954	694	51	2,546	18,332	14.23	25.12	23.35	15.96	43.94	26.54
108	10,270	245	79	1,969	12,671	22.55	27.00	18.25	13.98	25.52	27.01
676	62,775	13,890	136	17,302	94,779	31.77	28.79	39.09	13.89	31.92	30.49
707	102,234	64,920	137	18,780	186,778	29.58	28.52	34.61	13.93	33.67	30.86

causes in the districts and towns of the Province of Assam during the year 1915.

Injuries.				All other causes.	Total.	Ratio of deaths per 1,000 of population.												Number.
Wounds or accidents.	Snakes and wild animals.	Rabies.	Total.			Cholera.	Small-pox.	Plague.	Fever.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	All other causes.	From all causes.				
														For the year.	Mean of previous five years.			
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28		
170	10	2	189	3,124	11,811	3.29	.008	...	11.94	2.38	.84	.41	6.79	25.68	23.88	1		
841	99	...	1,012	24,199	79,117	5.04	.06	...	13.48	2.73	.73	.43	9.90	32.39	26.00	2		
1,011	109	2	1,201	27,523	90,928	4.77	.05	...	13.24	2.68	.75	.41	9.41	31.33	25.67			
144	99	1	267	753	24,232	7.53	.109	...	30.30	.40	.07	.45	1.27	41.15	31.76	3		
63	74	...	201	2,063	16,044	3.25	2.62	...	14.17	1.07	.25	.31	3.20	24.88	24.73	4		
75	28	1	127	2,363	12,416	1.79	.61	...	19.03	3.99	1.29	.34	6.36	33.43	34.04	5		
35	44	...	88	1,017	9,425	10.86	.25	...	15.12	1.47	.18	.29	3.41	31.61	25.23	6		
81	30	...	155	3,441	17,946	3.07	1.22	...	11.70	4.32	.95	.22	5.10	26.60	22.79	7		
87	10	...	110	2,941	12,201	.52	.06	...	12.91	4.00	2.10	.24	6.49	26.94	24.81	8		
485	285	2	948	12,578	92,264	4.20	1.15	...	17.25	2.59	.77	.31	4.15	30.44	26.67			
1,496	394	4	2,149	39,901	183,192	4.48	.61	...	15.29	2.63	.76	.36	6.72	30.88	26.28			

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

Number.	District and town.	Population according to Census of 1911.	Cholera.	Small-pox.	Plague.	Fever.	Dysentery and diarrhoea.	Respiratory diseases.	In-	
									Suicide.	
									Male.	Female.
1	2	3	4	5	6	7	8	9	10	11
TOWNS.										
SURMA VALLEY.										
1	Silchar ...	8,785	21	...	...	34	44	10	...	...
2	Hailakandi ...	1,402	1	...	...	6	2	...	...	...
3	Sylhet ...	14,457	34	5	...	101	90	28	...	...
4	Karimganj ...	3,052	17	...	...	26	25	2	...	...
5	Maulvi Bazar ...	2,369	12	1	...	16	6	1	...	...
6	Habiganj ...	6,244	13	...	...	33	18	5	1	...
7	Sunamganj ...	4,620	31	...	...	32	13	3	...	...
	Total ...	40,989	129	6	...	248	198	49	1	...
ASSAM VALLEY.										
8	Dhubri ...	5,808	74	1	...	14	18	13	...	...
9	Goalpara ...	5,964	23	3	...	27	28	26	...	...
10	Gauhati ...	12,481	8	2	...	113	11	30	...	...
11	Barpeta ...	10,739	30	380	...	152	37	16	1	2
12	Tezpur ...	5,355	16	1	...	13	19	31	1	2
13	Mangaldai ...	654	4	...	...	26	14	4	...	...
14	Nowgong ...	5,433	23	...	...	33	29	9	...	...
15	Sibsagar ...	5,764	4	1	...	70	8	...	...	...
16	Nazira ...	2,583	2	17	...	33	3	...	...	...
17	Jorhat ...	6,231	9	2	...	38	24	12	...	...
18	Golaghat ...	2,236	...	...	...	47	13	1	...	...
19	Dibrugarh ...	14,563	48	4	...	177	82	19	...	...
20	North Lakhimpur ...	1,645	7	...	...	20	3	4	...	...
	Total ...	78,456	248	411	...	763	289	165	2	4
	Total of towns ...	119,445	377	417	...	1,011	487	214	3	4
	Total for the Province ...	6,051,507	26,979	4,076	...	91,739	16,122	4,732	153	109

in the districts and towns of the Province of Assam during the year 1915—concluded.

Injuries.				Ratio of deaths per 1,000 of population.														Number.
Wounds or accidents.	Snakes and wild animals.	Rabies.	Total.	All other causes.	Total.	Cholera.	Small-pox.	Plague.	Fever.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	All other causes.	From all causes.				
														For the year.	Mean of previous five years.			
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28		
2	...	...	2	62	173	2.39	...	...	3.87	5.00	1.13	.22	7.05	19.09	17.97	1
...	...	...	...	4	13	.68	...	...	4.10	1.36	...	...	2.73	8.89	10.26	2
7	...	...	7	209	474	2.35	.34	...	6.98	6.22	1.92	.43	14.45	32.78	22.47	3
4	...	...	4	17	91	5.57	...	...	8.51	8.19	.65	1.31	5.57	29.81	23.59	4
6	...	...	6	25	67	5.06	.42	...	6.75	2.53	.42	2.53	10.55	28.28	14.35	5
4	...	...	5	73	147	2.08	...	...	5.28	2.88	.80	.80	11.69	23.54	20.49	6
1	...	...	1	26	106	6.71	...	...	6.92	2.81	.64	.21	5.62	22.94	16.96	7
24	...	..	25	416	1,071	3.14	.14	...	6.05	4.83	1.19	.61	10.15	26.12	19.73	
3	...	...	3	56	179	12.74	.17	...	2.41	3.09	2.23	.51	9.64	30.81	17.56	8
1	...	...	1	56	164	3.85	.30	...	4.52	4.69	4.35	.16	9.39	27.49	23.97	9
3	...	...	3	40	207	.64	.16	...	9.05	.88	2.40	.24	3.20	16.58	16.90	10
4	1	...	8	101	724	2.79	35.28	...	14.15	3.44	1.48	.74	9.40	67.41	23.40	11		
2	...	...	5	100	185	2.98	.18	...	2.42	3.54	5.78	.93	18.67	34.54	23.01	12
...	1	...	1	11	60	6.11	...	...	39.75	21.40	6.11	1.53	16.83	91.74	17.73	13
1	...	...	1	55	150	4.23	...	...	6.07	5.33	1.65	.18	10.12	27.60	33.68	14
1	...	...	1	19	103	.69	.17	...	12.14	1.38	...	.17	3.29	17.86	21.16	15
1	1	...	2	6	63	.77	6.58	...	12.77	1.16	...	.77	2.32	24.39	Data not available	16
1	...	...	1	55	141	1.72	.38	...	7.26	4.58	2.28	.19	10.51	26.95	18.92	17
...	...	...	...	8	69	...	...	...	21.01	5.81	.44	...	3.57	30.85	21.46	18
5	...	...	5	89	424	3.29	.27	...	12.15	5.63	1.30	.34	6.11	29.11	23.27	19
...	...	...	...	12	46	4.25	...	...	12.15	1.82	2.43	...	7.79	27.96	28.57	20
22	3	...	31	608	2,515	3.16	5.23	...	9.72	3.68	2.10	.39	7.74	32.05	22.37			
46	3	...	56	1,024	3,586	3.15	3.49	...	8.46	4.07	1.79	.46	8.57	30.02	21.46			
1,542	397	4	2,205	40,925	186,778	4.46	.67	...	15.16	2.66	.78	.36	6.76	30.86	26.18			

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	8	1,103	200	1	6	6	11	90
2	Sylhet ...	22	22	10,781	1,840	338	99	126	257	230
	Total ...	30	30	11,884	2,040	339	105	132	268	349
ASSAM VALLEY.										
3	Goalpara ...	21	20	2,137	499	91	26	35	65	94
4	Kamrup ...	11	11	1,954	40*	42	25	24	33	62
5	Darrang ...	12	10	1,406	168	7	9	16	70	102
6	Nowgong ...	7	7	1,495	45*	189	235	586	732	343
7	Sibsagar ...	11	9	2,143	290	161	81	66	126	208
8	Lakhimpur ...	7	6	1,702	Not available.	8	5	11	10	22
	Total ...	69	63	10,837	1,042	498	381	738	1,056	831
	Total for the Province	99	93	22,721	3,082	837	486	870	1,324	1,180

* Mauzas.

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	2	1,103	1	...	...	1	1	...	1	...
2	Sylhet ...	22	14	10,781	55	12	11	27	23	25	20	15
	Total ...	30	16	11,884	56	12	11	28	24	25	21	15
ASSAM VALLEY.												
3	Goalpara ...	21	19	2,137	183	12	40	84	69	127	141	62
4	Kamrup ...	11	9	1,954	32*	192	132	249	306	471	278	172
5	Darrang ...	12	9	1,406	93	3	13	17	31	44	21	32
6	Nowgong ...	7	5	1,495	10*	6	6	3	10	14	5	13
7	Sibsagar ...	11	9	2,143	57	32	39	50	103	130	136	129
8	Lakhimpur ...	7	5	1,702	Not available.	3	1	4	1	4	8	4
	Total ...	69	56	10,837	375	243	251	407	520	790	589	412
	Total for the Province	99	72	22,721	431	260	262	435	544	815	610	427

* Mauzas.

districts of Assam during each month of the year 1915.

June.	July.	August.	September.	October.	November.	December.	Total.			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
39	10	10	5	45	709	607	853	686	1,539	3.46	3.06	3.27	2.04	1
161	84	426	1,787	3,261	3,292	2,326	6,624	5,812	12,436	5.22	4.80	5.02	3.17	2
200	94	436	1,792	3,326	4,001	2,933	7,477	6,428	13,975	4.93	4.55	4.75	2.99	
182	452	287	307	626	1,058	713	2,235	2,251	4,536	7.17	7.97	7.55	1.52	3
37	35	90	127	472	621	568	1,116	1,029	2,136	3.28	3.16	3.19	3.55	4
41	31	34	87	53	90	145	351	334	685	1.76	1.86	1.81	2.70	5
19	18	98	161	239	485	138	1,731	1,532	3,263	11.17	10.30	10.75	4.24	6
204	76	79	131	380	341	238	1,080	1,011	2,091	2.96	3.10	3.02	2.10	7
14	9	13	25	62	104	10	114	139	293	.61	.63	.62	.90	8
497	621	601	838	1,832	3,299	1,812	6,717	6,287	13,004	4.13	4.23	4.18	2.43	
637	715	1,037	2,630	5,158	7,300	4,745	14,194	12,785	26,979	4.52	4.39	4.46	2.70	

Small-pox in the districts of Assam during each month of the year 1915.

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
1	...	...	...	...	1	3	4	1	...	.004	.01	.008	.01	1
7	8	4	8	10	103	67	170	29	57	.08	.05	.06	.37	2
8	8	4	8	10	104	70	174	21	57	.07	.05	.06	.31	
23	26	26	19	18	376	271	647	72	180	1.18	.96	1.07	.54	3
58	63	48	34	43	1,131	940	2,071	743	946	3.33	2.86	3.10	1.26	4
23	22	10	10	5	117	114	231	51	52	.58	.63	.61	.50	5
7	6	3	3	...	51	25	76	15	43	.32	.16	.25	1.13	6
90	48	24	19	45	462	383	845	96	140	1.26	1.17	1.22	.15	7
5	...	1	1	...	15	17	32	...	...	.06	.07	.06	.04	8
206	163	112	86	116	2,152	1,730	3,902	989	1,261	1.22	1.18	1.25	.59	
214	173	116	94	126	2,256	1,820	4,076	1,001	1,418	.71	.62	.67	.45	

IMPERIAL STATEMENT No. IX.—Deaths registered from Fever

Number.	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	1,103	444	417	354	298	372	410
2	Sylhet	22	22	10,781	6,279	2,339	7,038	1,703	1,718	2,033
	Total	30	30	11,884	6,714	2,956	2,392	2,001	2,090	2,443
ASSAM VALLEY.										
3	Goalpara	21	21	2,137	2,133	1,164	878	1,268	1,248	1,432
4	Kamrup	11	11	1,954	47*	703	427	612	701	1,093
5	Darrang	12	11	1,406	1,047	461	442	472	548	788
6	Nowgong	7	7	1,495	62*	270	284	303	318	319
7	Sibsagar	11	11	2,143	973	494	565	400	611	685
8	Lakhimpur	7	7	1,702	Not available.	317	325	407	395	267
	Total	69	68	10,837	4,262	3,409	2,921	3,552	3,821	4,684
	Total for the Province ...	99	98	22,721	10,976	6,365	5,313	5,553	5,911	7,127

* Mauzas.

IMPERIAL STATEMENT No. X.—Deaths registered from

Number.	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	7	1,103	214	84	55	55	54	62
2	Sylhet	22	21	10,781	2,432	497	303	231	220	271
	Total	30	28	11,884	2,646	581	358	286	274	333
ASSAM VALLEY.										
3	Goalpara	21	18	2,137	130	8	7	7	18	33
4	Kamrup	11	11	1,954	31*	21	36	29	23	41
5	Darrang	12	12	1,406	367	54	46	79	163	191
6	Nowgong	7	7	1,495	59*	23	16	21	23	21
7	Sibsagar	11	11	2,143	956	193	130	198	165	161
8	Lakhimpur	7	7	1,702	Not available.	134	89	111	143	153
	Total	69	66	10,837	1,334	433	324	445	475	690
	Total for the Province...	99	94	22,721	4,180	1,014	682	731	749	933

* Mauzas.

in the districts of Assam during each month of the year 1915.

June.	July	August.	September.	October.	November.	December.	Total.			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
592	452	557	508	467	546	561	2,835	2,679	5,514	11.9	11.96	11.77	11.16	1
2,719	2,791	3,260	3,509	3,853	3,516	3,453	17,632	15,510	33,142	13.90	12.88	13.40	11.14	2
3,311	3,153	3,917	4,017	4,320	4,062	4,014	20,457	18,189	38,646	13.52	12.73	13.14	11.15	
2,604	1,605	1,623	1,422	1,434	1,969	1,758	9,718	8,167	17,885	30.51	28.94	29.77	26.88	3
1,623	984	716	772	753	788	826	5,050	4,353	9,403	14.87	13.25	14.07	15.02	4
776	712	569	567	544	484	744	3,711	3,596	7,307	18.63	19.00	18.83	19.04	5
409	607	427	406	388	375	437	2,340	2,203	4,543	15.10	14.81	14.96	14.46	6
737	848	828	765	630	691	756	4,292	3,788	8,080	11.76	11.63	11.70	10.77	7
563	704	599	724	608	584	461	3,117	2,928	6,045	12.51	13.31	12.83	11.34	8
5,007	5,460	4,753	4,656	4,347	4,891	4,902	28,228	24,835	53,063	17.37	16.74	17.06	16.27	
8,918	8,613	8,670	8,673	8,667	8,953	8,976	48,715	43,024	91,739	15.51	14.77	15.16	13.73	

Dysentery and Diarrhœa in the districts of Assam during each month of the year 1915.

June.	July.	August.	September.	October.	November.	December.	Total.			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
72	102	107	93	103	179	175	606	533	1,141	2.46	2.37	2.42	2.00	1
306	322	473	712	1,101	1,233	1,059	3,872	3,017	6,889	3.01	2.59	2.76	2.09	2
378	424	580	805	1,204	1,412	1,255	4,439	3,559	7,998	2.92	2.49	2.71	2.17	
30	38	25	44	31	25	19	168	117	285	.32	.41	.47	.41	3
64	81	55	68	103	161	58	416	324	740	1.22	.98	1.10	1.01	4
176	126	159	189	157	121	124	845	671	1,516	4.25	3.75	4.01	4.12	5
33	61	82	72	43	37	37	252	217	469	1.62	1.45	1.54	1.89	6
220	234	354	298	324	300	377	1,635	1,298	2,933	4.56	3.9	4.29	4.08	7
184	200	236	265	256	210	183	1,234	945	2,179	4.91	4.29	4.62	4.45	8
713	740	911	927	914	854	803	4,570	3,572	8,142	2.89	2.49	2.65	2.56	
1,094	1,164	1,491	1,732	2,208	2,266	2,053	9,000	7,122	16,122	2.86	2.44	2.66	2.37	

IMPERIAL STATEMENT No. XI.—Deaths registered from

Number.	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	6	1,103	102	58	35	30	23	30
2	Sylhet ...	22	20	10,781	503	203	169	162	143	121
	Total ...	30	26	11,884	605	266	204	192	166	151
ASSAM VALLEY.										
3	Goalpara ...	21	12	2,137	44	9	7	7	8	6
4	Kamrup ...	11	10	1,934	26*	12	19	23	18	12
5	Darrang ...	12	11	1,406	141	36	42	48	41	59
6	Nowgong ...	7	6	1,495	25*	3	4	11	5	3
7	Sibsagar ...	11	8	2,143	213	51	57	55	66	44
8	Lakhimpur ...	7	7	1,702	Not available.	90	66	88	72	60
	Total ...	69	54	10,837	449	201	195	232	210	164
	Total for the Province ...	99	80	22,721	1,054	467	399	424	376	315

* MARRAS.

IMPERIAL STATEMENT No. XII.—Deaths registered from Plague

Number.	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	...	1,103	...	...	...	...	...	...
2	Sylhet ...	22	...	10,781	...	...	...	...	...	...
	Total ...	30	...	11,884	...	...	...	...	...	...
ASSAM VALLEY.										
3	Goalpara ...	21	...	2,137	...	...	...	...	...	...
4	Kamrup ...	11	...	1,934	...	...	...	...	...	...
5	Darrang ...	12	...	1,406	...	...	...	...	...	...
6	Nowgong ...	7	...	1,495	...	...	...	...	...	...
7	Sibsagar ...	11	...	2,143
8	Lakhimpur ...	7	...	1,702
	Total ...	69	...	10,837
	Total for the Province ...	99	...	22,721

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Resolution on the Annual Sanitary Report of the Province of Assam for the year 1915.

Extract from the Proceedings of the Chief Commissioner of Assam in the Municipal Department, No. 2741M., dated the 19th June 1916.

READ—

The Sanitary Report for the year 1915.

RESOLUTION.

The year was not a healthy one. Heavy floods in the Surma Valley and in parts of the Assam Valley caused climatic conditions unfavourable to health. The floods which occurred in Sylhet and Cachar in July were serious enough to necessitate extensive measures of relief. The people had to resort to unusual diet, and this, combined with bad climatic conditions, proved most detrimental to the general health and was the chief cause of the rise in the death-rate per mille from 24.66 in 1914 to 30.86 in 1915.

The mortality from all the principal diseases was above that of the preceding ten years. There were cholera epidemics of some severity in Nowgong, Goalpara, Sylhet and Cachar, and a serious outbreak of small-pox at Barpeta. In connection with the latter it is interesting to find that in the district of Kamrup, where the extension of vaccination has been opposed by the conscientious objections of the Mahapurushia sect, the average death-rate from small-pox for the last ten years has been markedly higher than in any other district in the province. It is consequently a matter for satisfaction that the recent outbreak at Barpeta has so far overcome the local opposition that the Municipal Commissioners have applied for the extension to the town of the provisions of the Vaccination Act, XIII of 1880.

The provincial birth-rate in 1915 was 33.60 per mille, which is higher than the rate for 1914 and also than the average rate of the previous quinquennium. The birth-rate exceeded the death-rate in all districts except Goalpara.

2. The Chief Commissioner is glad to learn that the appointment of the newly created Sanitary Inspectors as Registrars of Births and Deaths in the larger towns has resulted in more complete registration in urban areas. The position in rural areas remains unsatisfactory. Certain suggestions for the improvement of rural registration which were made by the Sanitary Commissioner in last year's report have been carefully considered, but were found impracticable for financial and other reasons. The Chief Commissioner hopes that a solution of this problem will eventually be found in village organisation and the utilisation of village authorities in the registration of vital statistics. The attention of trying magistrates was drawn during the year to the inadequacy of the fines inflicted for failure to report births and deaths in urban areas. During the year under report, however, the average fine rose only from ten annas to one rupee. The Chief Commissioner must again draw the attention of magistrates to the futility of imposing nominal fines. Enquiry will be made as to the reasons for the particular leniency shown to defaulters in Shillong.

3. The Chief Commissioner regrets that, owing to lack of funds and to the impossibility during the war of obtaining an officer for the work, no anti-malarial measures beyond those pursued at Lumding could be undertaken during the year. The Sanitary Commissioner has been asked to report what he can do in this connection under present conditions and his proposals are awaited.

The anti-kala-azar operations were continued and five travelling dispensaries were at work. The steady decrease in the virulence of this disease and in the area of its activity is most satisfactory.

4. The Chief Commissioner is glad to learn that, although funds were not available as freely as they have been in the past, considerable improvement in urban sanitation were effected during the year. He recognises that the Sanitary Department has an uphill task in dealing with many of our municipalities. Active and passive obstruction has to be fought and Municipal Commissioners and Chairmen persuaded to action which they know is required, but which they are for various reasons reluctant to take. The Sanitary Commissioner's remarks regarding the failure of most municipalities to insist on the adoption of a sanitary pattern of latrine are strongly worded. It is however obvious that the insistence on a cleansable pattern of latrine is the first essential to a satisfactory conservancy system; and, now that type plans of a cheap and sanitary pattern are at their disposal, municipalities have no excuse for postponing this elementary and most important reform. The activity of the Jorhat Municipality under the chairmanship of Lieutenant-Colonel A. Playfair is in this respect in marked contrast to the inaction of other municipalities.

The Sanitary Commissioner has detailed the various schemes for the improvement of water-supply and drainage which are either in progress or have been completed, and the Chief Commissioner considers that on the whole the progress made has been satisfactory. It is noteworthy that the bulk of the funds required for these schemes were provided by the Administration. The Chief Commissioner must warn municipalities that for the duration of the war and of the financial stringency resulting therefrom they must not look to Government for the special grants which have been forthcoming of recent years. He trusts that Municipal Commissioners will look facts in the face, and where funds are insufficient will not hesitate to levy the enhanced taxation required to bring their towns into decent order.

5. The progress made on the schemes for the improvement of the rural water-supply is satisfactory. The Chief Commissioner commends to the attention of the Chairmen of Local Boards the remarks made in paragraph 32 of the report regarding the necessity for seeing that the protection of tanks is maintained intact. The Chief Commissioner cannot allow the large sums of money, which have been distributed for the improvement of the water-supply, to be wasted by inattention to protective fenceings. The matter was brought to the notice of Local Boards and of District and Subdivisional Officers in this Department's letter No. 3227-28M., dated the 13th July 1915, and the Chief Commissioner trusts that the instructions therein contained are now carefully followed.

6. In order to emphasise the importance of this question, the relevant extract from the letter just referred to is herewith cited in full. It runs as follows:—

"I am, in this connection, to request that the attention of Deputy Commissioners and Subdivisional Officers may be drawn to the duties of chaukidari panchayats and of gaonburas in respect of the proper conservation of reserved sources of water-supply. These duties are laid down, as regards gaonburas, in paragraph 180 at page 207 of the Land Revenue Manual, and, as regards panchayats, in Rule 2(5) of the rules prescribed under Section 65 of Act VI (B. C.) of 1870 in Notification No. 2691J., dated the 12th March 1906. These authorities should be required to see that the fences are not wilfully damaged, and that the tanks are not used otherwise than by means of the ghats and gangways provided, and to report to the Chairman of the Board any repairs that may be required. When Village Authorities are established under the new Self-Government Act, Local Boards will presumably require them to undertake these duties, but meanwhile the existing responsibilities of panchayats and gaonburas must be enforced. An occasional prosecution for wilful damage to fences, or, when the rules under the Local Self-Government Act come into force, for the offences in connection with reserved sources of water-supply which are thereby made punishable, might be instituted with advantage."

The Chief Commissioner is strongly of opinion that the only way in which it will be possible to enforce the protection of tanks will be with the help of the villagers themselves. Pending the formation of village authorities under the Assam Local Self-Government Act, the duty of seeing that the protective fences are not wilfully damaged and that the tanks are not used otherwise than by means of the ghats and gangways provided, will rest upon the chaukidari panchayats and gaonburas, and these duties should be strictly enforced. Moreover, in those districts in which village authorities are formed under the Act, one of the first duties to be imposed upon the village authorities should be that of the protection of the water-supply.

7. The Chief Commissioner is glad to hear that his offer to managers of tea gardens of the advice of the provincial sanitary staff has been accepted in connection with several tea garden water-supply schemes.

8. The account given of the work of the provincial laboratory is interesting. An investigation of the quality of the urban milk supply of the province was undertaken, and it is reassuring to learn that the degree of adulteration which was discovered was not serious. Monthly analyses of the Gauhati tap water led to the revelation of certain flaws in the method of filtration.

9. Effect was given from the 1st July 1915 to the sanctioned scheme for the creation of a separate post of Sanitary Commissioner of the province. The Chief Commissioner is indebted to Major McCombie Young, the first incumbent of the post, for the energy which he has shown in his efforts to improve the sanitary conditions of the province and for his interesting report. Sir Archdale Earle desires also to thank the President and members of the Sanitary Board for their labours during the year.

ORDERED that the Resolution and the Report be published in the *Assam Gazette*.

By order of the Chief Commissioner of Assam,

A. W. BOTHAM,

Second Secretary to the Chief Commissioner of Assam.

