

Annual sanitary report of the Province of Assam.

Contributors

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ANNUAL SANITARY REPORT

OF THE

PROVINCE OF ASSAM

FOR THE YEAR

1916.



BY

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



SHILLONG :

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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 2nd May 1917.

SIR,

I HAVE the honour to submit herewith the Annual Sanitary Report of the Province of Assam for the year 1916.

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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FROM
Hon. T. G. McCORMICK, JR., U.S. SENATOR
BANKING COMMISSIONER, MASS.

TO
THE SECOND SECRETARY TO THE CHIEF
COMMISSIONER OF ASSESSMENT

Date: January 15, 1911

I have pleasure in acknowledging the receipt of the report of the
Committee of Assessment for the year 1910.

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ANNUAL SANITARY REPORT

OF THE

PROVINCE OF ASSAM

FOR THE YEAR

1916.

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 1916:—

"The cold weather period, January and February.—There was about the usual amount of rain and humidity, cloud and temperature were nearly normal.

"The hot weather period, March to May.—Rainfall was in excess by 12 per cent. in March, average in April and only 6 per cent. in defect in May. There was appreciably less cloud than usual in the terminal months, but humidity was normal throughout. Maximum temperature exceeded the average by 3° in March, was 2½° lower than usual in April and normal in May; the departures of the minimum were on the other hand small and of no significance.

"The south-west monsoon period, June to September.—The monsoon was less active than usual in June, with the result that the total rainfall in the plains fell short of the normal by 26 per cent.; it was on the other hand fully up to its normal strength in the succeeding three months.

"The aggregate rainfall of the season was in defect by 5¼" or 9 per cent. and to this result June alone contributed upwards of 4½". There was considerably less than the customary amount of cloud in June and August, but humidity and temperature did not present any marked abnormal features.

"The retreating south-west monsoon period, October to December.—In October the monsoon was abnormally active, particularly in the first week, and provided 75 per cent. more rain than usual. The November fall, which occurred mainly on the 10th and 11th, was almost up to the average, while in December the weather was drier even than usual. Skies were unusually cloudy during the season, but temperature and humidity did not differ appreciably from their normal values."

Common rice was sold at an average price of 8 seers per rupee during the year 1916. From the district reports it would appear that the public health was not seriously affected during the year by the occurrence of adverse meteorological conditions affecting the price of food-stuffs. In October heavy floods occurred in parts of the Surma Valley and in Nowgong, and gratuitous relief and the grant of agricultural loans became necessary in certain areas.

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

SECTION II.

EUROPEAN ARMY.

(No remarks.)

SECTION III.

NATIVE ARMY.

(No remarks.)

SECTION IV.

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(No remarks.)

SECTION V.

GENERAL POPULATION.

Vital Statistics.

2. There was no change in the area under registration nor in the population on which the ratios for this report have been based. As in previous years, ratios have been calculated on the population of the plains districts which, according to the census of 1911, is 6,051,507.

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

The result of registration in hill districts, where it is only partially carried out, is shown separately in paragraph 10 of this report.

The birth-rate for the year was 30·52 and is compared below with the rates recorded in other provinces in India :—

Provinces.	Birth-rate.		
	1910-14.	1915.	1916.
1	2	3	4
Assam	32·40	33·60	30·52
Bengal	34·53	31·80	31·89
Bihar and Orissa	41·9	40·4	36·6
Central Provinces	50·75	47·95	43·85
Madras	32·21	31·2	32·54
Burma	33·70	35·13	33·71
Bombay	36·14	37·10	35·98
United Provinces	44·56	43·48	43·09
Punjab	44·9	43·60	45·59
North-West Frontier Province	35·32	31·73	33·84

The death-rate for the year was 28·59 and was below that of the previous year, but somewhat in excess of the average of the quinquennium 1910-14.

It is compared below with the rates recorded in other provinces in India :—

Provinces.	Death-rate.		
	1910-14.	1915.	1916.
1	2	3	4
Assam	26·19	30·86	28·59
Bengal	29·33	32·83	27·37
Bihar and Orissa	31·5	32·2	32·8
Central Provinces	37·77	35·91	39·95
Madras	23·7	22·0	21·87
Burma	25·81	27·99	23·97
Bombay	29·93	26·12	33·32
United Provinces	56·37	30·04	29·50
Punjab	31·3	36·23	30·70
North-West Frontier Province	24·44	23·61	30·09

3. During the year under report 184,739 births were registered, against 203,336 in the preceding year, the birth-rates being 30·52 and 33·60, respectively, and the quinquennial average 32·75. This shows a decrease of 18,597 in the number of births which is 3·08 per mille, as compared with the year 1915. The general decrease is probably due to the adverse economic conditions caused by the floods and epidemics which were prevalent during 1915, particularly in the Surma Valley Division.

As compared with the quinquennial average, there was an increase in three districts, *vis.*, in Nowgong, Darrang and Kamrup and a decrease in the remaining five districts. The decrease has been largest in the district of Sylhet (—4·32) and is also noticeable in Goalpara (—3·04), Lakhimpur (—2·30) and Cachar (—2·20).

It is noteworthy that Sylhet, Cachar and Goalpara registered death-rates above the average from cholera in 1915 and the diminished birth-rate is probably to some extent the reflex of these conditions in these districts. The cause of the decrease in Lakhimpur is less obvious.

The provincial birth-rate exceeded the death-rate by 1.93 in 1916, as compared with 2.74 in 1915.

4. The total number of births registered in urban areas during the year 1916 was 3,262, against 3,556 in 1915, representing annual ratios of 27.31 and 29.77 per mille, respectively. The highest rate, that of 49.94, reported from Nazira, was due to the inclusion of a large number of omissions of the previous year and does not therefore represent the true birth-rate.

The birth-rate of Barpeta, which this year records a birth-rate of 46.46 per mille, and has in past years been the subject of comment in Sanitary Reports owing to the abnormally high birth-rate, has now been reduced to credible proportions by an investigation carried out by me when inspecting the town. It appears from the records in the municipal office that the municipal area of Barpeta was constituted by Notification No. 161G., dated the 28th September 1878, and this is the area on which the census of the municipal population was taken. The area of compulsory registration was constituted by Government Notification No. 184G., dated the 13th July 1882, and comprises a much larger area than the municipal area. The statistics of the whole compulsory area have been duly collected and combined, and up till now the ratios have been calculated on the census population of the smaller municipal area. This error has now been corrected by the elimination of the births occurring outside the municipal area, and the result is the reduction of the ratio from 56.42 in 1915 to 46.46 per 1,000 in 1916. This shows the distrust with which abnormal figures should be viewed and the necessity for careful scrutiny of their collection and calculation.

Ratios above the average were recorded in Nowgong, Golaghat, Sunamganj, Jorhat and Goalpara with rates varying from 30 to 35 per mille.

Rates below 20 were recorded in Hailakandi (19.83), Karimganj (19.65) and Dibrugarh (17.85). The registration in Hailakandi town was taken over by the Union from the police during the year under report and the reported birth-rate has risen from 10.94 in 1915 to 19.83 in 1916.

In Hailakandi, Karimganj and Dibrugarh these low ratios are probably less fallacious than they appear to be and are due to the special age and sex composition of the population. If they were calculated on the resident female population of child-bearing age and status, the apparent deficiency would be explained. The fall in the birth-rate of the Dibrugarh Municipality from 25.75 in 1915 to 17.85 in 1916 is due to a decrease in the population of the town owing to the transfer of a Battalion of Military Police to Sadiya and to the erosion of the river, which destroyed a number of houses and led to the migration of their occupants, and it is also believed that a decrease in the amount of business done in Dibrugarh in late years has had the same effect in reducing its population.

The reported birth-rate in Sunamganj Municipality has risen from 19.04 in 1915 to 32.46 as a result of verification of entries of births and deaths by the vaccination inspecting staff. From a comparison with the birth-rate of other towns in this division, it would appear that some portion of the increase is due to the inclusion of previously unregistered births occurring in former years and shown in the year under review.

The birth-rate in the town of Sylhet 21.37 is somewhat in defect and it is possible that registration in this town is not as complete as it should be, but on the other hand the presence of a large and locally unfertile student population has to be remembered.

5. The total number of births registered in rural areas during the year under report was 181,477 yielding a ratio of 30.59 per mille of population as compared with 199,780 and 33.67, respectively, in 1915.

The following registering circles reported birth-rates above 45 per 1,000, *viz.*, the first, 2nd, 3rd, 4th and 5th circles of Sidli, Bijni Duar, Ripu and forest villages circles, all in Goalpara, the Paneri circle in Darrang, the Nowgong circle in Nowgong, the Nalbari circle in Kamrup and the Kanairghat circle in Sylhet. Three circles in Goalpara, two in Darrang, and one each in Kamrup and Sibsagar reported rates between 40 and 45 per mille. The reported rates in Doomdooma circle 10.39, in Lakhimpur district and Sonari circle 18.83 in Sibsagar district continued low. These low rates are not explainable without a special investigation, the staff for which is at present unavailable.

Lumding circle in Nowgong district where registration seemed to have been improved in the years 1914 and 1915, recorded the low rate of 10.9 and the

matter will again receive attention. Palashbari circle in Kamrup district recorded a rate of 21.40 as compared with 26.48 in 1915 and 24.18 in 1914. The attention of the Civil Surgeon will be drawn to this, as an investigation into the low birth-rate of this area carried out in 1914 showed that the deficiency was chiefly due to defective registration.

6. During the year under report 173,038 deaths were registered as compared with 186,778 in the preceding year, showing a decrease of 13,740. The death-rate for the year was 28.59 as compared with 30.86 for the preceding year and with 26.37, the quinquennial average.

The death-rate during 1916 was higher in three and lower in five districts than in the preceding year. The highest rate, 42.02 was recorded in the district of Darrang and was chiefly due to cholera and 'fever'. The mortality from *kala-azar* in this district also continued high. The lowest rates of 24.63 and 24.76 were recorded in the districts of Kamrup and Cachar. The death-rate in Sylhet district fell from 32.35 in 1915 to 25.89 in 1916 and part of this decrease may have been due to disorganisation of the registration arrangements during the floods of the autumn. Goalpara which in 1915 recorded the highest district death-rate, this year occupied the second place with a rate of 37.08. This is one of the three districts in which the death-rate exceeded the birth-rate, the other two districts being Darrang and Lakhimpur. The predominance of deaths over births in Goalpara would appear to have been caused by the occurrence of an epidemic of cholera, that of Darrang has already been explained as being due to similar causes, while the excess of deaths over births in Lakhimpur was due to the unhealthiness of the subdivision of North Lakhimpur where a large number of deaths from cholera took place. The health of the remainder of the district appears to have been very much as usual.

7. Deaths registered in urban areas during the year under report numbered 2,918 against 3,586 in 1915, representing annual ratios of 24.43 and 30.02 per mille, respectively, against the quinquennial average of 22.93 per mille. The fall in the death-rates during the year occurred chiefly under small-pox, cholera and fever. The highest death-rate was returned by Mangaldai (48.92) due to fever and dysentery and diarrhoea. The next highest rates above 30 per mille were returned by Golaghat (36.22) due to fever, Tezpur (35.10) due to cholera and dysentery and diarrhoea, North-Lakhimpur (32.21) due to causes grouped under the head "all other causes", Jorhat (31.16) due to cholera and dysentery and diarrhoea, and Nowgong (30.18) due to cholera. Rates of 20 per mille or less were returned by Habiganj (18.57), Sibsagar (17.69), Silchar (16.84) and Hailakandi (14.36). Excluding deaths among emigrants in cholera hospitals, the ratios of mortality for the towns of Dhubri and Gauhati were 19.62 and 20.83, respectively. As compared with the previous year there was an increased mortality in eight towns and a decrease in twelve while the death-rate showed an increase over the quinquennial average in 13 towns and a decrease in 5.

8. The total number of deaths registered in rural areas amounted to 170,120 as compared with 183,192 in 1915, representing annual ratios of 28.68 and 30.88, respectively, as compared with the quinquennial average of 26.44.

The highest rate, *viz.*, 67.39, was reported from the Bijni Duar circle in Goalpara district and the cause is believed to have been an unusual prevalence of cholera and fever. The next highest rate, 64.83, was reported from the Guma circle in the same district and is said to be due to 'fever'. The following circles also show a high death-rate, *viz.*, Paneri circle (59.06), and Kalaigaon circle (47.01) in Darrang, the Nowgong circle (52.23) in Nowgong, the 3rd circle Sidli (56.25), 1st and 2nd circle Sidli (49.23), forest village circle (49.17) and Ripu circle (48.85) in Goalpara district, and the Kanairghat circle (48.86) in Sylhet, all of which reported rates in excess of 45 per mille. *Kala-azar* is prevalent in Paneri and Kalaigaon, while the excess in Nowgong and Goalpara circles is attributed to cholera and fever. Rates below 20 per 1,000 were reported from the Doomdooma circle (10.64) in Lakhimpur district and Sonari circle (16.75) in Sibsagar. As noted in paragraph 5, the figures returned for Lumding circle (7.29) in Nowgong, and from Palashbari circle (15.52) in Kamrup are again suspiciously low. The rates in Derai circle (19.45) and Dharampasa circle (19.67) in Sylhet and Rangia circle (18.76) in Kamrup are also lower than seems compatible with the conditions prevailing in these areas and appear to be explained by defective registration.

9. The subjoined table shows the result of the enquiries conducted by the vaccination inspecting staff in urban areas to test the accuracy of registration of vital statistics during the non-vaccination season of the year 1916.

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

Municipalities.	Unregistered vital occurrences detected during 12 months from October 1915 to September 1916.		Recorded vital occurrences during 12 months from October 1915 to September 1916.		Percentage of omissions.	
	Births.	Deaths.	Births.	Deaths.	Births.	Deaths.
1	2	3	4	5	6	7
Silchar	10	2	185	171	5.13	1.16
Hailakandi	1	1	23	19	4.17	5.00
Sylhet	32	18	399	421	7.42	4.10
Karimganj	2	2	61	92	3.17	2.13
Maulvi Bazar	2	...	72	13	2.70	...
Habiganj	11	9	133	127	7.64	6.62
Sunamganj	24	25	51	45	32.00	35.71
Dhubri	5	3	138	82	3.50	3.53
Goalpara ... ..	...	2	107	97	...	2.02
Gauhati	7	...	310	294	2.21	...
Barpeta	12	1	234	44	4.88	2.22
Tezpur	13	5	182	81	6.67	5.81
Mangaldai	20	12	59	35	25.32	25.53
Mowgong	15	9	155	163	8.82	5.23
Sibsagar	24	24	137	69	14.91	25.81
Nazira	32	12	46	43	41.03	21.2
Jorhat	24	25	118	147	16.90	14.53
Golaghat	6	3	74	89	7.50	3.26
Dibrugarh	16	6	214	151	5.93	3.82
North Lakhimpur ... ..	...	...	39	47	...	...
Shillong	23	11	338	217	6.37	4.82
Total	279	170	3,175	2,447	8.08	6.50

The large number of omissions detected in Sunamganj and Mangaldai is the result of increased attention being given to registration in these areas where it was formerly neglected, and as many of the omissions reported should have been registered in the previous year, the figure given does not represent the actual degree of defect in the year 1916, which is less than the figure shown. Compulsory registration has recently been introduced in Nazira and the people are not yet fully aware of what is required of them. The larger towns show an error varying from 2 per cent. to 16 per cent. which is to some extent dependent on the energy with which the subject has been investigated.

The number of persons convicted during the year under report was 255 and the fines inflicted amounted to Rs. 232. The fines inflicted are in many cases too low to have any deterrent effect and the attention of trying magistrates has on several occasions been drawn to the orders of Government in this connection. Cases where prosecutions have failed for apparently inadequate reasons have been investigated departmentally and steps have been taken to ensure that the prescribed procedure should be more accurately observed.

10. There was no change in the area under registration in hill districts and in the North-East Frontier district.

Registration in hill districts.

The subjoined table shows the recorded birth and death rates in the hill districts in 1916 compared with those of the year 1915:—

Districts.	1916.		1915.	
	Birth-rate.	Death-rate.	Birth-rate.	Death-rate.
1	2	3	4	5
Khasi and Jaintia Hills	24.12	23.40	24.76	18.38
Naga Hills	18.73	33.11	26.36	15.68
Lushai Hills	41.68	29.86	46.27	29.45
Garo Hills	22.72	19.86	26.07	27.94

Judged by the births and deaths recorded in the town of Kohima and in Dimapur (the only areas in the Naga Hills district which are subject to registration), the health of these areas was not as good as in the previous year. The prevalence of fever during the monsoon period is believed to be the cause of the adverse change. The health of the Lushai Hills district was much the same as in the year 1915. There were no epidemics of cholera and small-pox in this district during the year under report but there was a slight increase of mortality under the heads 'fever' and 'dysentery and diarrhoea' over those returned in the year 1915. The Sub-Inspector of vaccination of the Lushai Hills district examined 2,130 entries of births and deaths during the year 1916 and detected 40 omissions as compared with 1,626 and 9, respectively, in 1915. The general health of the Garo Hills district was reported to be on the whole satisfactory during the year 1916. The mortality from cholera fell from 405 in 1915 to 27 in 1916. Three hundred and twenty-two births and 299 deaths were recorded in the North-East Frontier district during the year.

The birth and death rates of the Shillong Municipality were 23·24 and 15·54, respectively, during the year. These figures are an index of the excellence of the sanitary arrangements in this town and its comparative freedom from preventable diseases.

11. The subjoined table shows the birth and death rates reported from tea estates during the year 1916 :—
Registration in tea gardens.

Districts.	Birth-rate.	Death-rate.
Cachar	16·44	14·99
Sylhet	24·04	22·31
Goalpara	49·55	60·17
Kamrup	11·21	17·94
Darrang	26·71	43·12
Newgong	25·48	26·14
Sibsagar	30·63	41·43
Lakhimpur	27·09	35·74
Total	25·15	30·96

As remarked in the report for the year 1915 the reporting of vital statistics from tea estates has up till now been unsatisfactory. The question has received careful investigation and it has been shown that many tea estates have hitherto failed to submit to the district Civil Surgeon the monthly returns of births and deaths from which the figures submitted in this and previous reports have been compiled. With the object of rectifying the conditions which have in the past rendered these statistics fallacious, the Local Administration has now passed orders that in future these monthly returns shall be submitted to the District Magistrate and transmitted by him, *via* the office of the Civil Surgeon, to this office. From this arrangement, greater regularity in reporting and an improvement in the accuracy of the returns submitted may be anticipated. The statistics for each garden will be compiled in this office, extra staff for this purpose having now been sanctioned. When the system is properly established, with the co-operation of tea-garden medical officers it is hoped that much interesting and valuable statistical material will eventually be available.

12. The total number of births and deaths registered within railway limits during the year 1916 were 75 and 296, respectively, against 90 and 415, respectively, in 1915.
Registration on railways.

13. During the year under report the highest birth-rate (3·52) was recorded in the month of December, followed by November (3·46) and October (3·28). The lowest rate was recorded in the month of June (1·65).
Seasonal incidence of births and deaths.

Mortality was fairly evenly distributed during the year owing to the absence of any serious epidemics of cholera and small-pox. The rates were between 2 and 3 per mille in 10 months, *viz.*, January and April to December, and between 1 and 2 in the months of February and March.

14. As in previous years, the highest mortality (175·01) was recorded among infants under one year of age, as calculated on the population of this age group according to the census of 1911. The next highest rate was 33·48 for the age group
Mortality according to age, sex and class.

of one to five years. The lowest rate (10·69) was as usual recorded for persons between 10 and 15 years of age. The rate of infant mortality, calculated on the number of births registered, was 202·00 per mille as compared with 201·89 in 1915. The death-rates among males and females during the year were 29·28 and 27·85, respectively, as compared with 31·26 and 30·41, respectively, in 1915.

The ratio of mortality was distributed among the different classes of the community in the following proportions :—

Christians	...	...	...	...	...	30·08
Hindus	...	...	...	...	...	27·28
Muhammadans	...	...	...	...	...	28·74
Budhists	...	...	...	...	...	21·25
Other classes	...	...	...	...	...	36·57

15. During the year the vaccination inspecting staff tested 67,130 entries of births and deaths in the Gaonburas' and chaukidars' registers as compared with 51,671 in 1915 and discovered 1,885 omissions as compared with 1,943 in 1915; the percentage omissions was 2·81 against 3·76 in 1915. The percentage of omissions detected in different districts varies from 9·93 in Darrang to 2·00 in Lakhimpur.

16. There was no change in the agency for the collection and registration of vital statistics either in urban or in rural areas. In urban areas of compulsory registration where Sanitary Inspectors of the Sub-Assistant Surgeon class have been appointed registrars of births and deaths, the system of reporting to ward gaonburas has been discouraged and people for the most part make their reports direct to the registrar. All entries so reported are authenticated by the signature of the person making the report to whom a copy of the entry is now issued by the registrar in the form of a birth or death certificate. The utility of such certificates as proof of registration and as presumptive evidence of birth or of death is being increasingly understood and appreciated and the system has from an administrative point of view the advantage of affording the registrar who is also Sanitary Inspector, earlier information of the occurrence of epidemic disease than he might otherwise obtain in the absence of compulsory notification of epidemic disease.

In the rural areas of Sylhet, Cachar and Goalpara, vital statistics were collected 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 *khasmahals* in Goalpara, report to mauzadars who in their turn submit their returns to the Civil Surgeons, in whose office district returns are compiled.

As has been pointed out in previous reports the defects in the system of collection are many and serious, the statistics obtained by it are inaccurate, and until we are prepared to pay for a better system, we can but admit the inaccuracies and accept the statistics.

SECTION VI.

HISTORY OF CHIEF DISEASES.

17. The following table shows the death-rates per mille from the chief causes of mortality in 1916 as compared with those of the average of the previous ten years.

Diseases.	1906-15.			1916.		
	Urban.	Rural.	Combined.	Urban.	Rural.	Combined.
Cholera ...	2·56	3·02	3·00	1·77	2·17	2·16
Small pox ...	1·07	·53	·54	·24	·55	·55
Plague ...	...	...	...	...	...	...
Fever ...	9·69	14·22	14·11	6·89	16·20	16·02
Dysentery and Diarrhoea ...	3·04	2·49	2·49	4·37	2·55	2·58
Respiratory diseases ...	·80	·55	·56	2·18	·82	·84
Injuries ...	·43	·31	·31	·51	·38	·38
All other causes ...	5·99	5·97	5·97	8·44	5·99	6·04
Total ...	23·58	27·09	27·02	24·43	28·08	28·59

As compared with the decennial average, there was less cholera, small-pox and fever in urban areas during the year under report. In rural areas there was a decrease in the cholera mortality and an increase under the head of "fever," while the small-pox death-rate remained about the same level. The rates of mortality for "dysentery and diarrhoea" and for "respiratory diseases" were somewhat higher both in urban and in rural areas than in the decennium with which they are compared. It should be noted however that several new urban areas have been added to these totals during the last two or three years and that the total figures are consequently not strictly comparable with those of the previous decennium. The drop in the urban small-pox rate from 1.07 to .24 per 1,000, while the rural ratio remains unchanged, may fairly be attributed to the greater degree of efficiency with which the compulsory Vaccination Act is now administered in urban areas.

18 Cholera.

Districts.	Death-rate per mille.	
	1906-15.	1916.
Cachar	2.46	1.08
Sylhet	2.90	.87
Goalpara	2.31	3.13
Kamrup	4.48	2.30
Darrang	4.09	6.66
Nowgong	4.61	6.50
Sibsagar	2.81	2.02
Lakhimpur	1.25	2.39
Total	3.00	2.16

Cholera showed no very marked prevalence in the year under report. Compared with the rates of 1915, there was a decrease in six districts and an increase in two. As compared with the decennial average, there was an increase in four districts and a decrease in four.

19. The town of Golaghat was free from cholera during the year. The provision of a new water-supply for the town in the shape of a large protected water tank may have had some influence in producing this immunity. The highest rate, that of 6.34 (exclusive of emigrant cases), was recorded in the town of Tezpur which shared in the prevalence of the disease in the district. Rates of 5.70 and 5.35 were recorded in the towns of Nowgong and Jorhat, respectively. Out of 30 deaths from cholera registered in Dhubri, 23 were those of emigrant labourers landed from river steamers for treatment and excluding these deaths, the ratio for Dhubri was 1.2. Similarly the corrected mortality for Gauhati exclusive of such extraneous cases was .88 per mille. In rural areas the following circles recorded high cholera mortality, *viz.*, Bijni Duar (22.31) and Ripu (11.99) in Goalpara, Tezpur (13.53), Behali (8.33) and Kalaigaon (7.15) in Darrang, Nowgong (11.90) and Samaguri (10.66) in Nowgong and North-Lakhimpur (8.61) in Lakhimpur. The epidemic which appeared in the Goalpara district in the latter part of the year 1915, continued up to January 1916 and recrudescences occurred in the months of May, June and July, and also in November and December. In regard to Nowgong, it is reported that cholera made its appearance early in April in sporadic form in the north east part of the district and assumed epidemic proportions throughout May and June, after which it gradually died away. As an epidemic it was persistent, intractable, widely spread and not confined to any particular area or areas and these facts rendered it impossible to trace its origin. Systematic and regular permanganation of wells, and the distribution of treatment by dispensaries and itinerating agencies, were the measures adopted to cope with it. The improvement of the water-supply in rural areas has been vigorously continued by the Local Board, 24 wells have already been completed and several others are in progress in areas where the highly polluted stream of Kallang had hitherto been the only source of water-supply. An expenditure of Rs. 22,622 has been incurred on the scheme, a substantial proportion of which has been contributed by Government.

In North-Lakhimpur, a serious outbreak of cholera occurred and vigorous steps were taken by the Subdivisional Officer, with the help of the Subdivisional Assistant Surgeon, to check the spread of the epidemic. The reports of the Assistant Surgeon and Sub-Assistant Surgeon disclosed the colossal ignorance of the people and their reluctance to receive any help or treatment or to practice any measures of

prophylaxis or prevention. In Kamrup cholera was imported from the neighbouring districts of Goalpara and Nowgong and the contagion is believed to have been spread by means of water. Sub-Assistant Surgeons of dispensaries and extra Sub-Assistant Surgeons rendered all possible assistance. The Civil Surgeon acknowledges the assistance given by the Deputy Commissioner in carrying out preventive measures.

20. The total number of deaths from cholera registered in tea estates during the year was 1,498 against 1,659 in 1915, the ratio per mille being 2·13 and 2·36, respectively. The highest rate 7·4 was recorded in estates in Kamrup. The rate was between 3 and 4 in Sibsagar, 2 and 3 in Darrang and Nowgong and 1 and 2 in Cachar, Sylhet and Lakhimpur.

21. *Small-pox.*

Districts.						Death-rate per mille.	
						1906-15.	1916.
1						2	3
Cachar	...	...	...	...	...	·01	·59
Sylhet	...	...	...	...	...	·21	·26
Goalpara	...	...	...	...	...	·61	·82
Kamrup	...	...	...	...	...	1·90	·79
Darrang	...	...	...	...	...	1·22	·61
Nowgong	...	...	...	...	...	1·03	·34
Sibsagar	...	...	...	...	...	·38	1·35
Lakhimpur	...	...	...	...	...	·13	·18
Total						·54	·55

The death-rate from small-pox for the year was nearly equal to that of the preceding decennium, the highest incidence being reported from the district of Sibsagar. The mortality from small-pox in Cachar was the highest recorded for the previous ten years. Possibly the floods of the previous year may have facilitated the spread of the disease by reducing the resistance of the people.

22. Out of 20 towns, 8 escaped the disease and in 10 the rate was below 1 per mille. The highest urban rates 3·13 and 1·16 were recorded in the towns of Golaghat and Nazira respectively, which shared in the general prevalence in the district of Sibsagar. During the year the Bengal Vaccination Act V of 1880 was extended to the towns of Nazira and Mangaldai. In rural areas, the highest rate, *viz.*, 5·07, was reported from the Sibsagar circle in Sibsagar, while Kariapara in the district of Darrang and Kanaighat in Sylhet reported rates of 3·85 and 3·18 per mille, respectively. Sixteen rural circles were free from the disease.

23. *Fever.*

Districts.						Death-rate per mille.	
						1906-15.	1916.
1						2	3
Cachar	...	...	...	...	...	11·30	13·27
Sylhet	...	...	...	...	...	11·24	13·86
Goalpara	...	...	...	...	...	27·14	30·78
Kamrup	...	...	...	...	...	15·56	16·31
Darrang	...	...	...	...	...	19·26	20·38
Nowgong	...	...	...	...	...	15·51	17·19
Sibsagar	...	...	...	...	...	11·98	12·63
Lakhimpur	...	...	...	...	...	11·63	11·55
Total						14·11	16·02

As has often been remarked, deaths under this head include deaths due to every class of diseases showing febrile symptoms. As compared with the decennial average, every district (except Lakhimpur) recorded increased death-rates from fever.

24. The highest death-rate 26·38 was recorded in the town of Golaghat, and the next highest rates of 19·87 and 19·35 were recorded in the towns of Mangaldai and Nazira, respectively. No responsibility can however be assumed for the accuracy of those returns which were not recorded by medical registrars and it is noteworthy that rates below 5 per mille were recorded in the towns of Nowgong, Silchar, Dhubri, Tezpur and Goalpara in which the registrars are men with medical qualifications.

In rural circles, Guma in Goalpara district recorded the highest rate, *viz.*, 56·81, and many other circles in this district also reported a high fever death-rate. Paneri, Kalaigaon, and Mangaldai circles in Darrang, Nowgong and Samaguri circles in Nowgong, Nalbari and Raha circles in Kamrup, Kanaighat circle in Sylhet and Dibrugarh circle in Lakhimpur are areas which reported rates higher than 20 per mille.

In the absence of an officer who can give his time to the elucidation of the causes which lead to the prevalence of malaria in the province, and in view of the financial stringency entailed by the war, the consideration of special measures aimed at the reduction of malaria has had to be abandoned for the present. The growth in the sale of Government quinine which is offered at rates which are much below those at which the drug is obtainable in the open market, is however an encouraging anti-malarial measure.

25. *Kala-azar.*

Districts.	1907.	1908.	1909.	1910.	1911.	1912.	1913.	1914.	1915.	1916.
1	2	3	4	5	6	7	8	9	10	11
Cachar ...	22	5	6	2	3	2	8	...	2	...
Sylhet ...	576	561	454	666	549	394	444	203	159	63
Goalpara ...	49	32	81	87	135	192	206	138	55	106
Kamrup ...	516	386	378	450	354	385	294	215	283	277
Darrang ...	845	649	643	627	679	563	399	317	310	320
Nowgong ...	208	146	140	221	286	308	417	393	419	451
Sibsagar ...	11	2	1	...	34	31	29	24	5	28
Lakhimpur ...	...	5	...	50	11	...	1	8	...	3
Total	2,227	1,786	1,703	2,303	2,051	1,875	1,798	1,298	1,233	1,248

The mortality returns in the aggregate vary little from those of the preceding two years.

Examining the district figures in detail, Nowgong shows a higher mortality than has been recorded for the last ten years and from these figures there appears to be some tendency to increased activity of the disease. In reviewing this apparent increase, it is noteworthy that the Civil Surgeon, Dr. Dodds Price, points out that the birth-rate has, in 1916 exceeded the death-rate by 3·19 per 1,000, and he considers that the district is now to some extent recovering its vitality which was so seriously damaged during the years when *Kala-azar* was epidemic. Major Mackie's observations in 1912 and those of the provincial survey of 1912-13 showed that the incidence of the disease is now greatest during childhood. An increasing birth-rate therefore must lead to the presence of a larger number of susceptible persons in the population, and other things being equal, to a proportionately increase in the number of cases

of *Kala-azar*, without any concomitant increase in the virulence of the endemic. Registration has also improved in this district and fewer cases now escape record. From these considerations, and taking into account the information derived from our travelling dispensary reports, it does not appear probable that any disquieting degree of activity of the disease is making its appearance, although it is to be regretted that the continued presence of the endemic must to some extent retard the recovery to which Dr. Dodds Price has alluded.

In Darrang there is a small increase over the figures for the last two years which however does not fully display the undoubted increase of activity which we know from the reports of our travelling dispensaries is taking place in some parts of Mangaldai.

The disease has also been rather active in the endemic centres in Goalpara as compared with last year. In Kamrup there was little change. In the district of Sibsagar a larger number of deaths have been reported than in the previous year, and in the Golaghat subdivision of this district, in three infected villages of Bati-para Lukumani, Domjuria and Khongia, 14 new cases were discovered as against 12 in the previous year. Our operations in this area have been continued and it was decided to remove 9 families to new house sites. The other villages in this area in which we had in previous years carried out segregation operations, remained free from the disease, no fresh cases having been discovered in them during the year.

A serious outbreak of *kala-azar* came to light in a tea garden in this area. The original source of the infection is obscure, but it seems probable that it was imported some years ago from one of the infected villages already mentioned. During a period of nine months, 68 cases had come under observation, of whom 23 had died. Measures providing for the segregation of infected and suspected families, for the destruction of the infected houses and for the reconstruction of new lines on an uninfected site have been taken, and the Local Administration was advised to apply for powers under the Imperial Epidemic Diseases Act of 1897 (III of 1897) to prevent migration of infected persons in the event of panic or discontent arising among the labour force as the result of these measures. After the close of the year sanction was accorded to these proposals, the details of which are now under the consideration of the Local Administration. If these measures of segregation, removal and prevention of migration are effectively carried out, there is no need to fear an extension of the disease to the labour forces of other tea estates, a contingency whose disastrous potentialities for the tea industry of the province are obvious. It may be added that the Directors, Manager and Medical Officer of the infected garden are fully alive to these possibilities and are taking all necessary steps to give effect to the recommendations which experience has shown to be required for dealing with such outbreaks.

Measures of segregation and removal of infected villages have also been taken up in two badly-infected villages in the Nowgong district, and in two villages in Kamrup.

The policy we have followed is to endeavour to institute such measures in villages which from the reports of our travelling dispensary staff are found to be badly affected, as both from a humanitarian and from a public health point of view, it is undesirable to allow their inhabitants to remain on a badly-infected site until depopulation terminates the outbreak, with the possibilities of spreading an acute form of the disease meanwhile. The help thus offered by Government is usually gladly received and with the co-operation of the district administration little or no unwillingness to move is experienced. The main difficulty is usually that of finding suitable 'basti' land for the site of the new villages and where this can be overcome, the removal is fairly easily arranged.

Four travelling dispensaries each in charge of a Sub-Assistant Surgeon and provided with pony pack transport, the whole under the immediate supervision of Assistant Surgeon Suresh Chandra Majumdar, were at work for varying periods of the touring season. Regular weekly reports were received from them, from which it appears that medical and surgical advice was given by them to 5,185 persons.

During the rainy season, one of the Sub-Assistant Surgeons on *Kala-azar* duty Sasi Kumar Das, under the supervision of Assistant Surgeon Suresh Chandra Majumdar, carried out an enquiry into the water-supply and health conditions of certain villages in the Habiganj subdivision in regard to which a careful and interesting report was submitted by Suresh Chandra Majumdar.

26. *Dysentery and diarrhoea.*

Districts.	Death-rate per mille.	
	1906-15.	1916.
1	2	3
Cachar ...	2.44	2.06
Sylhet ...	2.10	1.97
Goalpara ...	.47	.36
Kamrup ...	1.31	.97
Darrang ...	4.45	5.48
Nowgong ...	1.94	1.92
Sibsagar ...	4.45	5.29
Lakhimpur ...	4.78	5.55
Total ...	2.49	2.58

As usual the greatest incidence of these diseases was reported from the upper Assam Valley districts, in other districts the death-rate was lower than the decennial average.

The following table shows the death-rates from dysentery and diarrhoea in tea estates during the year 1916 :—

Goalpara ...	24.77
Darrang ...	15.30
Sibsagar ...	12.57
Lakhimpur ...	10.08
Sylhet ...	5.82
Nowgong ...	4.29
Cachar ...	2.98
Kamrup ...	1.79

The Goalpara figure denotes the occurrence of 14 deaths among a population of 565 only, and its comparative significance is small. In regard to the other figures it has already been pointed out that little reliance can at present be placed upon these tea garden returns.

27. *Plague.*—No case of plague was reported during the year 1916.

28. *Other causes.*—The mortality attributed to "respiratory diseases," "injuries" and "all other causes" were 5,109, 2,338 and 36,557 as compared with 4,732, 2,205 and 40,925 in 1915; the ratios per mille which they yielded were '84, '38 and 6.04 against '78, '36 and 6.76, respectively, in 1915.

SECTION VII.

VACCINATION.

[*Published separately.*]

SECTION VIII.

SANITARY WORKS—MILITARY.

[*No remarks.*]

SECTION IX.

SANITARY WORKS—CIVIL.

29. During the year 1916, the municipal institutions of the province were 15 municipalities and 7 unions. The station of Sibsaigar was converted into a municipality and a new union was constituted at Doom Dooma.

30. During the year 1916, the total income of these urban local bodies amounted to Rs. 10,12,442, as compared with Rs. 9,74,820 in 1915. Of this total a sum of Rs. 4,45,309 or 43·98 per cent. was spent upon sanitation against 27·60 per cent. of the preceding year. The table below shows in sequence the percentage of income spent on sanitation by each local authority :—

1. Gauhati Municipality	...	...	...	...	67·80
2. Habiganj "	...	...	...	...	63·14
3. Silebar "	...	...	...	...	60·89
4. Jorhat "	...	...	...	...	53·57
5. Dibrugarh "	...	...	...	...	52·25
6. Shillong "	...	...	...	...	49·42
7. Maulvi Bazar Union	...	...	...	...	46·12
8. Tezpur Municipality	...	...	...	...	40·49
9. Nowgong "	...	...	...	...	39·52
10. Karimganj "	...	...	...	...	39·02
11. Goalpara "	...	...	...	...	38·31
12. Dhubri "	...	...	...	...	37·79
13. Hailakandi Union	...	...	...	...	32·00
14. Sunamganj Municipality	...	...	...	...	29·22
15. Mangaldai Union	...	...	...	...	26·13
16. Nazira Union	...	...	...	...	24·34
17. Barpeta Municipality	...	...	...	...	23·82
18. Sylhet "	...	...	...	...	19·62
19. Sibsagar "	...	...	...	...	18·66
20. North Lakhimpur Union	...	...	...	...	17·32
21. Golaghat "	...	...	...	...	16·76
22. Doom Dooma "	...	...	...	...	4·89

The following table shows the total municipal expenditure on different heads of sanitation during 1916, as compared with those in 1915 :—

Heads of expenditure.	Total expenditure.		Difference.	
	1916.	1915.	Increase.	Decrease.
1	2	3	4	5
	Rs.	Rs.	Rs.	Rs.
1. Conservancy, including establishment, road-watering, latrines, etc.	1,86,413	1,61,123	25,290	...
2. Drainage ...	14,428	20,125	...	5,697
3. Water-supply ...	2,25,060	70,943	1,54,117	...
4. Disposal of the dead ...	580	489	91	...
5. Markets and slaughter houses ...	11,336	11,694	...	358
6. Vaccination ...	1,894	1,434	460	...
7. Other sanitary works ...	5,598	3,263	2,335	...
Total ...	4,45,309	2,69,071	1,82,293	6,055
8. Construction and maintenance of roads	88,977	95,703	...	6,726
Total including roads ...	5,34,286	3,64,774	1,82,293	12,781

The increase under the head water-supply is explained by expenditure incurred on the water works under construction in Silchar and Tezpur, and on the provision of a new triple expansion pump for the Gauhati water works, the former items being largely and the latter item wholly, contributed by Government. There is an appreciable increase in the amount spent on conservancy from municipal funds.

31. The following expenditure has been incurred during the year out of the balance of the Imperial recurring sanitary grant for sanitation.

Sanitary works.				Rs.
Pay and allowance of Sanitary Inspectors	...	...	...	11,000

SURMA VALLEY DIVISION.

Cachar.—A pipe water-supply scheme for the town of Silchar, which has been under construction for the last two years, is almost completed.

Sylhet.—A pipe water-supply scheme for the town of Sylhet is under construction and it is reported that fair progress has been made during the year.

The conservancy improvement scheme of the town is still in progress and out of a sanctioned estimate of Rs. 19,200, the sum of Rs. 16,046 has been spent.

ASSAM VALLEY DIVISION.

Goalpara.—Progress with the scheme for a pipe water-supply for the town of Dhubri has been delayed by failure to find water on the site from which it was proposed to obtain it, and borings in search of water are being carried on.

The proposed pipe water-supply for the town of Goalpara is in abeyance owing to financial difficulties.

Kamrup.—A triple expansion pump has been added to the Gauhati water works towards which the Local Administration made a grant of Rs. 20,000.

Darrang.—Work on the pipe water-supply for the town of Tezpur which was reported to be in progress in the last report is now approaching completion.

A 4 feet diameter well for the improvement of water-supply for the town of Mangaldai is being sunk and a revised drainage scheme for the town is under preparation.

Sibsagar.—Plans and estimate for the extension of one of the drinking water tanks of the town of Golaghat in order to obtain earth to fill up the remaining portion of the old tank and for replacing an unsatisfactory pattern of water elevators, have been approved and work has been put in hand.

A pipe water-supply scheme for the town of Sibsaigar has been prepared, but is kept in abeyance for financial reasons.

The earth work of two tanks for the improvement of drinking water-supply of the town of Nazira is well advanced, one being nearly completed.

Lakhimpur.—The conservancy improvement scheme of the town of Dibrugarh has been completed.

A survey of the drainage of the North Lakhimpur town has been carried out. The levels in the beds of the main drains, etc., shew that entire regrading and resectioning is necessary for a complete satisfactory scheme and it has been suggested that the scheme should, for the present, be restricted to clearing local obstacles.

It is satisfactory to be able to record that an increase of activity and efficiency of sanitary administration has been displayed during the year in most of the municipal towns of the province. In particular, the need for the improvement of conservancy and for dealing with insanitary privies is being more generally recognised and efficient action to remedy the latter evil is now being taken in most of them with the exception of Sylhet and Dhubri.

Credit is due to those Chairmen and Commissioners who have thus realised their responsibilities and are carrying out this somewhat unpopular reform. The details of these activities may be briefly reviewed as follows :—

In Silchar, the reconstruction of privies was commenced in August and by the end of the year out of 273 insanitary structures, 34 had been rebuilt, 8 were under construction and 14 demolished, while legal proceedings were in operation against the owners of 29 others.

In Sylhet, with over 500 insanitary privies, 'notices to improve' were served on 63 persons in September, 16 privies were reported to have been reconstructed, but no effective action had been taken in regard to the remaining recipients of these notices. In 1912, when the deficiency of the conservancy system of this town was first pointed out, 5 cart loads of night soil were being removed daily. In 1916, after an expenditure of Rs. 16,046 on a conservancy improvement scheme, only 7 cart loads are now removed daily, while seven new night soil carts are in stock and unused. In Dibrugarh, with a somewhat similar population fifteen cart loads are removed daily. In other matters also, the sanitary administration of this town has been disappointing. In a recent epidemic of small-pox, patients in the eruptive stage of small-pox were in residence and at large in the bazar and no effective steps were taken for their removal

and segregation, although the need for such measures was urged by the Sanitary Inspector, the Civil Surgeon and by the Sanitary Commissioner. Brick fields within the town which on a previous occasion were condemned by me as insanitary, permission to work them being withdrawn on this score from the former lessees, have been re-opened by others to whom permission to do so has been granted.

In Habiganj, the fencing of water tanks has been improved, insanitary public latrines have been rebuilt and a municipal market started.

In Karimganj, the water-supply arrangements have been improved and maintained, and in Hailakandi, fencing and water drawing jetties for all the drinking water tanks have been provided.

In Sunamganj, a new drinking water tank is being provided and the improvement of privies to meet local conditions has been commenced.

In Shillong, all recommendations for the improvement of the sanitary conditions of the town have been carried out with commendable thoroughness. There has been a substantial increase in taxation, and funds for the extension of the pipe line to outlying quarters were provided. A large number of new privies were built or rebuilt and the staff and plant necessary to cleanse them provided. The care of the food-supply received attention, and the *goalas* who bring milk into the station from outlying villages have been induced to use a special covered milk churn for carrying their milk. Public *dhobis* have been required to use a municipal *dhobighat* supplied by a pipe with water from a hill spring.

ASSAM VALLEY.

In Dhubri, no effective action has been taken to amend the condition of insanitary privies, but two new public latrines have been built.

The Chairman and Commissioners of Goalpara Municipality have drawn up a scheme for the improvement of their conservancy, which is being financed by their own resources and improvement of privies has been commenced. The Chief Commissioner in recognition of their public spirit has placed a sum of Rs. 500 at their disposal to assist in financing the scheme.

In Gauhati, a large number of insanitary privies has lately been rebuilt and a new trenching ground has been provided. A municipal slaughter house has been provided and the drainage of the Kayapotti is being put in order by the municipality with funds provided by the Marwari community through the influence of a leading Marwari merchant and Ward Commissioner.

In Barpeta, the successful application of the newly introduced compulsory Vaccination Act is satisfactory, and the acceptance of a change of the Municipal Act in force for that of Act III (B. C.) of 1884 with the object of raising a latrine tax coupled with an increase in the house tax, shows that the Commissioners are now prepared to give effect to certain recommendations hitherto postponed for lack of funds.

In Tezpur, the improvement of insanitary privies has been energetically carried out, 72 have been reconstructed and a new trenching ground has been acquired.

In Jorhat, the standard of efficiency in conservancy work has been well maintained.

In Sibsagar, a municipality has been constituted to provide the funds necessary to give effect to the improvements that are required. An improvement scheme is being formulated, a new trenching ground has been acquired and a "bhil" within the town is being drained.

In the Union of Nazira, two new water tanks are being dug with funds half of which is supplied by the Union, and the compulsory Vaccination Act has been introduced and enforced.

In Dibrugarh, the conservancy improvement scheme has been completed and a good number of public conveniences is now available. Energetic action is being taken in regard to insanitary privies, of which 44 have been compulsorily reconstructed and a large number have been privately improved or reconstructed.

In Doom Dooma, a Union has been constituted and a comprehensive improvement scheme drawn up.

It may be remarked that these activities have been displayed during a time when financial assistance from Government is practically unobtainable and they may fairly be taken to indicate the existence of a progressive spirit in municipal administration, which deserves recognition and support.

An expenditure of Rs. 83,100 is reported to have been incurred by the Public Works Department on sanitary works, original and repairs, during the year 1916 in the province against Rs. 1,37,668 in 1915.

SECTION X.

GENERAL REMARKS.

32. Government grants amounting to Rs. 1,21,000 were placed at the disposal of

Village sanitation.

Local Boards to finance the second year's programme for the improvement of drinking water-supply in rural areas. The portion of work taken up in the first year of this scheme is now for the most part completed. The Local Administration drew the attention of Local Boards to the necessity for the proper protection of all existing Local Board tanks and has required that every tank should be inspected after completion either by the Chairman or by a member of the Board with a view to ascertaining whether the work has been carried out strictly in accordance with the approved programme and that the tank is completely protected. The instructions and type-plans for such constructions have been revised by the Sanitary Board by the elimination of certain type-plans which experience had proved to be defective. In view of the high price of iron, due to the war, the substitution of wooden posts for iron standards in the fencing has been approved as a temporary measure.

The scheme for the improvement of the water supply in Kallang river area in Nowgong district is still in progress, and 24 wells have been completed.

An expenditure of Rs. 2,05,815 was incurred by Local Boards on village sanitation, especially on drinking water-supply, during the year 1916, as compared with Rs. 1,13,037 in the previous year.

33. The statement below shows the quantity of quinine sold in each district in 1916, as compared with that in 1915:—

Sale of quinine.

District.	"Treatment" parcels sold in—		Difference by districts.	
	1916.	1915.	Increase.	Decrease.
1	2	3	4	5
Cachar	1,256	976	280	...
Sylhet	7,852	3,623	4,229	...
Khasi and Jaintia Hills	1,936	1,748	188	...
Naga Hills	331	111	220	...
Lushai Hills	1,116	631	485	...
Goalpara	1,812	1,960	...	148
Kamrup	905	969	...	64
Darrang	788	676	112	...
Nowgong	880	937	...	77
Sibsagar	897	831	66	...
Lakhimpur	372	328	44	...
Total	18,145	12,810	5,624	289
Total increase ... ..	...	...	5,335	...

The sale of quinine has increased by 5,335 parcels, as compared with the previous year. This means that an additional 53,350 tubes, each of which is calculated to contain enough quinine for the treatment of one attack of malarial fever, have been sold. The greater part of this increase is probably due to an increasing appreciation of the value of the drug but the rise in the price of quinine in the open market owing to war conditions has had some effect in increasing the demand for this quinine which is sold by Government at a loss reckoned even on pre-war prices. At one time it was feared that large employers of labour would buy up large quantities of quinine through post offices and thus avail themselves of the Government assistance which is offered in this form for the benefit of the poor, needy and ignorant. Steps were accordingly taken to prevent as far as possible the purchase of these treatments in

quantities beyond what could be required for personal or house-hold purposes, and it does not appear that any serious misuse of the benevolence of Government is now taking place.

It is however possible that these treatments are to some extent being purchased by private medical practitioners and shop-keepers, for the compounding of medicines, fever mixtures, etc., owing to the comparatively low price at which it is obtainable and if this tendency continues, it may be necessary to raise the price of the treatments to check the leakage, as the persons for whom this cheap quinine is intended would not be those profiting from the low rate of sale. For the present however, if issues are carefully scrutinised by Civil Surgeons and if postmasters comply with instructions limiting the quantity to be supplied to individual purchasers, no change in price or procedure need be suggested.

34. The pilgrim traffic in this province is numerically unimportant. The usual sanitary precautions were taken in connection with the Pilgrim traffic. Sidheswari *mela* in the district of Cachar and no outbreak of disease was reported.

35. There were ten coolie camps under the control of the Assam-Bengal Railway during the year under report, with a population varying from 200 to 500 in each. The drinking water-supply was provided either from wells or rivers and its quality and quantity is reported to have been satisfactory and sweepers were employed for conservancy purposes. The general health of the majority of them was, on the whole, good but small outbreaks of cholera were reported from three camps in the months of March and April, the total number of cases being 21.

36. The Laboratory which was formerly housed in temporary quarters on Secretariat Hill was transferred in July 1916 to permanent accommodation in a wing of the Pasteur and Research Institute. Provincial Laboratory.

The total number of examinations done during the year was 952, against 847 in 1915, the details of which are as follows :—

Bacteriological.—Blood smears.—One hundred and fifty-eight films were examined this year, against 133 in 1915.

Agglutination tests.—Thirty samples of blood were examined this year, against 42 last year.

Bacteriological examination of water.—The number of samples examined this year was 72, against 66 in 1915.

Chemical.—One hundred and thirty-eight samples of water were examined, against 98 in 1915 and 16 samples of milk, against 110 in 1915.

The Shillong tap water was examined every week both chemically and bacteriologically and throughout the year it showed a uniformly high standard of purity.

It is satisfactory to note that since the establishment of the laboratory in 1912, there has been a steady increase in the amount of work done in the laboratory.

The staff and appliances have been at the disposal of the Director of the Pasteur Institute since its opening, and have proved of considerable service to him in the absence of his own staff and appliances.

37. The number of emigrants that passed through Goalundo to the labour districts in Assam during the year 1916 was 77,034 against 79,984 in 1915. Emigration.

These were despatched by the following routes, in the numbers noted below :—

To the Assam Valley by steamer	...	...	...	56,059
To Cachar and Sylhet by rail <i>viâ</i> Chandpur	...	...	...	21,025

One hundred and four cases of infectious diseases amongst emigrants were admitted into the Goalundo charitable hospital during the year. Of these, 25 suffered from cholera and 79 from small-pox, as compared with 22 from cholera and 3 from small-pox in the preceding year. There were 14 deaths, *viz.*, 10 from cholera and 4 from small-pox, as compared with 16 from cholera in the preceding year.

Sixty-three deaths occurred on steamers during the voyage to Assam, *viz.*, 38 from cholera and 25 from other diseases, as compared with 36 and 32, respectively, in the preceding year.

From these figures it appears that the health of the emigrants was much the same as that of the preceding year. The Embarkation Agent considers that the decreased death-rate from cholera in the Goalundo hospital is due to the introduction of hypertonic saline treatment.

Twenty-one thousand nine hundred and forty-nine emigrants passed through Naihati and Amingaon by rail to the labour districts and among them there were 7 cases of sickness and five deaths.

During the year the Travelling Inspector of Emigrants has been, as usual, engaged in the supervision of the medical and sanitary conditions under which emigrants travel to Assam. He is concerned with the steamer route from Goalundo to Assam, and from Goalundo to Chandpur, and also with the arrangements on the Assam-Bengal Railway and Eastern Bengal Railway. In regard to the part of his beat which is on the Eastern Bengal Railway, some ambiguity exists in regard to how far he should travel, as Saraghat, which was the limit of the jurisdiction of this department prior to the opening of the Sara Bridge, is no longer a place of halt. It is desirable that his jurisdiction should be extended to Naihati, as it is from that station that the journey to Assam commences, whether by rail or steamer, to the Assam Valley, or to the Surma Valley.

Endeavours have been made to discover the causes of disease and mortality occurring *en route*, and to improve the conditions under which emigrants travel. An informal conference was held in Calcutta in April 1916 with the Agent, Eastern Bengal Railway, at which a representative of Messrs. Begg Dunlop & Co. was present on behalf of the Tea Districts Labour Supply Association. After discussion of our aims, it was arranged that the Eastern Bengal Railway would build feeding sheds at Santahar and Golakganj and a special hospital at Amingaon for the accommodation of emigrants, and that when these arrangements are completed, a special coolie train would be run from Naihati halting at Santahar and Golakganj for the supply of a hot meal, the cost of which would be included in the fare. These arrangements are now approaching completion, but it is not known to what extent the curtailment of railway facilities entailed by the war will delay the inception of these arrangements.

Several questions affecting emigration were discussed with the Chairman, Assam Labour Board, and with the representatives of the Tea Districts Labour Supply Association and in regard to the occurrence of cases of small-pox and the desirability of vaccinating all emigrants prior to the commencement of the journey it was arranged that although wholesale vaccination was for various reasons undesirable, on the receipt of information regarding a case of small-pox occurring *en route*, arrangements would be made by the forwarding agents for the vaccination by the local agents of all labourers recruited in the area from which the infected person had come.

Attention was also directed to the arrangements on the steamer routes. The steamer companies have revised the medical equipment of their steamers and this now includes a simple apparatus for the administration of hypertonic saline injections for cholera. Their medical officers have been trained in the technique of administration of these injections by Dr. P. Ganguli, the Embarkation Agent at Goalundo, and it is hoped that this treatment will reduce the mortality among cholera patients on steamers, who can thus receive at an early stage a treatment which had formerly to be delayed until the patient was installed in a cholera hospital.

It is due to the railway and steamer companies and to the Secretaries of the Tea Districts Labour Supply Association to acknowledge the readiness with which all suggestions made by this Department have been received and carried out.

38. I was in charge of the Department throughout the year with the exception of three months spent on leave necessitated by ill health, during which period the Hon'ble Colonel H. E. Banatvala, I.M.S., Inspector General of Civil Hospitals, officiated for me.

In January, the municipalities of Sylhet, Habiganj, Karimganj, Silchar and Sunamganj were visited and inspected.

In February, the municipalities of Barpeta and Jorhat and the unions of Nazira and Golaghat were visited and the *ka'a-azar* operations in the Golaghat subdivision were inspected.

In March, Dibrugarh, Sibsagar, Tezpur and Mangaldai were inspected and the emigration depôts in the districts of Sibsagar, Nowgong and Darrang were visited.

In April, the provincial sanitary report was prepared and a visit was paid to Calcutta to confer with the Chairman, Assam Labour Board, the Agent, Eastern Bengal Railway, and the Secretaries, Tea Districts Labour Supply Association, regarding emigration arrangements.

In May, the municipality of Shillong was inspected, the vaccination report was prepared and a tour of inspection of vaccination in the Khasi and Jaintia Hills district was carried out.

In June, I was engaged in routine office work.

In July, the emigration arrangements on the steamer route between Goalundo and Gauhati were inspected and the municipality of Goalpara was visited.

From August 15th to November 14th, the Hon'ble Colonel H. E. Banatvala, I.M.S., was in charge of the Department. He paid a visit of inspection to the State of Manipur in the month of September.

In November, I resumed charge of the Department and recommenced touring. An outbreak of *kala-azar* in a tea garden in the Golaghat subdivision was investigated and the *kala-azar* operations in this subdivision inspected.

In December, the union of Golaghat and the municipalities of Nowgong and Jorhat were inspected and a tour to inspect some *kala-azar* infected areas was carried out in company with the Deputy Commissioner of Nowgong.

In all districts visited, the vaccination arrangements were inspected as thoroughly as time would permit and rural vital statistics and sanitation received attention.

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

Sanitary Commissioner, Assam.

SECTION XI.

ANNUAL REPORT OF THE SANITARY BOARD.

39. The constitution of the Sanitary Board remained the same as in the previous year. As usual, the business of the Board was transacted during the year by circulation of files to the members, there being only one formal meeting of the Board.

Mr. A. T. Duguid filled the place of a Sanitary Engineer and the Chief Engineer has furnished the following note showing the principal works on which Mr. Duguid was employed during the year :—

Cachar.—Silchar water works. Working drawings and general supervision of construction.

Sylhet.—Sylhet water works. Working drawings and general supervision of construction.

North Sylhet Subdivision.—Several small bonificazione schemes.

Tea gardens.—Report with outline of schemes for water-supply of 2 tea gardens.

Goalpara.—Dhubri water works. General supervision of construction.

Kamrup.—

Gauhati.—Improvement of water works distribution system and drainage.

Darrang.—Tezpur water works. Working drawings and general supervision of construction.

Lakhimpur.—

Dibrugarh.—Revising drainage scheme to suit new conditions due to recent high floods.

Sibsagar.—

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

Sibsagar.—Rough estimate and drawings for water works.

Khasi and Jaintia Hills, Shillong.—Investigation of reasons for reported shortage in water-supply, and fire protection scheme.

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	223,062	470,167	7,236	6,613	13,849
2	Sylhet	1,268,469	1,204,202	2,472,671	37,088	34,072	71,160
	Total	1,514,674	1,428,164	2,942,838	44,324	40,685	85,009
ASSAM VALLEY.							
3	Goalpara	318,475	282,168	600,643	11,251	10,615	21,866
4	Kamrup	339,398	328,430	667,828	10,629	9,984	20,613
5	Darrang	198,581	178,733	377,314	6,864	6,753	13,617
6	Nowgong	154,938	148,658	303,596	5,304	4,883	10,187
7	Sibsagar	364,810	325,489	690,299	10,929	10,149	21,078
8	Lakhimpur	249,021	219,968	468,989	6,390	5,979	12,369
	Total	1,625,223	1,483,446	3,108,669	51,367	48,363	99,730
	Total for the Province	3,139,897	2,911,610	6,051,507	95,691	89,048	184,739

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	1,859	253	246,205	223,062	470,167	13,849	29.45	5,951	5,693	11,646
2	Sylhet	5,388	458	1,268,469	1,204,202	2,472,671	71,160	28.77	34,354	29,673	64,027
	Total	7,247	466	1,514,674	1,428,164	2,942,838	85,009	28.89	40,305	35,669	75,973
ASSAM VALLEY.											
3	Goalpara	3,954	151	318,475	282,168	600,643	21,866	36.40	11,947	10,325	22,272
4	Kamrup	3,858	173	339,398	328,430	667,828	20,613	30.86	8,792	7,662	16,454
5	Darrang	3,418	110	198,581	178,733	377,314	13,617	36.08	8,243	7,615	15,858
6	Nowgong	3,843	79	154,938	148,658	303,596	10,187	33.55	4,850	4,368	9,218
7	Sibsagar	4,906	133	364,810	325,489	690,299	21,078	30.53	10,460	9,261	19,741
8	Lakhimpur	4,529	103	249,021	219,968	468,989	12,369	26.37	7,310	6,512	13,822
	Total	24,508	126	1,625,223	1,483,446	3,108,669	99,730	32.08	51,622	45,743	97,365
	Total for the Province	31,845	190	3,139,897	2,911,610	6,051,507	184,739	30.52	91,927	81,111	173,038

registered in the districts of Assam during the year 1916.

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
15.39	14.06	29.45	109	4.69	...	16.18	15.46	31.65
14.99	13.77	28.77	109	2.88	...	17.22	15.85	33.09
15.06	13.82	28.89	109	3.18	...	17.06	15.79	32.86
18.73	17.67	36.40	106	...	.68	20.37	19.07	39.44
15.91	14.94	30.86	106	6.23	...	15.82	14.80	30.62
18.19	17.89	36.08	102	...	5.94	17.54	16.81	34.35
17.47	16.08	33.55	109	3.19	...	15.12	14.56	29.68
15.83	14.70	30.53	108	1.94	...	16.40	15.35	31.76
13.62	12.74	26.37	107	...	3.10	14.73	13.94	28.67
16.52	15.66	32.08	106	.76	...	16.80	15.84	32.65
15.81	14.71	30.52	107	1.93	...	16.93	15.82	32.75

registered in the districts of Assam during the year 1916.

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
104	1.08	.59	...	13.27	2.06	.72	.31	6.71	24.17	25.42	24.76	23.08	24.29	24.13
116	.87	.26	...	13.86	1.97	.70	.48	7.72	27.08	24.64	25.89	26.72	25.18	25.97
114	.91	.52	...	13.77	1.99	.71	.45	7.56	26.61	24.76	25.71	26.27	25.04	25.65
116	3.13	.82	...	30.78	.36	.17	.42	1.36	37.51	36.59	37.06	33.63	33.29	33.47
115	2.30	.79	...	16.31	.97	.32	.30	3.61	25.90	23.32	24.63	24.65	23.99	23.84
108	6.66	.61	...	20.38	5.48	1.72	.39	6.75	41.50	42.60	42.02	33.07	34.66	33.82
111	6.50	.34	...	17.19	1.92	.31	.21	3.85	31.30	29.38	30.36	25.50	24.62	25.07
113	2.02	1.35	...	12.63	5.29	1.33	.27	5.67	28.72	28.45	28.59	27.85	27.99	23.39
112	2.39	.18	...	11.55	5.55	2.17	.27	7.62	29.35	29.09	29.47	24.04	24.67	24.43
113	3.35	.77	...	18.15	3.15	.97	.32	4.60	31.76	30.83	31.32	27.02	27.02	27.02
113	2.16	.55	...	10.02	2.58	.94	.38	6.04	29.28	27.85	28.59	26.66	26.04	26.37

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	1,231	768	687	892	983
2	Sylhet	7,101	4,878	4,114	3,793	4,609
	Total	8,322	5,646	4,801	4,685	5,592
ASSAM VALLEY.						
3	Goalpara	1,892	1,270	1,212	1,625	2,289
4	Kamrup	1,123	875	1,122	1,264	2,170
5	Darrang	1,038	702	869	1,091	1,800
6	Nowgong	450	439	635	1,228	1,073
7	Sibsagar	1,162	887	1,157	1,220	1,727
8	Lakhimpur	695	776	1,027	1,001	1,391
	Total	6,359	4,949	6,022	7,429	10,450
	Total for the Province	14,681	10,595	10,823	12,114	16,042
	Ratio per 1,000	2.42	1.75	1.79	2.00	2.65

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	1,359	1,114	890	914	493	439	249	195
2	Sylhet	8,472	6,724	4,132	3,746	2,196	1,843	1,233	779
	Total	9,831	7,838	5,022	4,660	2,679	2,332	1,472	974
ASSAM VALLEY.									
3	Goalpara	2,994	2,568	1,327	1,873	1,113	798	552	413
4	Kamrup	2,040	1,806	1,581	1,505	1,002	742	440	287
5	Darrang	1,772	1,672	1,261	1,211	613	500	321	241
6	Nowgong	1,030	910	776	808	502	411	267	184
7	Sibsagar	1,690	1,393	1,884	1,788	815	751	387	321
8	Lakhimpur	939	854	1,175	1,291	610	532	294	246
	Total	10,446	9,303	8,624	8,386	4,635	3,734	2,261	1,692
	Total for the Province	20,277	17,041	13,646	13,046	7,314	6,066	3,733	2,666
	Population	106,330	106,901	356,689	374,837	491,493	482,110	333,553	264,628
	Ratio per 1,000	190.69	159.40	38.26	34.80	14.92	12.58	11.19	10.07

Assam during each month of the year 1916.

June.	July.	August.	September.	October.	November.	December.	Total.
8	9	10	11	12	13	14	15
1,116	1,055	1,134	1,016	822	871	1,081	11,646
4,567	5,07	5,691	5,445	5,391	6,168	7,163	64,027
5,683	6,162	6,825	6,461	6,213	7,039	8,244	75,673
2,301	1,908	1,916	1,777	1,955	1,820	2,307	22,272
2,173	1,624	1,229	1,224	1,281	1,037	1,333	16,454
1,941	1,772	1,532	1,301	1,160	1,267	1,385	15,868
1,055	699	1,021	636	691	671	620	9,218
2,314	1,999	1,932	1,917	1,908	1,775	1,653	19,741
1,841	1,146	1,205	1,176	1,412	1,128	934	13,822
11,625	9,148	8,925	8,031	8,497	7,193	8,232	97,365
17,308	15,310	15,750	14,492	14,710	14,737	16,476	173,033
286	253	260	239	243	244	272	2859

districts of Assam during the year 1916.

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
233	329	530	797	646	578	523	373	414	339	619	567
1,152	1,615	3,945	4,213	3,738	3,090	3,041	2,013	2,674	1,962	4,681	3,718
1,385	1,944	3,575	5,010	4,284	3,638	3,569	2,386	3,668	2,301	5,300	4,235
402	654	994	1,164	1,113	839	1,030	633	781	584	941	779
277	259	532	670	666	584	681	559	661	487	912	763
240	376	805	1,099	1,116	1,103	920	561	668	471	507	381
221	228	399	497	497	461	455	315	335	232	378	322
374	453	1,024	1,411	1,331	1,230	1,100	715	964	594	911	695
209	291	743	1,155	1,217	1,010	1,002	532	647	389	453	392
1,723	2,361	4,497	5,996	5,940	5,247	5,188	3,315	4,056	2,757	4,232	3,132
3,108	4,365	8,972	11,006	10,324	8,885	8,757	5,701	7,144	5,058	9,532	7,437
231,893	245,076	526,427	563,035	501,826	399,477	303,554	224,199	167,715	136,717	139,495	114,630
13'40	17'16	15'33	19'54	20'57	22'24	28'64	25'43	42'59	36'99	79'10	64'87

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	305,935	155,653	24	8,338	470,167
2	Sylhet	1,512	1,093,950	1,364,739	20	7,450	2,472,671
	Total	2,629	1,403,985	1,520,392	44	15,788	2,942,838
ASSAM VALLEY.							
3	Goalpara	5,252	334,730	211,562	955	48,154	600,643
4	Kamrup	2,535	459,327	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	15,089	41	108,698	303,596
7	Sibsagar	5,410	505,266	29,718	1,964	57,941	620,299
8	Lakhimpur	4,789	367,990	13,419	5,648	77,143	468,989
	Total	21,272	2,180,339	355,320	9,791	541,947	3,108,669
	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.	Districts and towns.	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	510	276	...	6,900	933	332	5	2
2	Sylhet	2,441,929	2,130	656	...	34,008	4,754	1,629	36	18
	Total	2,901,849	2,640	932	...	40,908	5,687	2,961	41	20
ASSAM VALLEY.										
3	Goalpara	288,871	1,841	494	...	18,476	179	60	12	5
4	Kamrup	644,608	1,502	526	...	10,724	581	169	40	30
5	Darrang	371,305	2,478	232	...	7,673	2,032	618	15	5
6	Nowgong	298,163	1,944	105	...	5,196	565	83	1	1
7	Sibsagar	674,465	1,553	918	...	8,537	3,584	908	50	16
8	Lakhimpur	432,781	1,129	85	...	5,335	2,501	979	8	7
	Total	3,000,213	10,228	2,360	...	55,981	9,442	2,817	126	64
	Total for districts, excluding towns.	5,932,062	17,887	3,292	...	96,139	15,129	4,848	167	84

to class in the districts of Assam during the year 1916.

Number of deaths registered.						Ratio of deaths per 1,000 of population.					
Christians.	Hindus.	Muhammadians.	Buddhists.	Other classes.	Total.	Christians.	Hindus.	Muhammadians.	Buddhists.	Other classes.	Total.
9	10	11	12	13	14	15	16	17	18	19	20
13	6,623	4,351	...	659	11,646	11.63	21.71	27.95	...	79.03	24.75
13	26,399	26,683	...	929	64,027	8.59	24.02	26.88	...	124.09	25.83
26	33,022	41,037	...	1,588	75,673	9.89	23.52	26.99	...	100.38	25.71
297	11,507	8,257	8	2,203	22,272	56.54	34.37	39.02	8.37	45.74	37.08
17	12,084	1,735	...	2,618	16,454	6.70	26.31	26.84	...	18.38	24.63
144	8,527	1,078	55	6,054	15,858	75.27	24.35	53.09	90.31	55.46	42.02
24	5,503	940	2	2,637	9,218	17.47	31.30	59.91	48.78	24.71	30.36
143	15,998	639	51	2,910	19,751	26.43	26.87	21.59	25.96	50.22	23.59
68	11,087	235	9	2,339	13,822	14.19	20.11	17.51	15.46	30.32	29.47
603	64,768	12,884	209	18,811	97,365	32.57	21.70	36.26	21.35	34.71	31.32
719	97,790	53,921	209	20,399	173,008	30.03	27.28	28.74	21.25	36.57	28.59

causes in the districts and towns of the Province of Assam during the year 1916.

Injuries.					Ratio of deaths per 1,000 of population.												
Wounds or accidents.	Snakes and wild animals.	Rabies.	Total.	All other causes.	Total.	Cholera.	Small-pox.	Flu.	Typhoid.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	All other causes.	From all causes.		Number.	
														For the year.	Mean of previous five years.		
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
151	7	...	145	3,081	11,477	1.10	.60	...	13.48	2.07	.72	.31	6.69	24.95	24.28	1	
1,075	65	...	1,177	18,834	63,267	.87	.20	...	13.92	1.94	.69	.48	7.71	25.29	26.02	2	
1,106	95	...	1,322	21,915	74,744	.91	.22	...	13.85	1.96	.69	.45	7.55	25.76	25.74		
130	14	2	257	696	21,993	3.12	.83	...	31.37	.39	.19	.42	1.18	37.35	39.70	3	
70	65	...	295	2,948	15,955	2.83	.81	...	16.63	.90	.26	.31	3.43	24.75	23.81	4	
77	43	...	140	2,465	15,633	6.67	.62	...	20.66	5.47	1.66	.57	6.63	47.11	33.89	5	
22	27	...	61	1,100	9,014	6.51	.35	...	17.42	1.89	.27	.20	3.68	30.38	24.98	6	
87	26	3	182	3,338	19,329	2.00	1.33	...	12.65	5.31	1.54	.36	5.69	28.64	23.50	7	
83	17	...	115	3,736	13,411	2.47	.18	...	11.75	5.52	2.16	.24	7.25	29.61	24.44	8	
508	257	5	955	13,633	95,376	3.27	.77	...	18.45	3.11	.92	.31	4.49	31.47	27.10		
1,674	347	5	2,277	35,548	170,129	2.17	.55	...	16.29	2.55	.82	.38	5.99	28.08	26.44		

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

Number.	Districts and towns.	Population according to Census of 1911.	Cholera.	Small-pox.	Plague.	Fever.	Dysentery and diarrhoea.	Respiratory diseases.	In-	
									Suicide.	
									Male.	Female.
1	2	3	4	5	6	7	8	9	10	11
TOWNS.										
SURMA VALLEY.										
1	Silchar	8,785	1	3	...	32	35	10	...	...
2	Hailakandi	1,402	1	...	...	8	1	...	...	...
3	Sylhet	14,457	5	1	...	137	93	4?	1	...
4	Karimganj	3,052	1	...	...	38	16	9	...	...
5	Maulvi Bazar	2,269	3	1	...	26	7	1	...	...
6	Habiganj	6,244	3	...	...	38	6	3	...	...
7	Sunamganj	4,620	4	...	...	30	16	1	1	...
	Total	40,989	18	5	...	309	174	66	2	...
ASSAM VALLEY.										
8	Dhubri	5,808	30	3	...	8	22	20	...	...
9	Goalpara	5,964	12	1	...	7	18	26	1	...
10	Gauhati	12,481	34	1	...	99	48	28	...	...
11	Barpeta	10,739	2	2	...	74	24	20	...	...
12	Tezpur	5,355	34	...	...	7	34	32	1	...
13	Mangaldai	654	1	...	...	13	4	1	...	...
14	Newgong	5,433	31	...	...	25	19	14	1	...
15	Sibsagar	5,764	15	2	...	47	22	...	...	...
16	Nazira	2,583	4	3	...	50	10	...	...	...
17	Jorhat	5,231	28	4	...	30	31	12	...	...
18	Golaghat	2,236	...	7	...	59	10	...	...	...
19	Dibrugarh	14,563	2	1	...	80	104	42	1	...
20	North Lakhimpur	1,645	1	...	...	16	2	...	...	...
	Total	78,456	194	24	...	515	348	195	4	...
	Total of towns	119,445	212	29	...	824	522	261	6	...
	Total for the Province	6,051,507	13,099	3,321	...	96,963	15,651	5,109	173	84

*Mean of previous

in the districts and towns of the Province of Assam during the year 1916—concluded.

juries.						Ratio of deaths per 1,000 of population.											
Wounds or accidents.	Snakes and wild animals.	Rabies.	Total.	All other causes.	Total.	Cholera.	Small-pox.	Flague.	Fever.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	All other causes.	From all causes.		Number.	
														For the year.	Mean of previous five years.		
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
2	...	...	2	65	143	·11	·34	...	3·64	3·98	1·13	·22	7·39	10·84	13·66	1
1	1	...	2	9	21	·68	...	...	5·47	·68	...	1·36	6·15	14·36	8·80	2
10	2	...	13	132	423	·34	·06	...	9·47	6·43	2·90	·89	9·13	29·25	25·45	3	
...	...	...	...	11	75	·32	...	...	12·45	5·24	2·94	...	3·60	24·57	24·57	4
2	1	...	3	8	49	1·26	·42	...	10·97	2·95	·42	1·26	3·37	20·68	17·72	5	
2	...	...	2	64	116	·48	...	...	6·08	·96	·48	·32	10·24	13·57	18·89	6
...	1	...	2	44	97	·86	...	...	6·49	3·46	·21	·43	9·52	20·99	16·88	7
17	5	...	24	333	929	·44	·12	...	7·54	4·24	1·61	·58	8·12	22·66	20·93		
1	...	...	1	53	137	5·16	·51	...	1·37	3·78	3·44	·17	9·12	23·58	20·49	8
...	1	...	2	71	137	2·01	·16	...	1·17	3·01	4·35	·33	11·90	22·97	23·30	9	
...	...	...	...	73	283	2·72	·08	...	7·93	3·84	2·24	...	5·84	22·67	16·50	10
...	...	...	...	94	216	·18	·18	...	6·89	2·23	1·86	...	8·75	20·11	34·08	11
7	...	...	8	73	188	6·34	...	...	1·30	6·34	5·97	1·49	13·63	35·10	29·31	12
2	...	...	2	11	32	1·52	...	...	19·87	6·11	1·52	3·05	16·81	48·92	32·11	13
3	...	...	4	71	164	5·70	...	...	4·60	3·49	2·57	·73	13·06	30·18	30·18	14
5	...	...	5	11	102	2·60	·34	...	8·15	3·81	...	·86	1·99	17·69	20·64	15
1	...	...	1	7	75	1·54	1·16	...	19·35	3·87	...	·38	2·71	29·03	14·32*	16
2	...	...	2	56	163	5·35	·76	...	5·73	5·92	2·29	·36	10·70	31·40	20·64	17
...	...	...	...	5	81	...	3·13	...	26·38	4·47	...	...	2·23	36·22	23·25	18
10	1	...	12	117	358	·13	·06	...	5·49	7·14	2·88	·82	8·03	24·58	23·76	19	
...	...	...	...	34	53	·60	...	...	9·72	1·21	...	...	20·66	32·21	28·57	20
31	2	...	37	676	1,989	2·47	·30	...	6·56	4·43	2·48	·47	8·61	25·35	23·97		
48	7	...	61	1,009	2,918	1·77	·24	...	6·89	4·37	2·18	·51	8·44	24·43	22·93		
1,722	354	5	2,338	36,557	173,088	2·16	·55	...	16·02	2·58	·84	·38	6·04	28·59	26·37		

two years.

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	95	162	51	53	67	110
2	Sylhet	22	21	10,781	552	939	394	237	192	174
	Total	30	29	11,884	627	1,101	445	290	259	284
ASSAM VALLEY.										
3	Goalpara	21	18	2,137	244	230	13	14	33	387
4	Kamrup	11	11	1,954	35*	70	63	40	52	652
5	Darrang	12	11	1,406	386	78	16	39	126	645
6	Nowgong	7	6	1,495	40*	18	24	204	596	535
7	Sibsagar	11	10	2,143	255	58	19	15	74	210
8	Lakhimpur	7	7	1,702	35	3	2	30	80	326
	Total	69	63	10,837	975	457	137	345	1,000	2,775
	Total for the Province	99	92	22,721	1,602	1,558	582	635	1,259	3,059

* 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	5	1,103	141	...	...	1	2	4	19	25
2	Sylhet	22	9	10,781	191	12	9	19	41	77	64	107
	Total	30	14	11,884	332	12	9	20	43	81	83	133
ASSAM VALLEY.												
3	Goalpara	21	15	2,137	149	13	16	24	66	96	89	58
4	Kamrup	11	9	1,954	22*	82	46	88	92	80	47	39
5	Darrang	12	9	1,406	81	14	6	13	24	13	67	32
6	Nowgong	7	6	1,495	14*	1	1	16	5	16	15	9
7	Sibsagar	11	10	2,143	69	62	65	106	151	117	115	134
8	Lakhimpur	7	5	1,702	23	12	2	...	16	21	22	13
	Total	69	54	10,837	348	184	126	247	344	339	355	235
	Total for the Province	99	68	22,721	680	196	145	267	387	490	438	418

* Mauzas.

districts of Assam during each month of the year 1916

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
40	11	3	1	3	6	5	268	244	512	1.08	1.03	1.08	2.45	1
95	26	22	33	18	12	13	1,707	948	2,155	.95	.78	.87	2.58	2
135	37	25	34	21	18	18	1,475	1,192	2,667	.97	.83	.91	2.56	
297	157	38	53	65	277	319	894	989	1,883	2.80	3.50	3.13	2.23	3
221	98	57	29	22	62	172	813	725	1,538	2.39	2.29	2.30	2.68	4
639	456	217	119	49	75	24	1,784	1,229	2,513	6.46	6.87	6.66	2.49	5
251	113	96	29	38	49	2	1,013	969	1,975	6.33	6.47	6.50	4.65	6
351	114	101	129	194	114	18	769	631	1,400	2.10	1.93	2.02	2.14	7
424	92	66	10	23	54	4	574	549	1,123	2.39	2.49	2.39	.81	8
2,183	1,030	575	369	391	631	539	5,347	5,085	10,432	3.29	3.43	3.35	2.36	
2,318	1,067	600	403	412	649	557	6,892	6,277	13,099	2.17	2.15	2.16	2.46	

Small-pox in the districts of Assam during each month of the year 1916.

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
23	39	15	60	99	147	132	279	22	54	.59	.58	.59	.004	1
98	77	45	34	75	362	296	658	74	212	.28	.24	.26	.36	2
121	116	60	94	165	509	428	937	96	246	.33	.30	.32	.31	
51	18	25	22	18	305	196	498	60	165	.95	.68	.82	.60	3
22	10	11	9	3	268	261	529	142	314	.78	.79	.79	1.80	4
29	16	9	7	2	118	114	232	59	93	.59	.63	.61	.59	5
33	8	3	1	3	57	48	105	22	50	.36	.32	.34	.51	6
38	46	30	19	41	482	452	934	52	148	1.32	1.38	1.35	.37	7
...	...	...	...	...	47	39	86	1	...	.18	.17	.18	.04	8
193	98	73	58	67	1,277	1,107	2,384	336	710	.78	.74	.77	.73	
314	214	138	152	232	1,786	1,533	3,321	432	976	.57	.52	.55	.52	

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	1,103	500	362	331	467	504
2	Sylhet	22	22	10,781	7,335	2,843	2,110	1,816	1,824	2,433
	Total	30	30	11,884	8,438	3,403	2,472	2,147	2,291	2,937
ASSAM VALLEY.										
3	Goalpara	21	21	2,137	1,978	1,556	1,163	1,090	1,425	1,642
4	Kamrup	11	11	1,954	52*	695	592	739	884	1,168
5	Darrang	12	11	1,406	1,053	589	429	400	611	633
6	Nowgong	7	7	1,495	67*	308	313	290	456	264
7	Sibsagar	11	11	2,143	898	558	406	553	474	701
8	Lakhimpur	7	7	1,702	618	331	369	442	317	294
	Total	69	68	10,837	4,666	4,037	3,271	3,604	4,167	4,896
	Total for the Province	99	98	22,721	13,104	7,440	5,743	5,751	6,458	7,833

* 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	8	1,103	267	92	63	60	91	121
2	Sylhet	22	22	10,781	2,491	656	371	381	337	414
	Total	30	30	11,884	2,758	748	434	441	428	535
ASSAM VALLEY.										
3	Goalpara	21	19	2,137	98	19	10	7	13	31
4	Kamrup	11	11	1,954	31*	21	18	55	51	88
5	Darrang	12	11	1,406	385	83	46	88	100	250
6	Nowgong	7	7	1,495	48*	19	15	55	55	59
7	Sibsagar	11	11	2,143	929	129	111	152	227	339
8	Lakhimpur	7	7	1,702	94	82	94	155	235	231
	Total	69	66	10,837	1,585	353	294	512	681	996
	Total for the Province	99	96	22,721	4,343	1,101	728	953	1,109	1,533

* Mauzas.

in the districts of Assam during each month of the year 1916.

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
678	674	724	605	413	436	486	3,145	3,095	6,240	12.77	13.81	13.27	11.16	1
2,702	3,200	3,625	3,445	3,939	3,395	3,864	18,435	15,792	34,277	14.57	13.11	13.86	11.29	2
3,380	3,874	4,340	4,050	3,438	3,831	4,350	21,639	18,687	40,517	14.28	13.22	13.77	11.27	
1,793	1,553	1,685	1,547	1,746	1,420	1,871	9,968	8,533	18,491	31.29	30.20	30.78	27.73	3
1,527	1,151	870	779	905	677	916	5,906	4,991	10,897	17.40	15.19	16.31	14.83	4
713	716	726	562	585	739	900	3,978	3,715	7,693	20.03	20.78	20.38	18.95	5
600	443	662	438	454	447	446	2,769	2,452	5,221	17.87	16.49	17.19	14.55	6
874	835	922	883	909	786	822	4,670	4,053	8,723	12.80	12.45	12.63	11.17	7
524	416	532	568	657	501	371	2,893	2,528	5,421	11.61	11.40	11.55	11.19	8
6,031	5,114	5,397	4,777	5,256	4,570	5,326	30,184	26,262	56,446	18.57	17.70	18.15	16.43	
9,411	8,988	9,746	8,827	8,689	8,401	9,676	51,814	45,149	96,963	16.50	15.50	16.02	13.92	

Dysentery and Diarrhœa in the districts of Assam during each month of the year 1916.

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
87	91	82	74	78	49	81	544	425	969	2.20	1.89	2.06	2.59	1
412	382	337	307	353	414	528	2,751	2,141	4,892	2.16	1.77	1.97	2.22	2
499	473	419	381	431	463	609	3,295	2,596	5,891	2.17	1.79	1.99	2.23	
28	23	25	26	15	9	13	129	99	219	.37	.35	.36	.44	3
88	119	56	53	41	33	31	343	305	653	1.02	.92	.97	.94	4
247	284	222	245	206	143	156	1,172	898	2,070	3.90	3.02	3.48	3.98	5
75	37	90	40	46	43	50	378	256	634	2.11	1.72	1.92	1.55	6
549	476	350	333	361	337	292	2,935	1,622	4,557	5.57	4.98	5.29	4.06	7
341	303	250	242	225	230	149	1,418	1,183	2,607	5.63	5.40	5.55	4.29	8
1,319	1,242	993	989	964	794	651	5,421	4,269	9,790	3.24	2.94	3.15	2.43	
1,818	1,715	1,412	1,370	1,395	1,257	1,260	8,716	6,935	15,651	2.77	2.38	2.53	2.39	

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	97	50	18	45	34	28
2	Sylhet	22	21	10,781	553	176	200	193	134	119
	Total	30	27	11,884	650	226	218	238	168	147
ASSAM VALLEY.										
3	Goalpara	21	14	2,137	33	8	7	14	9	11
4	Kamrup	11	10	1,954	21*	31	16	26	25	9
5	Darrang	12	9	1,406	133	53	69	82	52	44
6	Nowgong	7	5	1,495	24*	2	11	5	10	6
7	Sibsagar	11	7	2,143	189	69	63	86	83	73
8	Lakhimpur	7	6	1,702	23	50	82	124	107	78
	Total	69	51	10,837	423	209	248	337	286	221
	Total for the Province ...	99	78	22,721	1,073	435	466	575	454	368

* Mauzas.

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	...	1,954	...	...	...	...	...	...
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	...	...	...	...	...	...

APPENDIX II.
PROVINCIAL.

Statement showing details of registration in compulsory areas.

Compulsory registration area.	Population according to Census of 1911.	Estimated births at 286 per 1,000 married women between the ages of 15 and 40.	Number of births registered during the year.	Estimated birth-rate per mille.	Registered birth-rate per mille.	Number of deaths registered during the year.		Death-rate per mille.		Number of prosecutions under Act IV (B.C.) of 1873.	Number of convictions.
						Including deaths in hospitals.	Excluding deaths in hospitals.	Including deaths in hospitals.	Excluding deaths in hospitals.		
1	2	3	4	5	6	7	8	9	10	11	12
Silchar	8,785	296	195	33.69	22.19	148	111	16.84	12.64	12	6
Hailakandi	1,462	45	29	30.78	19.83	21	17	14.36	11.63	2	2
Sylhet	14,457	582	309	40.26	21.37	423	347	29.25	24.00	78	29
Karimganj	3,032	260	60	39.92	19.65	75	61	24.57	19.99	2	2
Maulvi Bazar	2,369	77	57	32.50	24.06	49	44	20.68	18.57	2	1
Habiganj	6,244	222	142	35.55	22.74	116	108	18.57	17.30	20	19
Sunamganj	4,620	145	150	31.38	32.46	97	87	20.99	18.83	85	54
Dhubri	5,808	191	160	32.88	27.54	137	169	23.58	18.77	8	7
Goalpara	5,964	197	179	33.03	30.01	137	117	22.97	19.62	8	8
Ganhati	12,461	409	337	32.77	27.00	283	292	22.67	16.18	41	20
Barpeta	10,730	482	409	44.88	46.46	216	216	20.11	20.11	7	4
Tezpur	5,355	167	131	31.18	24.46	188	153	35.10	28.57	13	9
Mangaldai	654	*	19	*	29.05	32	22	48.92	33.64	-	-
Nowgong	5,433	185	185	34.05	34.05	164	133	30.18	24.48	23	13
Sibsagar	5,764	213	145	36.95	25.15	102	79	17.69	13.71	10	8
Nazira	2,583	*	129	*	49.94	75	75	29.03	28.03	37	25
Jorhat	5,231	192	150	36.70	30.39	163	115	31.16	21.98	48	45
Golaghat	2,236	88	74	39.35	33.09	81	58	36.22	25.94	12	3
Dibrugarh	14,563	543	260	37.28	17.85	358	194	24.48	13.32	20	Not reported.
North Lakhimpur...	1,645	*	43	*	26.13	53	36	32.21	21.89	...	...
Total	119,445	4,294	3,262	34.96	27.31	2,918	2,284	24.43	19.12	428	255

* Not available.

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Resolution on the Annual Sanitary Report of the Province of Assam for the year 1916.

Extract from the Proceedings of the Chief Commissioner of Assam in the Municipal Department, No. 4626M., dated the 23rd June 1917.

READ—

The Sanitary Report for the year 1916.

RESOLUTION.

THE Sanitary Commissioner reports that the public health was not seriously affected during the past year by the adverse meteorological conditions which prevailed, although the heavy floods which occurred in parts of the Surma Valley and in Nowgong in the month of October caused a rise in the price of food-stuffs and necessitated the grant of gratuitous relief and of agricultural loans in certain areas. The death-rate per mille for the year was 28.59 as compared with 30.86 in the preceding year and a quinquennial average of 26.37.

2. There were cholera epidemics of some severity in Goalpara, Darrang, Nowgong, and North Lakhimpur, the outbreak in the last-mentioned locality proving particularly difficult to combat owing to the ignorance and prejudice of the people in that backward area. On the whole, however, the mortality from cholera was less both in rural and urban areas than the decennial average. There was no change in the general death-rate from small-pox, but the increased efficiency with which the provisions of the Vaccination Act are administered produced a substantial reduction in the prevalence of this disease in urban areas. "Fever" was less severe than usual in urban, but more fatal in rural, areas. "Dysentery and diarrhoea" and "respiratory diseases" were somewhat above the average in both rural and urban areas.

3. The Chief Commissioner regrets that in the absence of an officer who can devote his time to the elucidation of the causes which lead to the prevalence of malaria in the province, and in view of the financial stringency entailed by the war, the consideration of special anti-malarial measures has had to be postponed for the present. The growth in the sale of Government quinine, which is offered at rates much below those at which the drug is obtainable in the open market, is satisfactory.

4. The anti-*kala-azar* operations were maintained, and four travelling dispensaries were at work. The total mortality from the disease varied little from that of the preceding two years. The district of Nowgong, however, showed a higher mortality than has been recorded for the last ten years, and there appears to be a tendency in this district to increased activity on the part of the disease. In Darrang and Sibsagar, also, the figures demonstrate the need for constant vigilance in detecting and suppressing new outbreaks.

A serious outbreak of *kala-azar* came to light in a tea garden in the Goalghat subdivision of the Sibsagar district. During a period of nine months, 68 cases came under observation, of which 23 had proved fatal. Measures providing for the segregation of infected and suspected families, for the destruction of infected houses, and for the reconstruction of new lines on an uninfected site have been taken, and on the advice of the sanitary authorities, the Chief Commissioner applied for, and has recently been granted, powers under the Epidemic Diseases Act (III of 1897) to enable him to deal adequately with the situation. The detailed measures to be adopted are now under consideration. The Chief Commissioner trusts that, if the measures of segregation, removal, and prevention are effectively carried out, there will be no reason to fear an extension of the disease to the labour forces of other tea gardens, a contingency of which the disastrous potentialities for the tea industry are obvious. The Chief Commissioner is assured that the garden authorities are fully alive to these possibilities, and that they are taking all necessary steps to give effect to the preventive measures which experience has shown to be required.

5. The provincial birth-rate was 30.52 per mille, as compared with 38.60 in 1915 and a quinquennial average of 32.75. The general decrease is attributable to the adverse economic conditions caused by the floods and epidemics which were prevalent during the year 1915, particularly in the Surma Valley Division. As compared with the quinquennial average, there was an increase in Nowgong, Darrang, and Kamrup and a decrease in the remaining five plains districts. The birth-rate exceeded the death-rate by 1.93 as compared with 2.74 in the preceding year.

6. There was no change in the agency for the collection and registration of vital statistics. In urban areas with compulsory registration, Sanitary Inspectors of the Sub-Assistant Surgeon class have been appointed registrars of births and deaths. In the rural areas of Sylhet, Cachar, and Goalpara, vital statistics were collected by police chaukidars, and in Kamrup, Darrang, Nowgong, Sibsagar, and Lakhimpur by gaonburas. As was observed last year, the position in rural areas must remain unsatisfactory till village authorities are formed and utilised. The reporting of vital statistics from tea estates has hitherto been not entirely satisfactory. The question has lately been investigated and it has been found that many tea estates have failed to submit to the district Civil Surgeon the monthly returns of births and deaths from which the statistics are compiled. With the object of rendering these statistics more trustworthy, it has been directed that in future the monthly returns shall be submitted by tea estates to the District Magistrate, and transmitted by him, through the office of the Civil Surgeon, to the Sanitary Commissioner. The Chief Commissioner hopes that this system will ensure greater regularity in reporting, and an improvement in the accuracy of the returns.

7. The Chief Commissioner notes with satisfaction that, although funds were not available as freely as they have been in the past, considerable improvement in urban sanitation was effected during the year, and that increased activity and efficiency in sanitary administration has been displayed in most of the municipalities. In particular, the need for the improvement of conservancy and for dealing with insanitary privies is being more generally recognised, and, with few exceptions, efficient action to remedy the latter evil is now being taken in municipal areas. Great credit is due to those Chairmen and Commissioners who have realised their responsibilities and are carrying out this somewhat unpopular reform.

The Sanitary Commissioner has detailed the various schemes for the improvement of urban 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.

8. The progress made with schemes for the improvement of rural water-supply is satisfactory. Government grants amounting to Rs. 1,21,000 were placed at the disposal of Local Boards to finance the second year's work on the five-year programmes for the improvement of drinking water-supply in rural areas. The work included in the first year's programme has for the most part been completed. The attention of Local Boards was drawn to the necessity for the proper protection of all existing Local Board tanks, and for the inspection of every such tank after completion either by the Chairman or by a member of the Board with a view to ascertaining whether the work has been carried out strictly in accordance with the approved programme, and whether the tank is completely protected.

9. The Chief Commissioner acknowledges with pleasure the readiness with which the Railway and Steamer Companies and the Tea Districts Labour Supply Association have received and carried out the suggestions made by the Sanitary Department on questions affecting the medical and sanitary conditions under which immigrants travel.

10. The Chief Commissioner's thanks are due to Major McCombie Young for his zealous administration of the department, and to 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.



