

## **Annual sanitary report of the Province of Assam.**

### **Contributors**

Assam (India)

### **Publication/Creation**

Shillong : [Government Press] (Printed at the Assam Secretariay Printing Office), [1920]

### **Persistent URL**

<https://wellcomecollection.org/works/yxhf2mkr>

### **License and attribution**

This work has been identified as being free of known restrictions under copyright law, including all related and neighbouring rights and is being made available under the Creative Commons, Public Domain Mark.

You can copy, modify, distribute and perform the work, even for commercial purposes, without asking permission.



Wellcome Collection  
183 Euston Road  
London NW1 2BE UK  
T +44 (0)20 7611 8722  
E [library@wellcomecollection.org](mailto:library@wellcomecollection.org)  
<https://wellcomecollection.org>

*Calcutta ✓*  
*13 15-16*  
*Rail. As on -*

# ANNUAL SANITARY REPORT

OF THE

PROVINCE OF ASSAM

FOR THE YEAR

1920.



SHILLONG :

PRINTED AT THE ASSAM SECRETARIAT PRINTING OFFICE.

1921.

[Price 12 annas.]

[Price 1s. 6.]

THE NATIONAL ARCHIVES

1910

RECORDS OF THE

NAVY

1910



22501666097

# ANNUAL SANITARY REPORT

OF THE

PROVINCE OF ASSAM

FOR THE YEAR

1920.



SHILLONG :

PRINTED AT THE ASSAM SECRETARIAT PRINTING OFFICE.

1921.

*Price 12 annas.*

*[Price 1s. 6.]*

Agents for the sale of Books published by the Assam Administration.

Agents in India.

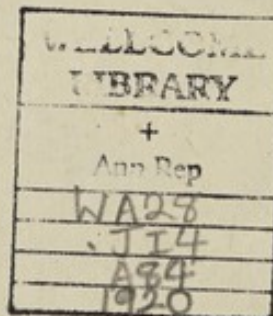
- |  |  |
|--|--|
| (1) Messrs. Thacker, Spink & Co., Calcutta.  | (10) Messrs. Rai M. C. Sarkar Bahadur & Sons, 90-2A, Harrison Road, Calcutta.      |
| (2) Messrs. W. Newman & Co., Calcutta.   | (11) Messrs. Students & Co., Cooch Bihar.  |
| (3) Messrs. S. K. Lahiri & Co., Calcutta.  | (12) Messrs. Vas & Co., Madras.  |
| (4) Messrs. A. M. and J. Ferguson, Ceylon.   | (13) The Standard Literature Co. Limited, 23-1, Old Court House Street, Calcutta.  |
| (5) Messrs. R. Cambray & Co., 6 and 8/2, Hastings Street, Calcutta.                          | (14) The Standard Book Stall, Karachi.   |
| (6) Messrs. Thompson & Co., Madras.  | (15) Mr. Mangaldas Harkisandas, Surat.   |
| (7) Babu Hari Ram Dhar, B.A., Popular Library, Dacca.  | (16) Messrs. Rarsaadas, Narandas & Sons of Surat.                                  |
| (8) Messrs. D. B. Taraporevala Sons & Co., 103 Meadon Street Fort, Post Box No. 187, Bombay. | (17) Munshi Seeta Ram, Managing Proprietor, Indian Army Book Depot Jubi, Cownpore. |
| (9) The Indian School Supply Depot, 309, Bow Bazar Street, Calcutta.                         | (18) Proprietor, New Kitabkhana, Poona.  |
| (19) The Association Press, Calcutta.  |  |

Agents in Great Britain.

- |   |   |
|---|---|
| (1) Messrs. Constable & Co., 10, Orange Street, Leicester Square, W. C.   | (8) Messrs. Grindlay & Co., 54, Parliament Street, S. W. London.        |
| (2) Messrs. Kegan Paul, Trench, Trübner & Co., 68-74, Carter Lane, E. C., London, Oriental Department, 25, Museum Street, London, W. C. | (9) Messrs. W. Thacker & Co., 2, Creed Lane, London, E. C.              |
| (3) Mr. B. Quaritch, 11, Grafton Street, New Bond Street, W.  | (10) Messrs. Luzac & Co., 45, Great Russell Street, London, W. C.       |
| (4) Messrs. P. S. King & Son, 9, Bridge Street, Westminster, S. W., London.   | (11) Mr. J. Fisher Unwin, Limited, 1 Adelphi Terrace, London, W. C.     |
| (5) Mr. B. H. Blackwell, 50 and 51, Broad Street, Oxford.   | (12) Messrs. Weldon and Wesley Limited, 28, Essex Street, London, W. C. |
| (6) Messrs. Deighton Bell & Co., Limited, Cambridge.  | (13) Messrs. Oliver and Boyd, Tweeddale Court, Edinburgh.               |
| (7) Messrs. Henry S. King & Co., 65, Cornhill, E. C., London.   | (14) Messrs. E. Ponsonby, Ltd., 116, Grafton Street, Dublin.            |

Agents on the Continent of Europe.

- |  |                                  |
|--|----------------------------------|
| (1) M. Farnest Leroux, 28, Rue Bonaparte, Paris. | (2) Martinus Nijhoff, The Hague. |
|--|----------------------------------|



SHILLONG:

PRINTED BY H. H. KING, SUPERINTENDENT, ASSAM SECRETARIAT PRESS.

No. 4360.

FROM

MAJOR J. TAYLOR, D.S.O., M.D., D.P.H., I.M.S.,  
OFFG. SANITARY COMMISSIONER, ASSAM,

TO

THE SECRETARY TO THE GOVERNMENT OF ASSAM, SHILLONG.

*Dated Shillong, the 9th May 1921.*

SIR

I HAVE the honour to submit herewith the Annual Sanitary Report of the Province of Assam for the year 1920.

I have the honour to be,

SIR,

Your most obedient Servant,

J. TAYLOR, *Major, I. M. S.,*  
*Offg. Sanitary Commissioner, Assam.*

Enclosures :—

1 Report.

14 Statements.

Digitized by the Internet Archive  
in 2019 with funding from  
Wellcome Library

[Maximum limit of narrative portion of the report, 30 pages.]

## CONTENTS.

### SECTION I.

#### METEOROLOGY.

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

### SECTION V.

#### GENERAL POPULATION—VITAL STATISTICS.

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

### SECTION VI.

#### HISTORY OF THE CHIEF DISEASES.

Chief causes of mortality (Influenza) ...	17	7
Cholera ...	18	8
High rates of mortality from cholera in individual towns and rural areas.	19	8
Cholera in tea estates ...	20	9
Small-pox ...	21	9
High rates of mortality from small-pox in individual towns and rural areas.	22	10
Fevers ...	23	10
High rates of mortality from fevers in individual towns and rural areas.	24	11
<i>Kala-azar</i> ...	25	12
Dysentery and diarrhoea ...	26	17
Plague ...	27	17
Other causes of mortality ...	28	17

### SECTION IX.

#### SANITARY WORKS—CIVIL.

General ...	29	18
Municipal expenditure on sanitation ...	30	18
Sanitary works ...	31	19

SECTION X.

GENERAL REMARKS.

	PARA.	PAGE.
Village sanitation ... ..	32	19
Sale of quinine ... ..	33	20
Pilgrim traffic and fairs... ..	34	21
Railway camps ... ..	35	21
Public Health Laboratory ... ..	36	21
Emigration... ..	37	22
Personal proceedings ... ..	38	23

SECTION XI.

Report of the Sanitary Board ... ..	39	23
-------------------------------------	----	----

# ANNUAL SANITARY REPORT

## OF THE PROVINCE OF ASSAM

FOR THE YEAR

1920.

---

### SECTION I.

#### METEOROLOGY.

The Director-General of Observatories has furnished the following note on the chief meteorological conditions of the province for the year 1920 :—

I. *The cold weather period January and February.*—Rainfall was below normal by 62 per cent. in January, but above it by 48 per cent. in February. Skies were more clouded than usual in both the months, and January in temperature was somewhat above the average.

II. *The hot weather period March to May.*—In March rainfall was above normal by 4·95" or 129 per cent. but in the next two months it was in slight defect. The departures of cloud were in agreement with those of rainfall, being in distinct excess in March and in defect in May. Maximum temperature was in general slightly below normal ; minimum temperature and humidity were about the average.

III. *The south-west monsoon period June to September.*—Rainfall was nearly normal in June, August and September, but was in defect by 4·61" or 25 per cent. in July. There was less cloud than usual in the last three months of the season. Humidity and temperature did not depart appreciably from the normal.

IV. *The retreating monsoon period October to December.*—Rainfall was normal in October, but in large defect in November and moderate defect in December. Cloud proportion was in distinct excess at Sibsagar and Gauhati and in defect in south Assam. Temperature was higher than usual generally in December.

The approximation to normal of the rainfall during the year was not accompanied by any diminution in the price of common rice which has steadily increased, the amount purchaseable for one rupee being from one to two seers less than in 1919. The price of rice has apparently been affected by external conditions. There is no co-relation between the price of grains and the mortality of the province in comparison with previous years.

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

### SECTION II.

#### EUROPEAN ARMY.

(No remarks.)

### SECTION III.

#### NATIVE ARMY.

(No remarks.)

### SECTION IV.

#### JAILS.

(No remarks.)

## SECTION V.

## GENERAL POPULATION.

*(Vital Statistics.)*

2. The report deals with the plains districts of the province, the population of which at the Census of 1911 was 6,051,507. This has been used as the basis for calculation of ratios. The hill districts are excluded.

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

The Provincial figures of the 1921 Census are now available and certain of the ratios based on the 1921 population are given for comparison. The area under registration shows an increase of about 13 per cent. over the 1911 census and certain of the Assam Valley districts show an increase which will materially affect the birth and death ratios. The greatest increases were in the districts of Nowgong (31·8 per cent.), Lakhimpur (30·2 per cent.), Darrang (27 per cent.) and Goalpara (26·7 per cent.). The 1921 census shows little change in the Surma Valley districts. There has been no change in the areas under registration during the year. The birth-rate of the province during 1920 was 31·53 per mille and is compared below with the rates recorded for other provinces of India :—

Provinces.	Birth-rate.		
	1914-18.	1919.	1920.
1	2	3	4
Assam ... ..	32·68	30·52	31·53
Bengal ... ..	33·3	27·5	30·0
Bihar and Orissa ... ..	39·50	30·46	32·28
Central Provinces ... ..	46·90	34·31	39·17
Madras ... ..	31·7	25·52	28·42
Burma ... ..	34·70	29·89	33·78
Bombay ... ..	35·57	27·90	30·28
United Provinces ... ..	43·49	32·39	35·55
Punjab ... ..	44·1	40·28	42·91
North-West Frontier Province ... ..	32·19	28·62	29·82

The birth-rate of the year in common with that of other provinces shows an increase over the rate in 1919, but the increase is less than elsewhere. The rate is still below that of the preceding quinquennium as in the rest of India.

The death-rate for the year 1920 was 28·98 as compared below with the rates recorded for other provinces in India :—

Provinces.	Death-rate.		
	1914-18.	1919.	1920.
1	2	3	4
Assam ... ..	31·46	50·09	28·98
Bengal ... ..	31·2	36·2	32·7
Bihar and Orissa ... ..	37·05	40·0	30·94
Central Provinces ... ..	50·24	43·24	40·11
Madras ... ..	27·6	27·23	21·87
Burma ... ..	28·19	31·09	26·44
Bombay ... ..	43·55	32·53	28·65
United Provinces ... ..	42·66	41·69	37·23
Punjab ... ..	43·6	28·34	28·55
North-West Frontier Province ... ..	35·95	28·66	23·36

The improvement as compared with 1919 is very remarkable and the death-rate compares favourably with most other provinces and is below the quinquennial average. The difference as contrasted with 1919 is due to the absence of influenza and cholera in severe epidemic form, both of which were responsible for very high mortality in 1919. The recovery has been more striking than in any other province.

3. The number of births registered during the year was 190,835, giving a ratio of 31.53 per mille, as compared with 30.52 in 1919 and with 32.19, the average of the quinquennium 1915-19. Birth registration—General. Calculated on the 1921 Census figures the ratio would be 27.87. The lowest birth-rate was recorded in Sylhet district which was 3.22 below the quinquennial average and was below the actuals of 1919. In Kamrup the rate was less than in 1919. In all other districts there was an increase as compared with the previous year. Goalpara, Darrang, Lakhimpur and Cachar showed rates above the quinquennial average.

4. In twenty-one urban areas with a population of 120,501, the total births registered were 3,774 and the birth-rate per mille was 31.32, as compared with 3,713 and 31.08 in 1919. Birth registration in urban areas.

Barpeta as in previous years showed the highest rate (49.91). High rates were also recorded in North Lakhimpur (41.94), Goalpara (36.72), Nowgong (36.44), Dhubri (36.32), Jorhat (34.79), Gauhati (32.84), Karimganj (32.43), Hailakandi (32.14) and Golaghat (31.30). The only urban area returning a rate below 20 per mille was Nazira union (19.74) where registration is defective. The average for urban areas in Surma Valley districts was 27.37, as compared with 33.35 in the Assam Valley districts.

5. The total number of births registered in rural areas during the year was 187,061, as compared with 181,025 in 1919, an increase of 6,036 or 1.03 per mille of population, the previous year having shown a decrease of 4.51 per mille. Birth registration in rural areas.

The highest birth-rates recorded in rural circles were 92.58 in third circle Sidli in Goalpara district and 86.70 in Selleng circle of the Sibsagar district which returned the highest rate (79.08) in the previous year. Other circles returning rates above the provincial average were 20 in Goalpara, seven in Kamrup, six in Nowgong, six in Darrang, five in Lakhimpur, six in Cachar and two in Sylhet.

The lowest ratio (4.87) was recorded in Margherita as in last year. Other low rates were Lumding (11.88), Majuli (16.02) and Udalguri (17.66) which are curiously in accordance with the experience of 1919.

6. The number of deaths registered during the year was 175,403 giving a ratio of 28.98, as compared with 50.09 in 1919 and with an average of 36.54 for the preceding quinquennium. The death-rate for the pre-influenzal quinquennium 1913-17 was 27.77 and the rate is now approaching the normal. Death registration—General.

Calculated on the provisional census figure for 1921 the rate would be 25.61. The highest district rates were Darrang (37.22), Goalpara (35.19), Nowgong (33.72), and Lakhimpur (32.06). The death-rate was below the 1915-19 quinquennial average in every district but was slightly above the average of the pre-influenzal quinquennium (1913-17) in all districts except Kamrup and Sibsagar.

7. The total number of deaths registered during the year in urban areas in which registration is compulsory was 2,972, as compared with 4,459 in 1919, showing a decrease of 1,487. The highest ratios in urban areas were recorded in Mangaldai (39.75), Golaghat (35.33), Gauhati (34.37), North Lakhimpur (33.43), Nowgong (32.94), Dhubri (29.09) and Goalpara (29.00). All the urban areas in the Surma Valley showed rates below the provincial urban average. Death registration in urban areas.

8. The total number of deaths recorded in rural areas during the year was 172,431 as compared with 298,674 in 1919, the respective annual ratios being 29.07 and 50.35 per mille, and the quinquennial average rate being 36.69. Death registration in rural areas.

9. The subjoined table shows the results 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 1920 :—

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

Municipalities.	Unregistered vital occurrences detected during 12 months from October 1919 to September 1920.		Recorded vital occurrences during 12 months from October 1919 to September 1920.		Percentage of omissions.	
	Births.	Deaths.	Births.	Deaths.	Births.	Deaths.
1	2	3	4	5	6	7
Silchar ...	2	...	162	105	1.22	...
Hailakandi ...	...	1	47	42	...	2.32
Sylhet ...	26	11	411	329	5.95	3.23
Karimganj ...	11	6	53	26	17.18	18.75
Maulvi Bazar ...	5	3	90	60	5.26	4.76
Habiganj ...	13	13	154	162	7.78	7.42
Sunamganj ...	21	9	99	82	17.50	9.89
Dhubri ...	16	9	145	94	9.93	8.73
Goalpara ...	14	17	233	187	5.66	8.33
Gaubhati ...	26	28	377	309	6.45	6.55
Barpeta ...	17	19	679	423	2.44	4.29
Tezpur ...	4	6	153	101	2.55	5.60
Mangaldai ...	1	...	16	29	5.38	...
Nowgong ...	6	5	202	191	2.88	2.55
Sibsagar ...	...	...	139	83	...	...
Nazira ...	...	...	37	60	...	...
Jorhat ...	16	11	182	107	8.08	9.32
Golaghat ...	1	2	45	59	2.17	3.28
Dibrugarh ...	33	3	291	129	10.18	2.27
North Lakhimpur ...	...	...	44	32	...	...
Dumduma ...	...	...	15	12	...	...
Shillong ...	16	4	455	257	3.39	1.53
Total ...	228	147	4,029	2,969	5.35	4.71

Karimganj as in the previous year showed the largest proportion of omissions. The figures are all probably much below the actuals. Three hundred and seventy-nine prosecutions were made and 250 convictions obtained, the average fine working out at Re. 1-4-4 on conviction. The inefficiency of prosecution in some municipalities is shown by the prosecution of 27 cases in Jorhat with only four convictions and total fine of twelve annas.

Registration in hill districts.

10. The following statement shows the recorded birth and death-rates in hill districts in 1920, as compared with 1919 :—

District.	1920.		1919.	
	Birth-rate.	Death-rate.	Birth-rate.	Death-rate.
1	2	3	4	5
Khasi and Jaintia Hills ...	23.82	17.22	21.28	29.32
Naga Hills ...	12.85	24.40	10.02	34.20
Lushai Hills ...	41.99	34.39	39.13	65.69
Garo Hills ...	26.40	21.91	23.83	26.27

There has been an improvement in the health of all hill districts during the year, this being specially notable in the Lushai Hills which suffered severely from influenza in the previous year. Malaria and respiratory diseases continue to cause high mortality in this district, the death-rate of which remains above that of the pre-influenzal period. In the Sadiya Frontier Tract registration is not on such a basis as would permit of making any deductions as to the health during the year.

11. The following table shows the birth and death-rates reported from the tea gardens during 1920, as calculated on the figures of population for that year :—

District.	Birth-rate.	Death-rate.
Cachar ... ..	22.71	23.67
Sylhet ... ..	20.62	25.58
Goalpara ... ..	42.78	31.41
Kamrup ... ..	18.51	24.75
Darrang ... ..	22.39	31.88
Nowgong ... ..	22.35	27.19
Sibsagar ... ..	27.04	32.31
Lakhimpur ... ..	36.85	44.97
Total ... ..	25.89	31.54

The birth-rate is lower and the death-rate higher than the provincial average but the difference in constitution of the tea-garden population by age groups, etc., renders comparison of little value. The death-rate in 1919 had been 83.82 per mille but the occurrence of cholera and influenza in that year had produced an exceptional mortality amongst a weakened population of whom one quarter of a million had come from famine districts during that year. The number of immigrants during 1920 was only 63,706 and these were in more satisfactory physical condition than those of 1919. The 1919 immigrant coolies remaining on tea gardens constitute a weakness in the labour force which tends to keep up the death-rate but improvement is taking place in them gradually and a further reduction in mortality should be obtained.

12. The total number of births and deaths recorded within railway limits were 42 and 512, respectively, as compared with 47 and 918, respectively, in 1919. The highest mortality was recorded under the heading of "Respiratory Diseases."

13. The highest birth-rates were recorded in October, November, December and January as in the previous year. The lowest rate was in June and there has been a progressive increase since, the rates for November and December being higher than in January. The birth-rate is beginning to show a recovery from the conditions of the previous year.

The seasonal incidence of mortality during the year was little affected by the occurrence of epidemic diseases. The death-rate was highest in January and became gradually less from January to August, the later months showing a slight increase but not reaching the figures of the previous year. June to October were the healthiest months indicating a lessened prevalence of malaria.

14. The details of registration according to age, sex and class are furnished in the annual forms Nos. II, IV and V attached to this report.

The curve of mortality by age groups followed a similar course to that of previous years, the mortality being greatest in the age group under one year and lowest in the age group ten to fifteen years. The deaths in all groups were proportionately reduced in comparison with 1919.

Out of every 100 deaths 55 were males and 45 females, as compared with 52 males and 48 females in the previous year. According to class the lowest death-rates were found amongst the Buddhists of whom there were very small numbers. The next lowest rate was amongst the Hindus who form a majority of the population of the province and whose death ratio of 27.47 per mille was below the provincial average. Muhammadans, Christians and "other classes" are next in order, all being above the average of the province. "Other classes" as usual furnish the highest ratio. This group is a large one and is composed chiefly of Animists.

### INFANTILE MORTALITY.

The total births registered during the year were 190,835 and the deaths under one year were 35,795, giving an infantile mortality rate of 187·57 per 1,000 births. The deaths amongst male infants were 120 to every 100 female infants, the relative birth-rates being 106 to 100.

The rates shown below indicate that there has been a considerable reduction as compared with the two previous unhealthy years and some improvement as compared with the pre-influenzal period:—

Year.							Infantile mortality.
1							2
1915	...	...	...	...	...	...	201·89
1916	...	...	...	...	...	...	202·00
1917	...	...	...	...	...	...	189·28
1918	...	...	...	...	...	...	216·95
1919	...	...	...	...	...	...	239·79
1920	...	...	...	...	...	...	187·57

As compared with other provinces, Assam shows higher rates than Madras, Bihar and Orissa, Punjab, Bombay and North-West Frontier Province. The rate is very similar to that of Burma and is below that of Central Provinces, United Provinces and Bengal.

Province.	Infantile mortality.		
	Male.	Female.	Total.
1	2	3	4
Central Provinces	277·03	234·43	255·75
United Provinces	223·28	216·91	220·25
Bengal	212·7	201·8	207·4
Assam	202·78	171·33	187·57
Burma	197·86	174·83	186·65
Bombay	191·42	174·27	183·21
Punjab	186·32	178·65	182·69
Bihar and Orissa	175·88	162·83	169·53
North-West Frontier Province	165·17	157·78	161·93
Madras	168·68	154·02	161·53

15. The vaccination inspecting staff checked 61,142 entries of births and deaths in village registers and detected 2,173 omissions. The percentage of omissions detected was 3·55 of the total examined, as compared with 4·47 in the previous year. The highest percentage of omissions was found in Kamrup district (10·03 per cent.) This district had also in previous year been most unsatisfactory and it has been found that in some cases no entries whatever have been made in the village registers by some of the gaonburas. Some of the defaulters were removed from their appointments and others fined, but the concessions and emoluments which gaonburas receive are not such as to form much inducement to them to carry out faithfully the registration work which they frequently consider an added duty for which they receive nothing. A proposal has been made for Government rewards to the gaonburas in each district whose work is found to be most satisfactory, but this is not likely to have any substantial effect. The greatest hope for the improvement of registration in rural areas rests with the spread of education which will eventually result in a large number of literates being available to select gaonburas and choukidars from, who will find the maintenance of registers less of a labour than that type of men who as a rule fill these posts at present.

One of the main defects in death registration is the classification of causes of death—this in the hands of the present staff being extremely unreliable.

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

16. There has been no change in the agencies for the collection of vital statistics either in urban or in rural areas during the year.

## SECTION VI.

### HISTORY OF CHIEF DISEASES.

17. The following table shows the death-rate per mille from each of the chief causes of mortality during 1920 as compared with the decennium ending 1919:—

Diseases.	1919-19.			1920.		
	Urban.	Rural.	Combined.	Urban.	Rural.	Combined.
1	2	3	4	5	6	7
Cholera ...	2.32	3.00	2.99	.13	.40	.40
Small-pox ...	.67	.47	.48	.08	.28	.28
Plague ...	...	...	...	...	...	...
Fever ...	8.58	16.93	16.75	8.46	18.76	18.57
Dysentery and Diarrhoea ...	3.39	2.43	2.45	3.32	1.81	1.84
Respiratory diseases ...	2.72	2.15	2.16	4.43	2.09	2.14
Injuries... ..	.51	.32	.33	.63	.32	.32
All other causes ...	7.21	6.16	6.18	7.61	5.37	5.41
Total ...	25.42	31.48	31.36	24.66	29.07	28.98

The death-rate under each heading is lower than that of the preceding decennium except in the case of fever, and was also lower than in the pre-influenzal period of the decennium ending 1917 except in the cases of fevers and respiratory diseases.

### INFLUENZA.

The following figures show the number of deaths reported from influenza during the year:—

District.							Deaths.
1							2
Cachar ...	...	...	...	...	...	...	426
Sylhet ...	...	...	...	...	...	...	619
Goalpara ...	...	...	...	...	...	...	287
Kamrup ...	...	...	...	...	...	...	89
Darrang ...	...	...	...	...	...	...	396
Nowgong ...	...	...	...	...	...	...	558
Sibsagar ...	...	...	...	...	...	...	1,313
Lakhimpur ...	...	...	...	...	...	...	1,674
Total ...							5,362

In the annual reports of 1918 and 1919 estimates of the probable mortality from influenza had been made by a comparison of the figures for deaths from fevers, respiratory diseases and all other causes for the months when influenza was prevalent as compared with the average of the quinquennium ending 1917. In the seven months from September 1918 the difference amounted to 150,424. Repeating this calculation for the complete year of 1920 the total under these

headings was 158,178 as compared with 132,662 in the quinquennium ending 1917, the increase being 25,516, portion of which may be attributable to causes discussed under the heading of "fevers."

The following table of deaths from respiratory diseases during the last four years (which also includes influenza) shows fairly well the regular rise and fall which may be attributed to influenza and the difference between the figures of 1917 and 1920 approximates to the actual number of deaths returned as influenza in 1920 :—

*Monthly deaths from respiratory diseases.*

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1917 ...	519	519	530	541	308	376	303	356	360	406	480	508	5,387
1918 ...	638	656	523	487	494	390	563	1,408	1,256	2,762	13,204	26,506	48,833
1919 ...	14,358	6,175	6,066	4,449	2,358	1,708	2,507	2,361	1,883	1,000	1,678	1,249	48,315
1920 ...	1,227	1,553	2,273	1,907	1,205	704	606	640	637	603	776	755	12,956

Influenza was not seriously epidemic during the year. Lakhimpur and Sibsagar districts returned the largest number of deaths.

On tea gardens 3,240 deaths from influenza occurred as compared with 11,177 in 1918 and 16,663 in 1919. The type of the disease was on the whole milder than in the previous year. 1,23,639 c.c.s of Influenza vaccines were issued during the year, of which 1,00,105 were supplied to tea gardens.

18. *Cholera*.—The death-rates from cholera by districts for the year as compared with the decennial average were as follows :—

Districts.							Death-rate per mille.	
							1910-19.	1920.
1							2	3
Cachar	...	...	...	...	...	...	2.51	.17
Sylhet	...	...	...	...	...	...	3.20	.56
Goalpara	...	...	...	...	...	...	2.31	.09
Kamrup	...	...	...	...	...	...	4.01	.22
Darrang	...	...	...	...	...	...	3.74	.59
Nowgong	...	...	...	...	...	...	4.52	.18
Sibsagar	...	...	...	...	...	...	2.32	.40
Lakhimpur	...	...	...	...	...	...	1.13	.35
Total	...	...	...	...	...	...	2.99	.40

Cholera was much less prevalent than for many years past and the very severe epidemic of 1919 was not repeated. Out of a total of 2,421 deaths in the year, 1,404 occurred in Sylhet district and of these 1,094 occurred from January to April, these months in this district contributing 45 per cent. of the total cholera mortality of the province. The prevalence of cholera in Sylhet in the beginning of the year was a continuance from epidemic conditions in 1919.

In the other districts cholera only occurred in sporadic form, the largest number of deaths in any one month in a district being 49 in Sibsagar in June.

19. The total number of deaths in urban areas was 16 distributed among ten towns:

High rates of mortality from cholera in individual towns and rural areas. Sunamganj, Dhubri and Habiganj having four, three and two deaths, respectively, and the other towns one each. In rural areas the highest rates were shown by the following circles in Sylhet district, Sulla thana (3.72), Dharmapasa (1.78), Sunamganj (1.63),

Madhabpur (1·27) and Baniachong (1·12). In Sibsagar district the highest rate was in Bokakhat circle (1·98). In Darrang district the highest rates were in Kalaigaon (1·19) and Panerighat (·89).

20. Six hundred and seventy deaths from cholera occurred in tea gardens during the year giving a ratio of ·73 per mille as compared with 7·73 in 1919. The ratio although lower than that of the previous two years was higher than for the decennium ending 1917. The highest rates were recorded in Sibsagar, Sylhet and Lakhimpur. All tea-garden coolies recruited during the year were inoculated with anti-cholera vaccine at their recruitment depôts before entering Assam, but a proportion of the older residents on the gardens were non-inoculated.

Forty-four thousand seven hundred and twelve c. c's of anti-cholera vaccine were issued for prophylactic use in the province during the year, the greater proportion of which was supplied to gardens. This does not include the quantity supplied from Kasauli for use at recruitment depôts.

#### 21. *Small-pox.*—

Districts.							Death-rate per mille.	
							1910-19.	1920.
1							2	3
Cachar	...	...	...	...	...	...	·34	·02
Sylhet	...	...	...	...	...	...	·29	·46
Goalpara	...	...	...	...	...	...	·63	·09
Kamrup	...	...	...	...	...	...	1·27	·08
Darrang	...	...	...	...	...	...	·41	·49
Nowgong	...	...	...	...	...	...	·63	·07
Sibsagar	...	...	...	...	...	...	·57	·28
Lakhimpur	...	...	...	...	...	...	·09	·05
Total							·48	·28

The death-rate from small-pox during the year was below the decennial average but slightly higher than in the preceding year. As in previous years the period of greatest prevalence was during the first six months of the year, a fairly constant level being maintained from February to May. A fall in the mortality occurred, as usual, in the autumn months and the number again increased in December. Out of a total of 1,700 deaths, 1,146 or 66 per cent. occurred in Sylhet district. The areas most severely affected being Muchikandi, Baniachong and Madhabpur areas of Habiganj subdivision.

Infection was probably introduced to Muchikandi from Hill Tippera and the vicinity of Garolia was first attacked. Infection spread slowly along the main roads and dissemination was hastened by the holding of fairs in the vicinity. The area had not been effectively vaccinated as vaccination was not compulsory and there was considerable opposition to it. On the recrudescence of small-pox in this area in November a large number of additional vaccinators were drafted into the infected area and the number of vaccinations done rose to 8,527 in the Habiganj subdivision in the month of December, a large proportion of the work being revaccinations. A smaller outbreak occurred in Maulvi Bazar subdivision near Srimangal, infection being imported by a railway passenger whose condition was at first concealed. Of the other infected districts, Darrang and Sibsagar were the only ones which suffered to any extent. In Darrang district 188 deaths from small-pox occurred showing a ratio of ·49 per mille, as compared with ·19 in 1919. In Sibsagar district 194 deaths occurred with a ratio of ·28 per mille, as compared with ·58 in the previous year. The progressive improvement in regard to the small-pox mortality is satisfactory.

Urban areas were almost entirely free from deaths from small-pox, the total number registered during the year being ten of which five occurred in Habiganj and one each in Sunamganj, Sylhet, Dhubri, Gauhati and Dibrugarh.

22. The highest mortality rate in an urban area was .80 in Habiganj town. In rural areas the circles of Sylhet district which showed the highest rates were Baniachong (2.33), Madhabpur (1.99), Habiganj thana (1.33) and Sulla thana (1.28). In Darrang the highest rates were in Panerihat (1.92), Kalaigaon (1.22) and Behali (1.21) and in Sibsagar district the circles of Bokakhat and Selleng showed rates of 1.22 and .79, respectively.

### 23. Fevers—

The total number of deaths from fevers during the year was 1,12,437, as compared with 1,54,435 in 1919. The fever death ratio of districts was as follows:—

Districts.							Death-rate per mille.	
							1910-19.	1920.
1							2	3
Cachar	...	...	...	...	...	...	14.02	13.27
Sylhet	...	...	...	...	...	...	14.39	18.00
Goalpara	...	...	...	...	...	...	30.57	32.32
Kamrup	...	...	...	...	...	...	18.62	19.24
Darrang	...	...	...	...	...	...	20.11	19.59
Nowgong	...	...	...	...	...	...	17.96	25.26
Sibsagar	...	...	...	...	...	...	13.23	11.92
Lakhimpur	...	...	...	...	...	...	13.34	12.97
Total							16.76	18.57

The mortality from fevers was higher than the decennial average but less than the ratios of 26.25 and 25.52 per mille reached in the years 1918 and 1919. In these years inclusion of deaths from influenza was probably the cause of the excessively high rates. The ratio for 1920 is much above the decennial average for the period ending 1917 for which the rate was 14.91.

It is remarkable that the lowest rates for fevers occurred from July to December, these months in a normal year showing the highest rates from this cause and in which mortality from malaria would be expected.

A comparison of the ratios from districts in 1920 as compared with the decennial ending 1917 in which the abnormal condition due to influenza and cholera do not complicate the results will be of interest.

Districts.							Death-rate per mille.		Increase or Decrease.
							1908-17.	1920.	
1							2	3	4
Cachar	...	...	...	...	...	...	12.17	13.27	+1.10
Sylhet	...	...	...	...	...	...	12.32	18.00	+5.68
Goalpara	...	...	...	...	...	...	26.16	32.32	+6.16
Kamrup	...	...	...	...	...	...	16.03	19.24	+3.21
Darrang	...	...	...	...	...	...	19.52	19.59	+0.07
Nowgong	...	...	...	...	...	...	16.47	25.26	+8.79
Sibsagar	...	...	...	...	...	...	12.39	11.92	-0.47
Lakhimpur	...	...	...	...	...	...	11.39	12.97	+1.08

It will be seen that the greatest increases were in the severely infected *kala-azar* districts of Nowgong, Goalpara and Kamrup in which it is known that high mortality from *kala-azar* has occurred and in which it is extremely likely that a large proportion of the deaths from this cause were returned as from fevers. The *kala-azar* figures are included in the total fevers but those registered as such only amount to 2,780 in a total of 112,437 deaths. In Sylhet district also few deaths have been reported as *kala-azar* while it is known that there has been increased mortality. Cachar and Lakhimpur which show little increase of the fever death-rate are free from the disease while in Darrang and Sibsagar the number of cases of *kala-azar* are not great and the disease is under control. A certain amount of sporadic influenza may have affected the figures.

The seasonal incidence of deaths from fevers does not suggest that there was any abnormal prevalence of malaria and the high rates during March, April and May are against this.

The rainfall during the year was not specially favourable to the conditions which result in increased incidence of malaria. While the death-rate from all causes on tea gardens was above the average of the province, the fever-rate on gardens was only 3.66 per mille.

Special anti-malaria measures were carried out during the year at Haflong, Lumding and Pasighat.

At Haflong measures of drainage and protection were carried out by the construction of *pukka* drains in practically all *nullahs* in the station, and the lakes were dealt with by bunding off irregular loops and deepening and improving the edges. The available figures show a decided decrease in the amount of malaria and the freedom of the Convent School from cases during the year is striking. An examination of children in the bazar still shows a spleen rate as high as 96 per cent. and arrangements have been made for a free issue of quinine to them under medical supervision before the outset of the next malaria season.

At Lumding the anti-malaria scheme carried out by the Assam-Bengal Railway authorities in consultation with the Sanitary Commissioner progressed very satisfactorily. Additions were made to the original scheme so as to deal with practically every possible source of mosquito-breeding. Although the scheme had not been completed by the end of the year, results had already become marked and there was a distinct reduction in the number of admissions to hospital in the later months of the year at the time when a rising incidence would be expected. The reduction in the number of mosquitos has been marked and former breeding places are now almost free from larvae.

The scheme has been an expensive one, but it would appear that it is certain to achieve its object and fully justify the outlay. The interest which has been taken in the work and the care with which it has been done makes the scheme a model one of its kind and the Railway authorities are to be congratulated on their action.

A minor malaria protection work has been carried out at Pasighat, a frontier part of the Assam Rifles in the Sadiya Frontier Tract. The work consisted chiefly in jungle clearing and in straightening and improving the banks of a stream flowing through the station. Oiling measures were also carried out and the results have appeared to be very satisfactory.

The Assam Sugar Estates near Nalbari applied for the assistance of the Sanitary Commissioner during the year with regard to dealing with the severe malarial condition in the Estate. An experienced Medical Officer was obtained for the Company to take medical charge and also to carry out an investigation of the conditions responsible for the prevalence of the disease. The Medical Officer selected made a complete mosquito survey from which it may be possible to formulate a scheme of improvement.

*Typhoid fever.*—An out-break of Typhoid fever occurred in Shillong similar to that of 1919 and at the same season. Twenty four cases occurred with five deaths, the infection being probably through milk-supply. The risks of this have been pointed out in the annual report of 1919. To deal with typhoid cases and other infectious cases a segregation camp was established at Maolai on the outskirts of the municipality.

24. In the urban areas the average death-rate from fevers was 8.46 per mille.

High rates of mortality from fever in individual town and rural areas. The highest rates were Mangaldai (21.40), North Lakhimpur (20.06), Golaghat (16.54), Goalpara (15.76), Barpeta (13.22) and Habiganj (13.13). As regards individual rural circles, 12 circles in Goalpara district, three in Nowgong, two each in Darrang and Sibsagar and one each in Sylhet and Lakhimpur returned ratios over the provincial rural average.

25. *Kala-azar*.—There has been a gradual tendency to increase in the mortality from *kala-azar* during the last four years, the year 1919 only showing a diminution under this head probably on account of the death of cases from inter-current influenza, the deaths being recorded as such and not as *kala-azar*.

The annual figures of mortality from *kala-azar* are shown in the following table :—

District.	1911.	1912.	1913.	1914.	1915.	1916.	1917.	1918.	1919.	1920.
1	2	3	4	5	6	7	8	9	10	11
Cachar	3	2	8	...	2	...	1	4	3	5
Sylhet	349	394	444	203	159	63	31	34	7	26
Goalpara	185	192	206	138	55	106	153	313	311	602
Kamrup	354	385	294	215	283	277	287	564	433	631
Darrang	679	563	399	317	310	326	245	263	171	256
Nowgong	284	308	417	393	419	451	501	565	559	846
Sibsagar	84	31	29	24	7	28	181	235	169	114
Lakhimpur	11	...	...	8	...	3	1	3	6	...
Garo Hills	13	16	16	10	12	6	18	22	20	18
Total	2,066	1,891	1,812	1,308	1,247	1,234	1,506	2,603	1,667	2,798

The recorded deaths from *kala-azar* in 1920 were higher than have been reported since 1905. Although the deaths reported did not reach an alarming figure, the previous experience of this disease in the province is such as to make any prospect of a recrudescence of *kala-azar* in epidemic form a matter for the greatest concern. From investigations made in the affected areas, there is no doubt that there has been a great increase in the number of cases and the number of infected villages, and the actual death returns do not give a true idea of what is happening. A very large number of deaths from *kala-azar* are undoubtedly returned under the heading of "Fevers" or classified from the terminal complications of Pneumonia and Dysentery which are frequent.

Individual instances have been detected of failure to report deaths as *kala-azar*. For example, Dhubri thana returned only two deaths from *kala-azar* during the year whereas on personal investigation it was found that over 60 deaths had occurred in one small area of the thana. Similarly in Habiganj subdivision of Sylhet several hundred deaths were confirmed, while only seven were reported as from *kala-azar*. Such instances are numerous and the reported mortality from this cause is very much below the actuals. It is impossible to say what number of cases have existed during the year but that it must attain a very large figure as shown by the fact that 7,188 cases came under treatment during the year while the system for treatment had not been expanded so as to deal with more than a moderate proportion of the affected areas. The indications at present are that 20,000 may be dealt with in the coming year. Arrangements have been made to try and get the information as to the number and distribution of cases through the agency of the Census of March 1921.

The areas infected are :—

(a) The old endemic areas of—Goalpara district.

Ditto Kamrup "  
Ditto Nowgong "  
Ditto Mangaldai subdivision of Darrang.

(b) Garo Hills.

(c) North Cachar Hills.

(d) The later infected areas of—Golaghat subdivision of Sibsagar district.

Ditto Sibsagar " " "

(e) Sylhet district.

Kamrup, Nowgong and Goalpara districts return the greatest number of deaths the total for these districts being double that of the previous year. In these districts there have been certain areas of intense infection. In Kamrup the Polasbari area has had a very large number of cases an idea of which may be gained when it is considered that one Sub-Assistant Surgeon in charge of a dispensary in the area treated over 1,000 cases during the year. In Goalpara district the area of most intense infection is Dudnai thana in which two dispensaries dealt with 914 cases. In Nowgong district the vicinity of Nowgong town itself is heavily infected and the general area of infection lies between the three points Nowgong, Raha and Jamunamukh. Several thousand cases exist of which 1,816 have actually been dealt with. In Darrang district the Panerihat thana is most affected but the intensity of infection is not so great as in the above mentioned districts. The returns of deaths from the Garo Hills and the North Cachar Hills give no indication of the prevalence of the disease in these districts, many hundred cases being known. The jungle conditions and inaccessibility of many of the villages in these districts make it impossible to obtain full information as to the extent of the disease but it was found that when central hospital accommodation for cases was made in the North Cachar Hills the one hundred beds provided filled up rapidly with *kala-azar* cases. In Sibsagar district there has been a reduction in *kala-azar* mortality during the year. In the Golaghat and Sibsagar subdivisions of this district there has been an extension of the infection and an increase in the number of cases but with a sufficient staff and energetic measures to deal with the disease the number of deaths has been kept down. In the Sibsagar subdivision 440 fresh cases were detected during the year.

Attention was directed to the presence of *kala-azar* in Sylhet during the year and short surveys of areas showed that the Habiganj and Karimganj subdivisions showed areas of heavy infection and that infection also existed in Maulvibazar and North Sylhet subdivisions. The mortality had undoubtedly been much greater than was shown by the returns of *kala-azar* deaths.

The plains area of Cachar were not infected, imported cases only occurring. Lakhimpur has been similarly free from the disease.

Up to the present year the control of *kala-azar* has mainly been attempted by the use of segregation measures under the *kala-azar* Regulations of 16th November 1917. This segregation was mainly applied to the spreading edge of the infection in the Sibsagar district and to but a very small proportion of villages in the old infected areas which were responsible for most of the mortality. Out of 58 villages under segregation during the year, 33 were more in Sibsagar district and 25 in the rest of Assam. The small number of villages segregated in the old endemic areas shows that the measure was not found possible of application on a large scale to deal with the conditions in these areas. Segregation is undoubtedly of value in preventing spread if applied with sufficient thoroughness and carefully supervised and enforced but provides no relief for the actual sufferers from the disease and successive crops of cases amongst the segregated are frequent. The removal to a fresh site protects a certain proportion of those who would otherwise be liable to infection but the main value of the measure consists in preventing communication with other uninfected areas. It is well recognised that the arrival of a *kala-azar* case is the usual preliminary to the occurrence of an outbreak of *kala-azar* and the enforcement of segregation is of value in preventing spread in an otherwise uninfected area. As regards endemic areas, other methods of relief must be adopted and fortunately we now have in our hands a very effective weapon in the treatment of the disease by Antimony Tartrate. The treatment had been commenced tentatively during the previous two years by the establishment of a special *kala-azar* hospital of 12 beds at Nazira and dispensaries for outdoor treatment at Kakadonga and Naharani—all in Sibsagar district, and in a special dispensary at Rathiatoli in Nowgong district but had not been extended so as to deal with the greater part of the infected area. The success of the treatment and its growing popularity made it incumbent on the Sanitary Department to extend the facilities for treatment as widely as possible in the province. With the high percentage of successes obtained, treatment, if carried out on a sufficiently large scale, appears capable of reducing the mortality from the disease to a great extent. This has been well exemplified in the case of Sibsagar district. In addition, the disappearance of the parasite from the spleen and peripheral blood of *kala-azar* cases obtained during treatment will undoubtedly render cases uninfective and every case treated will mean one less potential centre of infection. Treatment therefore will be likely to be of value as a preventive measure and will, from this point of view as well as for the saving of lives of existing cases, be pushed

by the Sanitary Department. A number of villages where treatment without segregation has been applied, have been put under special observation and although a sufficiently long period has not yet elapsed to enable the full value of the measure to be estimated the results so far have been very encouraging. A system of Village *Kala-azar* Records was started during the year which should enable detailed observation of the results of treatment to be carried out.

In the earlier parts of the year treatment of *kala-azar* with Tartar Emetic was only being carried out at the centres mentioned above under arrangements made by the Sanitary Department and at the Government Hospitals at Nowgong and Gauhati and at the Palashbari Local Board Dispensary. Towards the end of the year a big expansion in facilities for treatment was made and the majority of the dispensaries under the Medical Department in the infected areas commenced to treat cases. The Sanitary Department undertook to provide temporary *kala-azar* dispensaries in all areas not effectively served by existing dispensaries and to provide hospitals for indoor cases where required and to establish wards in connection with existing dispensaries under either Department. The dispensaries were established in as many areas as possible where a considerable number of cases could be obtained within a radius of three or four miles, the patients attending twice weekly. These dispensaries had out-centres which were attended on the other days and brought additional areas under treatment. A distance of three or four miles is considered to be as much as patients should be expected to come in for treatment but cases have been noticed to have come as far as eleven miles. The location of these dispensaries was determined by rapid surveys of areas in which *kala-azar* was known or suspected.

In any areas where there are many cases a certain proportion of the more advanced ones, especially with oedema and cardiac weakness, were found to require indoor treatment and for them wards have been provided. The indoor treatment has also been found necessary in areas where there are scattered cases whom a dispensary centre will not serve effectively and it is more convenient in such cases to bring them in to a central hospital. In the case of the North Cachar Hills cases occurring in isolated villages only accessible by jungle paths cannot be dealt with in any other way and for them hospitals have been provided at Haflong and Maibong.

The Sanitary Department undertook during the year to provide the special equipment required for treatment of *kala-azar* cases for all dispensaries under other control and to bear certain expenses incurred in the work.

With the greatly growing organization for *kala-azar* treatment, centralised control became impossible and to co-ordinate the work of the Medical and Sanitary Departments Assistant Surgeons were posted to the more severely infected districts to supervise the *kala-azar* work of all dispensaries and hospitals in their areas, working under the Civil Surgeons and reporting also to the Sanitary Commissioner. The work was thus done on the same lines by all centres whether established by the Sanitary or Medical Departments or under Local Boards and all records and returns were standardised. Overlapping was avoided and the basis for a complete *kala-azar* organization in the province laid down. By the end of 1920 the following centres and agencies for treatment were in operation or under preparation :—

Government Dispensaries	...	...	...	7	In addition to their ordinary work.
Local Board Dispensaries	...	...	...	43	

Special *kala-azar* Hospitals under Sanitary Department—

Dudnai	...	...	...	24	beds.
Goalpara	...	...	...	12	"
Bengbari	...	...	...	12	"
Kathiatoli	...	...	...	12	"
Nazira	...	...	...	28	"
Charinghia	...	...	...	8	"
Maibong	...	...	...	50	"
Total	...	...	...	146	"

*Kala-azar* Hospitals under Zemindari Estates—

Chalantapara	...	...	...	30	beds.
Gouripur	...	...	...	12	"
Total	...	...	...	42	"

*Kala-azar* Wards attached to existing dispensaries—

Habiganj	...	...	...	...	12 beds.
Hailong	...	...	...	...	48 "
Nowgong	...	...	...	...	20 "
Puranigudam	...	...	...	...	12 "
Tezpur	...	...	...	...	12 "
Gauhati	...	...	...	...	20 "
Polashbari	...	...	...	...	20 "

Total ... .. 144 "

Special Research Ward, Shillong ... .. 12 beds.

Special *Kala-azar* Dispensaries with sub-centres :—

17 Dispensaries

with

28 out-centres.

Travelling Dispensaries of Medical Department posted for special *kala-azar*  
duty ... .. 6

In addition to the staff of existing Government and Local Board dispensaries treating *kala-azar* cases and six Sub-Assistant Surgeons of Travelling Dispensaries posted solely on this duty, the special staff of the Sanitary Department for the purpose which had originally consisted of two Assistant Surgeons and eight Sub-Assistant Surgeons for treatment and survey work was increased to eight Assistant Surgeons and twenty-eight Sub-Assistant Surgeons. One Assistant Surgeon was employed on general duty, three in charge of hospitals and four on supervision of *kala-azar* work in the more severely infected districts. The twenty-eight Sub-Assistant Surgeons were practically all employed on treatment work either in charge of special hospitals and dispensaries or attached to existing dispensaries to run out-centres.

The number of cases treated in each district during the year was as follows :—

*Statement showing the number of kala-azar cases treated during the year 1920.*

Name of district.	Number of cases treated.	Number cured.	Number discontinued treatment.		Number remaining under treatment at the end of the year.	Remarks.
			By death.	Otherwise.		
1	2	3	4	5	6	7
Khasi and Jaintia Hills	54	31	9	14	...	
Cachar	75	5	7	8	55	
Sylhet	158	28	5	75	50	
Lakhimpur	9	4	...	4	1	
Sibsagar	656	293	76	121	166	
Nowgong	1,816	394	47	770	605	
Darrang	378	12	18	80	268	
Kamrup	2,402	1,119	64	572	647	
Goalpara	1,597	296	134	472	695	
Garó Hills	43	41	...	...	2	
Total	7,188	2,223	360	2,116	2,489	

It will be seen that a considerable number stopped treatment before the completion of the course. The reasons for this varied, but it was the general experience that during the harvesting season in October and November, it was extremely difficult to get cases to attend regularly, their livelihood depending on getting in their crops. It was also found that very many cases discontinued treatment after a few injections when fever ceased and they began to feel well. I have no doubt that a portion of these may be put on the road to recovery and in event of relapse it is found that they usually return for further treatment. The known mortality in the 7,188 cases treated, works out at 5 per cent. Treatment was at first voluntary, but is now practically compulsory under the revised *Kala-azar* Regulations published on 21st August 1920, under which areas may be notified and *kala-azar* cases ordered to undergo a complete course of treatment. Penal powers under these Regulations have been and should be used very sparingly and the Regulations will mainly be effective as a lever to induce sufferers to take treatment without resort to prosecution. Fortunately where *kala-azar* is severely prevalent the fear of the disease results in cases coming forward for treatment in large numbers and wherever treatment has been established for a few months and the results seen, prejudice is overcome and the majority of cases soon accept treatment.

There is undoubtedly a growing demand for the treatment and the reports of its success have spread to such an extent that petitions are now frequently received from villages asking for the services of a Sub-Assistant Surgeon to deal with their cases. The total treated during the year which was mainly the work of the latter months, is strong evidence of appreciation of its value especially when it is considered that a course of treatment covers a period of three months during which the patient had to walk several miles each way twice weekly to receive intravenous injections, the injections themselves being not a procedure which one would expect a villager to submit to readily. It should be possible at the present rate of progress to approach a figure of 20,000 cases treated in the coming year.

A special portable equipment was devised and issued to treatment centres containing all the necessary apparatus for the preparation and sterilisation of the Tartar Emetic solution and for its injection.

A pamphlet of instructions was issued for the use of the all employed on *kala-azar* duty and arrangements made for training Sub-Assistant Surgeons in the technique of the injections at existing treatment centres.

Major R. Knowles, I.M.S., published during the year, the result of his work on the treatment of *kala-azar* cases in the Special *Kala-azar* Ward attached to the Pasteur Institute, Shillong, of which he had been Director, and these results have been very valuable in adapting the treatment to the conditions of out-patient cases in the infected areas.

Mrs. Helen Adie continued her work in the Pasteur Institute, Shillong, on behalf of the Indian Research Fund Association on the transmission of *kala-azar* by bed bugs and obtained further advances in developmental stages. In August 1920 Mr. P. R. Awati, B.A., was posted to Assam to carry out an insect survey of the *kala-azar* infected and uninfected areas of the province, in order to determine whether there was any special prevalence of any biting insect in these areas which might give a clue as to the likely transmitter of the disease. The prevalence of *Conorhinus Rubrofasciatus* in houses in the severely affected Polashbari area is the most striking fact which has so far emerged from the enquiry.

*Kala-azar* work occupied the greater proportion of the energies of the Sanitary Department during the year and in dealing with the diseases results have been obtained which have been very encouraging. The hearty co-operation of Civil Surgeons has been of greatest importance in extending the scope of *kala-azar* work and the services of Major J. W. McCoy (Darrang), Lieutenant-Colonel H. Innes (Kamrup) and Major C. Bancroft (Goalpara) in this respect require special acknowledgment. The work of Assistant Surgeons Dibakar Hazarika and Dinesh Chandra Bhaumick and Sub-Assistant Surgeons Jagadish Chandra Banerji, Amar Chandra Chakravarty and Syed Ahmed of the Sanitary Department has been of great value. Sub-Assistant Surgeon Ramlal Majumdar of the Polashbari and Sub-Assistant Surgeon Himangshu Kumar Das Gupta of the Krishnai Local Board dispensaries have treated record numbers of cases of *kala-azar* and earned the gratitude of hundreds of sufferers. Their work is a great asset to the province.

26. *Dysentery and Diarrhœa*.—The total deaths from dysentery and diarrhœa registered were 11,143 and the district rate as under :—

Districts.	Death-rate per mille.		
	1910-19.	1919.	1920
1	2	3	4
Cachar ... ..	2.52	3.45	1.80
Sylhet ... ..	2.11	2.58	1.27
Goalpara ... ..	.44	.89	.34
Kamrup ... ..	1.02	.96	.60
Darrang ... ..	4.29	6.29	4.03
Nowgong ... ..	1.76	1.96	1.52
Sibsagar ... ..	4.34	6.36	3.47
Lakhimpur ... ..	4.94	7.91	4.57
Total ... ..	2.45	3.35	1.84

There has been a distinct reduction in the number of deaths from dysentery and diarrhœa both as compared with the previous year and with the decennial average. The figure is lower than for several years past.

The ratio of 6.95 for tea gardens was above the average of the province and indicates the necessity of improving the sanitary conditions where there are large aggregations of labour. Information and advice have been given to tea garden Managers and their Medical Officers as to minor sanitary conveniences, such as aqua-prives and pit privies which gardens might find suitable to instal.

Improvements in water-supply have been made on many gardens but in the present depressed state of the tea industry it has not been possible for many of them to face large capital expenditure on this and other sanitary measures.

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

28. *Other causes*.—The number of deaths reported from injuries was 1,905 as compared with 2,114 in 1919 giving a ratio of .32 as compared with .34 in the previous year. Two hundred and nine deaths were due to suicide and 293 attributed to snakes and wild animals. Twenty eight deaths occurred from hydrophobia.

The total number of deaths registered under the head "all other causes" amounted to 32,765 which yielded a ratio of 5.41 per mille.

## SECTION VII.

### VACCINATION.

(Published separately).

## SECTION VIII.

### SANITARY WORKS—MILITARY.

(No remarks).

## SECTION IX.

## SANITARY WORKS—CIVIL.

General.

29. There were sixteen Municipalities and nine Unions in the province in the year under report.

30. The aggregate income including the opening balances of sixteen Municipalities and six Unions (figures for North Lakhimpur, Doom Dooma and Tinsukia Unions not being available) amounted to Rs. 8,28,712 in 1920, as compared with Rs. 7,64,093 in the preceding year. The total expenditure on sanitation was Rs. 3,84,818, representing 46·43 per cent. of the total receipts.

The percentage of expenditure on sanitation in Municipalities and Unions were as follows :—

1. Dhubri Municipality	...	...	...	...	73·25
2. Shillong "	...	...	...	...	59·32
3. Dibrugarh "	...	...	...	...	56·95
4. Jorhat "	...	...	...	...	51·02
5. Silechar "	...	...	...	...	50·53
6. Goalpara "	...	...	...	...	44·05
7. Gauhati "	...	...	...	...	42·79
8. Sylhet "	...	...	...	...	39·98
9. Tezpur "	...	...	...	...	39·47
10. Nowgong "	...	...	...	...	38·00
11. Karimganj "	...	...	...	...	36·71
12. Barpeta "	...	...	...	...	33·66
13. Habiganj "	...	...	...	...	33·45
14. Gauripur Union	...	...	...	...	33·34
15. Maulvi Bazar "	...	...	...	...	25·86
16. Sibsagar Municipality	...	...	...	...	23·69
17. Nazira Union	...	...	...	...	23·28
18. Polashbari "	...	...	...	...	22·82
19. Hailakandi Union	...	...	...	...	19·63
20. Sunamganj Municipality	...	...	...	...	18·93
21. Golaghat "	...	...	...	...	15·27
22. Mangaldai Union	...	...	...	...	10·82

The table below shows the expenditure incurred during 1920, as compared with that of 1919 under the different heads :—

Heads of expenditure.	Total expenditure.		Difference.	
	1920.	1919.	Increase.	Decrease.
1	2	3	4	5
	Rs.	Rs.	Rs.	Rs.
1. Conservancy including establishment road watering, latrines, etc.	2,05,837	1,91,565	14,272	...
2. Drainage ...	29,096	30,018	...	922
3. Water-supply ...	1,35,360	87,907	47,453	...
4. Disposal of the dead ...	519	531	...	12
5. Markets and slaughter houses ...	6,315	7,728	...	1,413
6. Vaccination... ..	2,785	2,353	432	...
7. Other sanitary works ...	4,906	7,475	...	2,569
Total ...	3,84,818	3,27,577	62,157	4,916
8. Construction and maintenance of roads ...	69,844	89,345	...	19,501
Total including roads ...	4,54,662	4,16,922	62,157	24,417

The increase under the heading of water-supply is mainly due to the expenditure on the construction of the new water-works at Dhubri and to the installation of new pumps at the Gauhati water-works.

There has been a progressive increase under the head "Conservancy" during the last few years, most municipalities increasing their plant and establishment for the purpose by degrees but few of them being able to undertake any large initial expenditure.

31. A sum of Rs. 13,652 out of the Imperial recurring grant was expended on the account of pay and allowances of eight Sanitary Inspectors and of the training charges of nine newly appointed Sanitary Inspectors. Rupees 2,961 on account of anti-malaria work at Pasighat and Rs. 1,00,000 on account of grants-in-aid to Local Boards for improvement of rural water-supplies were also met from the Imperial grant.

*Surma Valley Division—Sylhet.*—The Municipal water-works continue to operate satisfactorily but deterioration in the results of filtration were noticed in the earlier months of the year when the river from which the water is drawn was at its lowest. In these months the standard was below that of absence of lactose fermenters in 10 c.c.s. Alterations in the dosage of lime and alum were made with some improvement. No drainage schemes or other large sanitary schemes were in progress during the year. Minor additions were made to the latrine and conservancy system.

The pipe water-supply of Silchar remained in good order during the year and some extensions of connections were made. The filtration results were very similar to those obtained in Sylhet. Some pollution of the intake occurred and the measures to deal with it were not very satisfactory. Slight additions to *pukka* drainage were made but a complete drainage system is urgently required for the town.

*Assam Valley Division.*—Progress has been made with the installation of the new water-works for the municipality of Dhubri which are now well advanced in construction. The intake is satisfactorily sited and the supply should be a great benefit to the town. The proposals for a pipe water-supply for Goalpara town have been abandoned on financial grounds. The improvement of the water-supply of Gauhati has been under consideration. The mains are now found insufficient for the requirements of the town and new pipe system will be required. A new set of pumps for the water-works has been installed during the year. The filtration of the water-supply has not yielded satisfactory results during most months of the year. The drainage scheme for Gauhati is still under consideration. No large sanitary works have been carried out during the year in other municipalities. Dibrugarh is still without a pipe water-supply and the very essential drainage scheme for this town has not yet been touched.

*Hill Districts.*—The Shillong water-supply continued to show a high standard of purity. Sanction was given during the year for the necessary augmentation of the supply by impounding additional springs. In the Goalapatti and Mawkhar and Jaiaw areas of Shillong Municipality improvements to the surface drainage were carried out. Improvement was made in the water-supply of Mawphlang village in Khasi and Jaintia Hills during the year. In Lushai Hills district an extension was made to the catchment area of the main reservoir of the water-works at Aijal and administrative approval was accorded to a water-supply project amounting to Rs. 37,394 for the Lungleh station. In the North Cachar Hills an investigation was made into the condition of the water-supply of Haflong and it was found that with a high iron content growth of crenothrix had taken place and the pipe had suffered accordingly and the water became objectionable. Proposals were put up for the elimination of iron from the water but the work was not taken in hand during the year.

A total expenditure of Rs. 23,800 is reported to have been incurred by the Public Works Department in original works and repairs under the heading of "Improvements to towns," "Drainage," "Water-supply" and "Miscellaneous Improvements" in 1920, as compared with Rs. 67,964 in the preceding year.

## SECTION X.

### GENERAL REMARKS.

32. No improvement in rural sanitation has taken place during the year except in the matter of additions to tanks and wells for their water-supply.

The aggregate expenditure of 19 Local Boards for the purpose was Rs. 1,46,654. A Government contribution of Rs. 1,00,000 was made towards the cost during the year. The largest sum expended by a Board was Rs. 25,365 by the Dhubri Local

Board the expense being incurred in the construction of wells. Five Local Boards in Sylhet spent Rs. 35,986 on the construction of tanks and the Local Boards of Silchar, Hailakandi, Barpeta, Jorhat and Sibsagar expended Rs. 6,990, Rs. 3,497, Rs. 3,400, Rs. 7,214 and Rs. 1,717, respectively, for this purpose. The expenditure on tanks and wells of the Local Boards of Gauhati, Tezpur and Mangaldai was Rs. 6,837, Rs. 8,687 and Rs. 3,537, respectively. Goalpara and Dibrugarh spent Rs. 2,442 and Rs. 1,398, respectively, on the construction of wells. The Nowgong Local Board expended Rs. 9,181 on wells and reserved tanks chiefly in areas where the Kallang river had been the main water-supply and had been responsible for the dissemination of water-borne diseases.

The improvement of water-supply is the measure of sanitation which is most essential in rural areas and which is the only means by which the annual occurrence of cholera in rural areas may be controlled. The provision of wells and tanks in areas in which river water supplies from the smaller streams are used is especially necessary, as such supplies are a frequent means of dissemination of cholera. The misuse of tanks and disregard of the measures for their protection has been regrettably common in certain districts and intrusion on the protected areas results in much pollution. Improvement in this respect will not take place until the villagers, who use the tanks, realise that they are a valuable public property of which it is the interest of every one to take the greatest possible care. Government sanction was obtained during the year for the necessary expenditure for the training of four Health Officers for rural areas and these will be trained early in the coming year.

33. The sale of quinine through the agency of postmasters, school-masters, members of the Vaccination Inspecting staff and other vendors was continued during the year.

Sale of quinine.

Sales were much below those of 1919 as is shown by the subjoined table :—

Districts.	Treatment parcels sold in		Difference.	
	1920.	1919.	Increase.	Decrease.
1	2	3	4	5
Cachar...	707	1,161	...	454
Sylhet...	4,461	8,780	...	4,319
Goalpara	1,770	2,409	...	639
Kamrup	1,130	1,265	...	155
Darrang	483	489	...	6
Nowgong	800	812	...	12
Sibsagar	619	912	...	293
Lakhimpur	239	326	...	87
Khasi and Jaintia Hills	1,157	1,810	...	653
Naga Hills	248	140	108	...
Lushai Hills	1,973	2,012	...	69
Garo Hills	37	25	12	...
Manipur	61	309	...	248
Sadiya Frontier Tract	5	19	...	14
Total	13,690	20,519	120	6,949
Net decrease	...	...	...	6,829

Quinine was on sale at 439 Post offices in the province during the year and the quantity sold through this agency was 77,841 treatments out of the total of 1,33,900. The diminution in sales was probably accounted for the greatly diminished prevalence of malaria during the year as compared with 1919.

Quinine continued to be sold below the market price, a policy which it has been generally agreed is not satisfactory. The method of distribution and accounting has been a subject of complaint both from the Postal authorities and Civil Surgeons and

it may be found necessary to revise it. Alterations in the Value Payable Post system during the year have entailed further changes in accounting and an additional cost to Government.

34. The Sidheswari Mela was held in Cachar district on 18th March and continued for a fortnight about 12,000 persons attending. The arrangements were as usual supervised by the Deputy Commissioner and Civil Surgeon and a Sub-Assistant Surgeon was in daily attendance. Temporary latrines were constructed and sweepers were provided. The gathering was free from epidemic disease.

35. There were two construction camps for railway coolies during the year under the Assam-Bengal Railway at Katlicherra and Dittokcherra in Cachar district—these camps accommodating 450 and 495 coolies, respectively. In the Katlicherra camp a trench system of latrines was adopted and sweepers were provided. The health of the camp was satisfactory with the exception of an out-break of 177 cases of influenza and the occurrence of malaria in the later months. A Sub-Assistant Surgeon, a compounder and a Sanitary Inspector were employed to look after the camp. The health of the Dittokcherra camp was good. Proper latrines were constructed at this camp and a sufficient staff of sweepers was provided. A satisfactory water-supply was available for each camp.

No construction camps are reported on the Eastern Bengal Railway within the province.

36. There has been a slight increase in the number of examinations carried out in the Laboratory during the year, but the work has been handicapped to some extent by difficulties in the replacement of laboratory material.

The bulk of the work as in previous years has consisted in the routine chemical and bacteriological examination of the pipe water-supplies in the province by which control is kept over the working of the filter plants. Examination of water samples from wells, borings and tanks either old water supplies or proposed new sources has also been a large part of the work. A considerable number of examinations of milk and oils have also been made. The following is the detail of the work done:—

	No. of samples found to be good.	No. sophisticated.	No. unfit for use.	Total for 1920.	Total for 1919.
1	2	3	4	5	6
1. Chemical analysis of water ...	...	...	...	165	104
2. Examination of ghee and fats ...	9	23	...	32	7
3. Examination of milk ...	49	41	...	90	18
4. Examination of mustard oil ...	15	77	160	252	92
5. Examination of other food stuffs ...	6	...	2	8	3
6. Bacteriological examination of water ...	...	...	...	231	201
7. Bacteriological examination of vaccine lymph ...	...	...	...	268	321
8. Bacteriological examination of milk ...	...	...	...	36	...
9. Special examination of vaccine lymph ...	...	...	...	11	...
10. Miscellaneous ...	...	...	...	4	4
11. Chlorogen ...	...	...	...	...	5
12. Identification of mosquitos ...	...	...	...	33	3
Total ...	...	...	...	1,130	758

The weekly examination of the Shillong pipe water was continued and the results obtained showed that its purity had been maintained. In the case of the pipe water-supplies of Sylhet, Silchar, Jorhat, Tezpur and Gauhati, the bacteriological results obtained did not show a high standard of purification, the average of all examinations showing the prevalence of lactose fermenters in seven '1 c. c. s.

Only nine out of 45 samples showed lactose fermenters absent from 20 c. c. s. of water sample. On the results of the examination an effort has been made to improve the filtration and from the occasional periods of satisfactory working of the plants it would appear that it should be possible to attain a better level.

The examination of milk samples was chiefly carried out with reference to an enquiry into the milk supply of Shillong and the proportion of sophisticated samples found was very high.

Out of 252 samples of oil, 160 sold as mustard oil were found to contain Hydrocyanic acid adulteration with Pakra oil having evidently occurred. The findings of the Officer in charge of the Laboratory were made the basis of a large number of prosecutions during the year.

Dr. Sen in charge of the Provincial Laboratory continue to be in charge of the Vaccine Section under the Director of the Pasteur Institute which manufactured and issued 50,192 c. c. s. of anti-cholera vaccine and 1,28,639 c. c. s. of anti-influenza vaccine and 2,019 c. c. s. of other vaccines during the year, or approximately 181 litres as compared with 341 litres in 1919.

37. The numbers of immigrants to Assam by the different routes were as follows:—

Emigration.				
Via Goalundo by steamer	...	...	...	7,135
Via Chandpur by rail to Assam Valley	...	...	...	11,128
Via Chandpur by rail to Cachar and Sylhet	...	...	...	13,864
Via Naihati and Amingaon	...	...	...	31,583
Total	...	...	...	63,710

The total was only a quarter of the figure (2,36,808) of the previous year. In 1919 there had been a large demand for labour and an abundant supply owing to food scarcity in the recruiting areas. The industry was in a prosperous state and coolies were required to make up the wastage from influenza and the shortage which had occurred during the war years. In 1920 depression in the tea industry owing to the closure of certain markets, the accumulation of stocks, and the adverse rate of exchange for companies capitalised in Great Britain necessitated reduction and economy in the working of tea estates and a consequent diminution in the demand for labourers.

In the later months of the year, immigration of coolies practically ceased. Those who were recruited were of a much better standard than in the previous year and the immigration was remarkably free from epidemic disease. The following table shows the incidence of infectious diseases during the journey within the limits of Assam:—

Disease.	1920.		1919.	
	Admissions.	Deaths.	Admissions.	Deaths.
1	2	3	4	5
Cholera	8	2	534	362
Influenza	163	59	810	313
Small-pox	14	4	30	8
Chickenpox	3	...	5	1
Others	154	27	794	194
* Total	342	92	2,173	878

In addition, at the large forwarding depôt at Goalundo there were 97 cases of influenza with 13 deaths in the earlier part of the year and four cases of small-pox which all recovered. The contrast with the conditions in 1919 is striking. As regards cholera the inoculation with anti-cholera vaccine at recruitment depôts before commencing the journey which is insisted on in every case may have played an important part in the reduction of this disease. The year has, however, been remarkably free from cholera over the greater part of Assam. The special arrangements made to deal with cholera in 1919 were continued during the year, but fortunately have not been required. The reduction in influenza is on a par with what has been experienced elsewhere.

38. Major T. C. McCombie Young, I.M.S., carried out the duties of the Sanitary Commissioner up to the 14th August 1920, on which date he proceeded on furlough and an officiating appointment was made. On the 5th August Captain S. R. Rao on relief from Military employment was appointed Deputy Sanitary Commissioner.

During January the Sanitary Commissioner carried out a tour of certain *kala-azar* areas of Goalpara and Kamrup districts, inspection of vaccination being done at the same time.

In the beginning of February a visit was made to Calcutta with regard to the hospital, sanitary and forwarding arrangements for the immigration of tea-garden labourers. The latter part of the month was devoted to a visit to *kala-azar* areas in Nowgong district and inspection of the municipalities of Silchar, Sylhet and Nowgong.

In March the Nalbari sugarcane farm in the district of Kamrup was visited in connection with the arrangements for anti-malaria work. The municipalities of Tezpur and Dibrugarh were then visited and the *kala-azar* areas of Sibsagar district and the Nazira *kala-azar* hospital inspected towards the end of the month.

April and May were occupied by the preparation of Annual Reports and work at headquarters and in July the Polashbari area of Kamrup was visited and the municipalities of Goalpara and Dhubri inspected.

The officiating Sanitary Commissioner remained at headquarters until the end of October except for a short visit to Haflong with regard to malaria and the water-supply. The late Pujahs which entailed a late commencement of the touring season resulted in a start being made in the beginning of November and during that month the *kala-azar* areas of Kamrup and Goalpara were visited in detail and arrangements made for a large extension in the dispensary system to deal with the disease.

The Bijni Raj Estate was visited and the arrangements of the Special Hospital at Chalantapara were made. The municipalities of Gauhati, Goalpara and Dhubri were inspected.

In December the officiating Sanitary Commissioner visited Simla for the Conference of Sanitary Commissioners and later in the month a tour in the Mangaldai subdivision of Darrang district was commenced.

During the touring season Captain S. R. Rao, Deputy Sanitary Commissioner, made detailed tours of the *kala-azar* infected areas of Nowgong, Kamrup and Goalpara and detected additional centres of infection and reported on the conditions existing and the number and distribution of cases for the purpose of determining the location of the dispensary centres which would be required for each area.

The Sanitary Commissioner with the Government of India visited the province in September and discussed the policy with regard to *kala-azar* with the officiating Sanitary Commissioner, the Inspector-General of Civil Hospitals and Secretary to Government in the Municipal Department.

J. TAYLOR, Major, I.M.S.,

Officiating Sanitary Commissioner, Assam.

## SECTION XI.

### ANNUAL REPORT OF THE SANITARY BOARD, ASSAM, FOR THE YEAR 1920.

39. The constitution of the Sanitary Board was the same as in the previous year.

(2) Only one meeting was held during the year, all other business being transacted by the circulation of files and notes.

(3) The following projects were considered by the Board:—

(a) *Silchar drainage scheme.*—The Board approved of the scheme for making pucca drains along the Public Works Department roads within the Silchar Municipality with certain additions and alterations.

(b) *Augmenting the water-supply of Shillong.*—The Board approved the recommendations of the Sanitary Commissioner and the Sanitary Engineer that any additional supplies now necessary should be taken direct from the springs near the present Ka Wah Risa Intake. Administrative approval to a rough estimate amounting to Rs. 8,866 has now been given.

4. The following detailed estimates were considered and recommended for sanction, and have since been sanctioned by Government :—

- (a) Improvement of the drainage of Mawkhar and Jaiaw within the limits of Shillong Municipality at an estimated cost of Rs. 31,244.
- (b) Extension of the catchment area of Aijal water-works at an estimated cost of Rs. 8,171.
- (c) Improvement of the water-supply of Mawphlang village in the Khasi and Jaintia Hills district at an estimated cost of Rs. 2,438.
- (d) Remodelling Dhubri water-works at an estimated cost of Rs. 1,20,930.

A. T. DUGUID,  
*Secretary.*

BRN. H. DEARE,  
*President.*

## STATEMENTS.

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

Number.	Districts.			Population according to the Census of 1911.			Number of births registered.		
				Male.	Female.	Total.	Male.	Female.	Total.
1	2			3	4	5	6	7	8
	SURMA VALLEY.								
1	Cachar	...	...	246,205	223,962	470,167	7,879	7,570	15,449
2	Sylhet	...	...	1,268,469	1,204,202	2,472,671	35,277	33,164	68,431
	Total	...	...	1,514,674	1,428,164	2,942,838	43,156	40,724	83,880
	ASSAM VALLEY.								
3	Goalpara	...	...	318,475	282,168	600,643	13,537	12,656	26,193
4	Kamrup	...	...	339,398	328,430	667,828	11,162	10,047	21,209
5	Darrang	...	...	198,581	178,733	377,314	7,441	7,325	14,766
6	Nowgong	...	...	154,938	148,658	303,596	5,118	4,943	10,061
7	Sibsagar	...	...	364,810	325,489	690,299	10,684	9,736	20,420
8	Lakhimpur	...	...	249,021	219,968	468,989	7,272	7,031	14,306
	Total	...	...	1,625,223	1,483,446	3,108,669	55,214	51,741	106,955
	Total for the Province	...	...	3,139,897	2,911,610	6,051,507	98,370	92,465	190,835

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

Number.	Districts.	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	223,962	470,167	15,449	32.85	6,326	5,568	11,914
2	Sylhet ...	5,388	458	1,268,469	1,204,202	2,472,671	68,431	27.67	38,227	31,143	69,470
	Total ...	7,247	406	1,514,674	1,428,164	2,942,838	83,880	28.50	44,653	36,731	81,384
ASSAM VALLEY.											
3	Goalpara ...	3,954	151	318,475	282,168	600,643	26,193	43.60	11,977	9,163	21,140
4	Kamrup ...	3,858	173	339,398	328,430	667,828	21,209	31.75	9,058	7,222	16,280
5	Darrang ...	3,418	110	198,581	178,733	377,314	14,766	39.13	7,345	6,699	14,044
6	Nowgong ...	3,843	79	154,938	148,658	303,596	10,061	33.13	5,487	4,752	10,239
7	Sibsagar ...	4,996	138	364,810	325,489	690,299	20,420	29.58	9,146	8,130	17,276
8	Lakhimpur ...	4,529	103	249,021	219,968	468,989	14,306	30.50	8,131	6,909	15,040
	Total ...	24,598	126	1,625,223	1,483,446	3,108,669	106,955	34.40	51,144	42,875	94,019
	Total for the Province	31,845	190	3,139,897	2,911,610	6,051,507	190,835	31.53	95,797	79,606	175,403

registered in the districts of Assam during the year 1920.

Ratio of births per 1,000 of population.			Number of males born to every 100 females born.	Excess of births over deaths per 1,000 of population.	Excess of deaths over births per 1,000 of population.	Mean ratio of births per 1,000 during previous five years.		
Male.	Female.	Total.				Male.	Female.	Total.
9	10	11	12	13	14	15	16	17
16.75	16.10	32.85	104	7.52	...	16.29	15.29	31.58
14.26	13.40	27.67	106	...	.42	16.02	14.87	30.89
14.66	13.83	28.50	106	.85	...	16.06	14.94	31.00
22.53	21.07	43.60	107	8.41	...	20.49	19.51	40.00
16.71	15.04	31.75	111	7.38	...	16.54	15.50	32.05
19.72	19.41	39.13	101	1.91	...	18.09	17.53	35.63
16.85	16.28	33.13	103	...	.59	17.18	16.38	33.56
15.47	14.10	29.58	109	4.56	...	15.59	14.56	30.16
15.50	14.99	30.50	103	...	1.56	15.00	14.25	29.25
17.76	16.64	34.40	106	4.16	...	17.11	16.21	33.33
16.25	15.27	31.53	106	2.55	...	16.60	15.59	32.19

registered in the districts of Assam during the year 1920.

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
113	.17	.62	...	13.27	1.80	2.80	.32	6.92	25.69	24.95	25.33	34.38	35.65	34.99
123	.56	.46	...	18.00	1.27	1.15	.35	6.26	30.21	25.86	28.09	36.19	33.72	34.99
121	.50	.39	...	17.25	1.36	1.41	.34	6.37	29.48	25.71	27.65	35.90	34.62	34.99
130	.09	.09	...	32.32	.34	.83	.39	1.09	37.60	32.47	35.19	43.05	40.66	41.86
125	.22	.08	...	19.24	.60	.51	.20	3.49	26.68	21.98	24.37	34.09	32.10	33.11
109	.39	.49	...	19.59	4.03	4.42	.41	7.66	30.96	37.48	37.22	44.62	46.65	45.58
115	.18	.07	...	25.26	1.52	2.66	.30	3.71	35.41	31.96	33.72	36.46	34.48	35.49
112	.40	.28	...	11.92	3.47	3.62	.19	5.13	25.07	24.97	25.02	35.31	36.58	36.19
118	.35	.05	...	12.97	4.57	6.33	.40	7.36	32.65	31.40	32.06	38.23	39.30	38.73
119	.30	.17	...	19.83	2.29	2.82	.30	4.50	31.46	28.90	30.24	33.27	37.75	38.02
120	.40	.28	...	18.57	1.84	2.14	.32	5.41	30.50	27.34	28.98	37.12	35.92	36.54

## IMPERIAL STATEMENT No. III.—Deaths registered in the

No.	Districts.	January.	February.	March.	April.	May.
1	2	3	4	5	6	7
<b>SURMA VALLEY.</b>						
1	Cachar ... ..	1,344	944	963	939	977
2	Sylhet ... ..	8,982	6,461	5,726	6,260	5,871
	Total ... ..	10,326	7,405	6,689	7,199	6,848
<b>ASSAM VALLEY.</b>						
3	Goalpara ... ..	1,955	1,523	1,851	2,225	1,960
4	Kamrup ... ..	1,255	1,234	1,459	1,546	1,616
5	Darrang ... ..	1,182	1,031	1,167	1,210	1,227
6	Nowgong ... ..	730	783	981	957	917
7	Sibsagar ... ..	1,461	1,385	1,646	1,572	1,228
8	Lakhimpur ... ..	1,261	1,389	1,703	1,440	1,141
	Total ... ..	7,844	7,345	8,806	8,950	8,089
	Total for the Province ... ..	18,170	14,750	15,495	16,149	14,937
	Ratio per 1,000 ... ..	3.00	2.43	2.56	2.67	2.47

## IMPERIAL STATEMENT No. IV.—Deaths registered according to

Under 1 year.													1 and under 5.		
No.	Districts.	Under 1 month.			Between 1 to 6 months.			Between 7 to 12 months.			Total of male columns 3, 6 and 9.	Total of female columns 4, 7 and 10.	Total.	Male.	Female.
		Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
<b>SURMA VALLEY.</b>															
1	Cachar ... ..	693	471	1,074	414	311	725	347	302	649	1,364	1,084	2,448	642	634
2	Sylhet ... ..	3,647	2,734	6,381	1,959	1,669	3,619	1,363	1,434	2,797	7,469	5,828	13,297	3,788	3,499
	Total ... ..	4,250	3,205	7,455	2,373	1,971	4,344	2,210	1,733	3,946	8,833	6,912	15,745	4,430	4,133
<b>ASSAM VALLEY.</b>															
3	Goalpara ... ..	1,566	1,026	2,592	1,164	882	2,046	733	527	1,265	3,468	2,435	5,903	1,456	1,314
4	Kamrup ... ..	875	733	1,608	851	622	1,473	940	691	1,631	2,666	2,046	4,712	1,215	1,030
5	Darrang ... ..	464	411	875	527	509	1,036	353	349	702	1,344	1,269	2,613	939	840
6	Nowgong ... ..	478	435	913	391	362	753	396	332	728	1,265	1,129	2,394	811	758
7	Sibsagar ... ..	569	462	1,032	556	451	1,007	293	261	554	1,409	1,174	2,583	1,224	1,079
8	Lakhimpur ... ..	233	211	444	259	261	511	480	410	890	963	882	1,845	992	922
	Total ... ..	4,176	3,278	7,454	3,739	3,087	6,826	3,200	2,570	5,770	11,115	8,935	20,050	6,637	5,952
	Total for the Province.	8,426	6,483	14,909	6,112	5,058	11,170	5,410	4,306	9,716	19,948	15,847	35,795	11,067	10,085
	Population (according to the census of 1911)	...	...	...	...	...	...	...	...	...	106,330	106,901	213,231	356,689	374,837
	Ratio per 1,000 ... ..	...	...	...	...	...	...	...	...	...	187.60	148.24	167.87	31.02	26.70

*districts of Assam during each month of the year 1920.*

June.	July.	August.	September.	October.	November.	December.	Total.
8	9	10	11	12	13	14	15
980	870	843	860	847	1,027	1,320	11,914
4,596	4,342	3,870	4,547	5,555	6,406	6,854	69,470
5,576	5,212	4,713	5,407	6,402	7,433	8,174	81,384
1,708	1,890	1,578	1,619	1,399	1,583	1,849	21,140
1,341	1,059	1,526	1,141	1,174	1,351	1,578	16,280
1,153	978	1,277	1,162	1,297	1,109	1,261	14,044
880	1,075	801	701	849	817	749	10,239
6,510	1,458	1,429	1,490	1,366	1,576	1,155	17,276
1,086	1,205	1,257	1,226	1,154	1,260	918	15,040
7,678	7,665	7,868	7,339	7,239	7,696	7,500	94,019
13,254	12,877	12,581	12,746	13,641	15,129	15,674	175,403
2.19	2.12	2.07	2.10	2.25	2.50	2.59	28.98

*age in the districts of Assam during the year 1920.*

5 and under 10.		10 and under 15.		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.	Male.	Female.	Male.	Female.
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
411	394	255	217	199	356	531	799	791	706	719	429	564	341	800	628
2,816	2,213	1,787	1,206	1,625	1,849	4,173	4,988	4,931	3,615	4,039	2,388	3,297	2,141	4,497	3,516
3,227	2,607	2,642	1,423	1,824	2,205	4,699	5,787	5,622	4,321	4,758	2,717	3,561	2,462	5,357	4,144
896	670	574	443	527	620	1,045	1,168	1,214	832	993	574	786	456	1,018	651
837	829	533	472	531	367	747	725	745	585	715	367	499	393	570	408
514	499	320	259	256	288	633	1,161	1,129	944	913	592	689	446	608	392
502	400	392	225	286	302	475	519	522	481	454	353	399	286	391	299
689	641	437	399	338	395	901	1,245	1,302	1,346	1,170	762	870	555	806	534
627	549	338	306	282	324	946	1,155	1,377	1,250	1,269	680	777	415	560	426
4,065	3,588	2,584	2,104	2,220	2,296	4,747	5,973	6,289	5,438	5,514	3,328	4,020	2,551	3,953	2,710
7,282	6,195	4,626	3,527	4,044	4,501	9,446	11,769	11,911	9,759	10,272	6,045	7,881	5,033	9,310	6,854
491,403	482,110	335,555	264,628	231,803	245,076	526,427	563,035	501,836	399,477	303,554	224,199	167,715	136,717	120,495	114,630
14.84	12.84	13.66	13.32	17.43	18.36	17.94	20.88	23.73	24.43	33.63	26.96	46.99	36.81	77.26	59.79

## IMPERIAL STATEMENT No. V.—Deaths registered according

Number.	Districts.	Population according								
		Christians.			Hindus.			Muhammadans.		
		Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.
1	2	3	4	5	6	7	8	9	10	11
	<b>SURMA VALLEY.</b>									
1	Cachar ...	609	508	1,117	159,250	145,785	305,035	82,239	73,414	155,653
2	Sylhet...	363	649	1,512	564,266	534,684	1,098,950	699,470	665,969	1,364,739
	<b>Total</b> ...	1,472	1,157	2,629	723,516	680,469	1,403,985	781,709	738,683	1,520,392
	<b>ASSAM VALLEY.</b>									
3	Goalpara ...	2,731	2,521	5,252	178,673	156,047	334,720	111,917	99,645	211,562
4	Kamrup ...	1,373	1,162	2,535	235,014	224,213	459,227	33,723	30,904	64,627
5	Darrang ...	1,028	885	1,913	129,631	115,710	245,341	11,073	9,232	20,305
6	Nowgong ...	707	666	1,373	91,213	86,582	177,795	8,163	7,526	15,689
7	Sibsagar ...	2,933	2,477	5,410	313,748	281,518	595,266	16,373	13,345	29,718
8	Lakhimpur ...	2,647	2,142	4,789	195,291	172,639	367,930	7,986	5,433	13,419
	<b>Total</b> ...	11,419	9,853	21,272	1,143,570	1,036,769	2,180,339	189,235	166,085	355,320
	<b>Total for the Province</b> ...	12,891	11,016	23,901	1,867,086	1,717,238	3,584,324	970,944	904,768	1,875,712

## IMPERIAL STATEMENT No. V.—Deaths registered according

Number.	Districts.	Number of deaths registered—condd.								
		Buddhists.			Other classes.			Total.		
		Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.
		30	31	32	33	34	35	36	37	38
	<b>SURMA VALLEY.</b>									
1	Cachar ...	1	1	2	386	300	746	6,326	5,588	11,914
2	Sylhet...	2	...	2	629	438	1,067	38,327	31,143	69,470
	<b>Total</b> ...	3	1	4	1,015	738	1,813	44,653	36,731	81,384
	<b>ASSAM VALLEY.</b>									
3	Goalpara ...	21	23	44	2,454	1,743	4,197	11,977	9,163	21,140
4	Kamrup ...	...	...	...	1,457	1,255	2,712	9,038	7,222	16,260
5	Darrang ...	10	1	11	2,470	2,024	4,494	7,345	6,639	14,044
6	Nowgong ...	2	1	3	1,449	1,376	2,775	5,487	4,752	10,239
7	Sibsagar ...	33	21	56	1,584	1,363	2,947	9,146	8,120	17,276
8	Lakhimpur ...	49	27	76	1,093	1,102	2,195	8,131	6,909	15,040
	<b>Total...</b> ...	117	73	190	10,507	8,813	19,320	51,144	42,875	94,019
	<b>Total for the Province</b> ...	120	74	194	11,522	9,611	21,133	95,797	79,606	175,403

to class in the districts of Assam during the year 1920.

to the Census of 1911.									Number of deaths registered.								
Buddhists.			Other classes.			Total.			Christians.			Hindus.			Muhammadans.		
M.	F.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
19	5	24	4,088	4,250	8,338	24,205	22,962	470,167	9	11	20	3,839	3,476	7,315	2,091	1,790	3,881
14	6	20	3,856	3,594	7,450	1,268,469	1,204,202	2,472,671	5	7	12	16,294	13,439	29,733	21,397	17,259	38,656
33	11	44	7,944	7,844	15,788	1,514,674	1,428,164	2,942,838	14	18	32	20,133	16,865	36,998	23,488	19,049	42,537
696	349	935	24,518	23,696	48,154	318,475	282,168	600,643	190	180	370	5,233	4,059	9,292	4,079	3,158	7,237
441	133	574	68,847	72,018	140,865	339,398	328,430	667,828	20	10	30	6,521	5,051	11,572	1,060	906	1,966
435	174	609	56,414	52,732	109,146	198,531	178,753	377,284	55	51	106	4,383	4,276	8,659	472	347	769
30	11	41	54,825	53,873	108,698	154,938	148,658	303,596	19	10	29	3,147	2,656	5,803	870	719	1,589
1,099	865	1,964	30,657	27,284	57,941	324,810	325,489	650,299	59	41	100	7,203	6,468	13,671	265	337	502
3,147	2,501	5,648	39,959	37,193	77,152	949,021	219,968	468,989	50	30	80	6,774	5,657	12,431	163	93	258
5,758	4,033	9,791	275,241	266,796	541,947	1,625,223	1,483,446	3,108,669	393	322	715	33,266	28,207	61,473	6,861	5,460	12,321
5,791	4,044	9,835	283,185	274,550	557,735	3,139,897	2,911,610	6,051,507	407	340	747	53,269	45,072	98,471	30,349	24,509	54,858

to class in the districts of Assam during the year 1920—concl.

Ratio of deaths per 1,000 of population.																	
Christians.			Hindus.			Muhammadans.			Buddhists.			Other classes.			Total.		
Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.
39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
14.77	21.65	17.90	24.10	23.50	23.81	25.42	24.38	24.93	52.63	200.00	83.33	94.42	84.70	89.47	25.69	24.95	25.33
5.79	10.78	7.93	28.87	25.13	27.05	30.59	25.94	28.32	142.85	...	100.00	163.12	121.86	143.22	30.21	25.86	28.09
9.51	15.55	12.17	27.82	24.78	26.35	30.04	25.78	27.97	90.90	90.90	90.90	127.76	101.73	114.83	29.48	25.71	27.65
69.57	71.40	70.44	29.28	26.01	27.76	38.44	31.69	34.20	34.65	65.90	46.07	90.96	73.83	87.15	37.60	32.47	35.19
14.56	8.00	11.83	27.74	22.52	25.19	31.43	29.31	30.42	...	...	...	21.16	17.42	19.25	26.68	21.98	24.37
53.50	57.62	55.41	33.84	36.95	35.31	38.11	31.33	37.87	22.98	5.74	18.06	43.78	38.38	41.17	36.98	37.48	37.22
26.87	15.01	21.12	24.50	31.13	32.36	103.57	95.53	101.25	66.66	90.90	73.17	26.42	24.61	25.52	35.41	31.96	33.72
20.11	16.55	18.43	22.95	22.97	22.96	16.18	17.75	16.89	31.84	24.27	28.51	51.66	49.95	50.86	25.07	21.97	23.02
18.88	14.00	16.70	34.68	32.75	33.78	20.66	17.11	19.22	15.57	10.79	13.45	27.35	29.62	28.45	32.65	31.40	32.08
34.41	37.68	33.61	29.08	27.20	28.19	36.25	32.87	34.67	20.31	18.10	19.40	38.17	33.04	35.64	31.46	28.90	30.24
31.57	30.83	31.25	23.00	26.24	27.47	31.25	27.08	29.24	20.72	18.29	19.72	47.88	35.00	37.89	30.50	27.34	28.98

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

1	2	3	4			5	6	7	8	9	10	
Number.	Districts and towns.	Population according to Census of 1911.	Births.			Birth rate.	Cholera.	Small-pox.	Plague.	Fever.	Dysentery and diarrhoea.	Respiratory diseases.
			Male.	Female.	Total.							
DISTRICTS EXCLUDING TOWNS.												
SURMA VALLEY.												
1	Cachar ... ..	459,920	7,733	7,424	15,157	32.05	82	13	...	6,186	819	1,286
2	Sylhet ... ..	2,441,929	34,833	32,748	67,601	27.68	1,395	1,139	...	44,332	3,092	2,731
	Total ... ..	2,901,849	42,566	40,172	82,738	28.51	1,477	1,152	...	50,518	3,911	4,017
ASSAM VALLEY.												
3	Goalpara ... ..	588,871	13,308	12,455	25,763	43.75	49	52	...	19,266	182	446
4	Kamrup ... ..	644,608	10,695	9,568	20,263	31.43	113	56	...	12,577	306	186
5	Darrang ... ..	371,305	7,351	7,236	14,587	39.18	225	188	...	7,350	1,510	1,645
6	Nowgong ... ..	298,163	5,029	4,834	9,863	33.07	55	22	...	7,612	436	778
7	Sibsagar ... ..	674,485	10,437	9,535	19,972	29.61	278	194	...	8,087	2,348	2,461
8	Lakhimpur ... ..	451,725	7,028	6,827	13,855	30.67	168	26	...	6,007	2,032	2,889
	Total ... ..	3,029,157	53,848	50,455	104,303	34.43	928	538	...	60,899	6,834	8,405
	Total for districts, excluding towns.	5,931,006	96,434	90,627	187,061	31.54	2,405	1,690	...	111,417	10,745	12,492
TOWNS.												
SURMA VALLEY.												
1	Silchar ... ..	8,783	119	126	245	27.88	...	...	...	45	24	32
2	Hailakandi ... ..	1,402	27	20	47	33.14	1	...	...	9	6	...
3	Sylhet ... ..	14,457	194	184	378	26.14	1	1	...	33	55	97
4	Karimganj ... ..	3,052	48	51	99	32.43	1	...	...	34	3	5
5	Maulvi Bazar ... ..	2,369	34	30	64	27.01	1	...	...	33	1	1
6	Habiganj ... ..	6,244	77	71	148	23.70	2	5	...	83	...	3
7	Sunamganj ... ..	4,620	71	70	141	30.51	4	1	...	38	3	4
	Total ... ..	40,989	570	552	1,122	27.37	10	7	...	274	92	142

causes in the districts and towns of the province of Assam during the year 1920.

11						12	13	14											15
Injuries.						All other causes.	Total.	Ratio of deaths per 1,000 of population.											Number.
Suicide.		Wounds or accidents.	Snakes and wild animals.	Rabies.	Total.			Cholera.	Small-pox.	Plague.	Fever.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	All other causes.	From all causes.			
Male.	Female.															For the year.	Mean of previous five years.		
2	4	123	12	4	145	3,173	11,704	17	02	...	13.45	1.78	2.79	31	6.80	25.44	35.29	1	
21	17	739	70	9	856	15,214	68,759	57	46	...	18.15	1.26	1.11	35	6.23	28.15	35.09	2	
23	21	862	82	13	1,001	18,387	80,463	50	39	...	17.40	1.34	1.38	34	6.24	27.72	35.12		
10	9	132	84	...	235	568	20,798	08	08	...	32.71	31	75	39	96	35.32	42.03	3	
13	15	55	26	1	110	2,159	15,547	23	08	...	19.51	47	38	17	3.34	24.11	33.00	4	
15	15	73	42	8	153	2,850	13,921	60	50	...	19.79	4.06	4.43	41	7.67	37.49	45.80	5	
6	3	48	30	1	88	1,060	10,060	18	07	...	25.52	1.46	2.60	29	3.58	33.73	35.54	6	
21	18	82	11	3	135	3,493	16,996	41	28	...	11.98	3.48	3.65	20	5.17	25.19	36.19	7	
31	9	123	18	2	183	3,321	14,646	37	05	...	13.29	4.54	6.39	40	7.35	32.42	39.09	8	
96	69	513	211	15	904	13,460	91,968	30	17	...	20.10	2.25	2.77	29	4.44	30.36	38.19		
119	90	1,375	293	28	1,905	31,847	172,491	40	28	...	18.78	1.81	2.09	32	5.37	29.07	36.69		
...	...	10	...	...	10	63	174	...	...	...	5.12	2.73	3.64	1.13	7.17	19.60	21.40	1	
...	...	...	...	...	...	20	36	68	...	...	6.15	4.10	...	...	13.67	24.62	21.88	2	
1	...	4	2	...	7	165	359	06	06	...	2.27	3.80	6.70	48	11.41	24.83	29.74	3	
...	...	...	...	...	...	15	58	32	...	...	11.14	98	1.63	...	4.91	19.00	25.88	4	
1	...	1	...	...	2	4	42	42	...	...	15.92	42	42	84	1.68	17.72	26.59	5	
...	2	2	1	...	5	44	141	32	80	...	13.13	...	48	80	7.04	22.58	22.16	6	
...	...	...	1	...	1	60	111	86	21	...	8.22	64	86	21	12.93	24.02	26.19	7	
2	2	17	4	...	25	371	921	24	17	...	6.68	2.24	3.46	61	9.05	22.46	25.64		



*n the districts and towns of Assam during the year 1920—concluded.*

11		12	13	14														15
Injuries.						Ratio of deaths per 1,000 of population.												
Suicide.		Wounds or accidents.	Snakes and wild animals.	Rabies.	Total.	All other causes.	Total.	Cholera.	Small-pox.	Plague.	Fever.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	All other causes.	From all causes.		Number.
Male.	Female.															For the year.	Mean of previous five years.	
...	...	4	...	...	4	61	169	51	17	...	9.98	2.58	4.64	68	10.59	29.09	39.25	8
...	...	1	...	...	1	29	173	16	...	...	15.76	2.85	5.19	16	4.86	29.00	30.18	9
1	...	13	...	...	14	119	429	...	08	...	10.81	5.44	7.37	1.12	9.53	34.27	31.88	10
4	3	4	1	...	12	59	304	...	...	...	13.22	2.51	5.95	1.11	5.49	28.30	40.87	11
...	...	1	...	...	1	35	97	...	...	...	5.41	1.86	4.10	18	6.53	18.11	27.07	12
...	...	2	1	...	3	6	26	1.52	...	...	21.40	1.52	1.52	4.58	9.17	39.75	71.86	13
1	1	3	...	...	3	59	179	...	...	...	10.49	4.96	5.79	92	10.85	32.94	32.76	14
...	...	1	...	...	1	9	69	17	...	...	7.63	86	1.56	17	1.56	11.97	16.82	15
...	...	...	...	...	...	...	25	...	...	...	9.67	...	...	...	...	9.67	25.16	16
...	...	1	...	...	1	33	107	...	...	...	6.49	5.54	1.91	19	6.30	20.45	25.42	17
...	...	1	...	...	1	5	79	...	...	...	16.54	6.26	9.83	44	2.23	35.33	38.01	18
...	...	7	...	...	7	117	316	...	06	...	1.64	6.04	5.42	48	8.03	21.09	26.43	19
...	...	...	...	...	...	3	23	...	...	...	18.93	...	...	...	2.84	21.78	Not available.	20
...	...	1	...	...	1	12	55	...	...	...	20.06	3.03	2.43	60	7.29	33.43	47.41	21
6	4	38	3	...	51	547	2,051	07	03	...	9.38	3.85	4.93	64	6.88	25.79	31.29	
8	6	55	7	...	76	918	2,972	13	08	..	8.46	3.32	4.43	63	7.61	24.66	29.35	
127	96	1,430	300	28	1,981	32,765	175,403	40	28	...	18.57	1.84	2.14	32	5.41	28.98	86.54	

*VI (a) for the year 1920.*

7		8		9		10		11		12	Deaths under one year.			Infant mortality rate.
Dysentery.		Diarrhoea.		Pneumonia.		Phthisis.		Other respiratory diseases.		Deaths from child-birth.				
Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.	Deaths.	Ratio.		Male.	Female.	Total.	
1	11	3	34	8	91	2	22	9	1.02	...	16	16	32	130.61
33	2.28	22	1.52	21	1.45	5	34	70	4.84	7	40	43	83	219.57
51	4.08	17	1.36	35	2.80	7	56	50	4.00	4	44	33	77	187.80
8	74	17	1.58	5	46	3	27	77	7.17	2	46	43	89	166.04
13	2.23	2	34	5	86	3	51	8	1.37	...	33	14	47	222.75
13	2.18	4	67	5	83	10	1.67	14	2.34	...	23	15	38	173.51
8	1.49	2	37	9	1.68	1	18	12	2.24	...	12	7	19	115.15
21	3.87	6	1.10	16	2.94	2	37	10	1.84	...	13	11	24	121.21
26	4.97	3	57	6	1.15	3	57	8	1.53	...	14	11	25	137.36
22	1.51	15	1.03	15	1.03	3	20	...	...	1	19	9	28	78.21
12	87	...	...	...	...	...	...	15	1.09	...	34	25	59	127.43

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

Number.	Districts.	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	5	1,103	10	2	2	1	5	20
2	Sylhet ...	23	23	10,781	300	633	183	170	103	53
	Total ...	31	28	11,884	310	640	185	171	108	73
ASSAM VALLEY.										
3	Goalpara ...	21	10	2,137	21	23	...	...	9	6
4	Kamrup ...	15	11	1,954	45	4	4	30	33	24
5	Darrang ...	12	8	1,406	69	14	6	13	31	38
6	Nowgong ...	10	7	1,495	10*	3	1	1	4	11
7	Sibsagar ...	15	9	2,143	316	9	9	21	7	32
8	Lakhimpur ...	13	6	1,702	23	4	11	46	7	7
	Total ...	86	51	10,837	484	57	31	111	91	118
	Total for the Province	117	79	22,721	794	697	216	282	199	191

\* 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	3	1,103	6	2	...	2	3	...	...	2
2	Sylhet ...	23	17	10,781	310	127	177	153	143	125	75	80
	Total ...	31	20	11,884	316	129	177	155	146	125	75	82
ASSAM VALLEY.												
3	Goalpara ...	21	11	2,137	22	...	4	3	8	8	9	9
4	Kamrup ...	15	10	1,954	10	1	9	9	14	6	...	4
5	Darrang ...	12	7	1,406	56	15	4	18	22	28	9	13
6	Nowgong ...	10	6	1,495	7*	...	2	2	2	3	3	3
7	Sibsagar ...	15	10	2,143	16	10	14	9	21	21	24	21
8	Lakhimpur ...	13	5	1,702	6	3	...	2	2	1	5	...
	Total ...	86	49	10,837	117	29	33	43	69	67	50	50
	Total for the Province	117	69	22,721	433	158	210	198	215	192	125	132

\* Mauzas.

*districts of Assam during each month of the year 1920.*

June.	July.	August.	September.	October.	November.	December.	Total.			Ratio of deaths per 1,000 of population.			Mean ratio per 1,000 of previous five years.	Number.
							Male.	Female.	Total.	Male.	Female.	Total.		
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
15	12	8	5	9	2	2	51	32	83	20	14	17	2.08	1
61	54	14	62	11	31	24	776	628	1,404	61	52	56	3.24	2
76	66	22	67	20	33	26	827	660	1,487	54	46	50	3.19	
7	1	...	3	...	2	2	33	20	53	10	07	09	3.11	3
8	9	5	7	9	14	6	80	73	153	23	22	22	4.46	4
31	23	12	15	19	12	12	139	87	226	69	48	59	4.78	5
2	4	3	9	8	...	9	31	24	55	20	16	18	4.79	6
49	39	30	28	31	19	5	153	126	279	42	38	40	2.44	7
10	17	10	7	27	14	8	85	83	168	34	37	35	1.27	8
107	93	60	69	94	161	42	521	413	934	32	27	30	3.34	
183	159	82	136	114	94	68	1,348	1,073	2,421	42	36	40	3.27	

*Small-pox in the districts of Assam during each month of the year 1920.*

August.	September.	October.	November.	December.	Total.			Number of deaths among children.		Ratio of deaths per 1,000 of population.			Mean ratio per 1,000 of previous five years.	Number.
					Male.	Female.	Total.	Under 1 year.	One to 10 years.	Male.	Female.	Total.		
14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
...	1	2	...	1	7	6	13	2	1	02	02	02	67	1
73	24	19	44	106	68	464	1,146	101	333	33	38	46	22	2
73	25	21	44	107	639	470	1,109	103	334	45	32	39	29	
...	4	...	4	4	27	26	53	5	10	06	09	09	72	3
1	7	2	4	...	33	24	57	4	1	09	07	08	1.28	4
4	1	17	11	46	119	69	188	108	71	59	38	49	31	5
2	2	...	1	2	12	10	22	9	4	07	06	07	14	6
23	21	11	5	14	119	75	194	7	26	32	23	28	18	7
...	...	...	...	14	15	12	27	4	...	06	05	05	13	8
30	35	30	25	80	325	216	541	137	112	19	14	17	70	
103	69	51	69	137	1,014	686	1,700	240	446	33	23	28	50	

## IMPERIAL STATEMENT No. IX.—Deaths registered from Fevers

Number.	Districts.	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
<b>SURMA VALLEY.</b>										
1	Cachar ... ..	8	8	1,103	1,103	696	436	465	536	576
2	Sylhet ... ..	23	23	10,781	8,473	5,315	3,900	3,535	4,373	4,128
	<b>Total ... ..</b>	<b>31</b>	<b>31</b>	<b>11,884</b>	<b>9,576</b>	<b>6,011</b>	<b>4,366</b>	<b>4,000</b>	<b>4,909</b>	<b>4,704</b>
<b>ASSAM VALLEY.</b>										
3	Goalpara ... ..	21	20	2,137	2,137	1,684	1,444	1,704	1,947	1,802
4	Kamrup ... ..	15	14	1,954	1,896	1,031	1,017	1,188	1,287	1,366
5	Darrang ... ..	12	11	1,406	1,172	664	541	618	616	776
6	Nowgong ... ..	10	10	1,495	52*	511	561	597	725	656
7	Sibsagar ... ..	15	15	2,143	1,275	661	598	749	719	696
8	Lakhimpur ... ..	13	13	1,702	1,477	464	451	630	566	414
	<b>Total ... ..</b>	<b>86</b>	<b>83</b>	<b>10,837</b>	<b>7,919</b>	<b>5,015</b>	<b>4,612</b>	<b>5,486</b>	<b>5,869</b>	<b>5,650</b>
	<b>Total for the Province ...</b>	<b>117</b>	<b>114</b>	<b>22,721</b>	<b>17,495</b>	<b>11,026</b>	<b>8,978</b>	<b>9,486</b>	<b>10,769</b>	<b>10,354</b>

\* Mauzas.

## IMPERIAL STATEMENT No. X.—Deaths registered from

Number.	Districts.	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
<b>SURMA VALLEY.</b>										
1	Cachar ... ..	8	7	1,103	152	78	57	68	62	70
2	Sylhet ... ..	23	22	10,781	1,365	380	273	231	179	237
	<b>Total ... ..</b>	<b>31</b>	<b>29</b>	<b>11,884</b>	<b>1,517</b>	<b>458</b>	<b>330</b>	<b>299</b>	<b>241</b>	<b>307</b>
<b>ASSAM VALLEY.</b>										
3	Goalpara ... ..	21	21	2,137	117	12	2	7	10	37
4	Kamrup ... ..	15	14	1,954	281	19	17	29	42	46
5	Darrang ... ..	12	11	1,406	201	82	99	77	96	70
6	Nowgong ... ..	10	9	1,495	24*	32	22	23	18	35
7	Sibsagar ... ..	15	13	2,143	747	190	125	129	126	133
8	Lakhimpur ... ..	13	12	1,702	304	181	108	120	123	126
	<b>Total ... ..</b>	<b>86</b>	<b>80</b>	<b>10,837</b>	<b>1,674</b>	<b>516</b>	<b>373</b>	<b>376</b>	<b>415</b>	<b>447</b>
	<b>Total for the Province...</b>	<b>117</b>	<b>109</b>	<b>22,721</b>	<b>3,191</b>	<b>974</b>	<b>703</b>	<b>675</b>	<b>656</b>	<b>754</b>

\* Mauzas.

*in the districts of Assam during each month of the year 1920.*

June.	July.	August.	September.	October.	November.	December.	Total.			Ratio of deaths per 1,000 of population.			Mean ratio per 1,000 of previous five years.	Number.
							Male.	Female.	Total.	Male.	Female.	Total.		
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
582	519	381	443	391	493	722	3,289	2,951	6,240	13.35	13.17	13.27	16.88	1
3,185	2,886	2,572	2,874	3,600	3,927	4,227	24,741	19,811	44,552	19.59	16.45	18.00	17.65	2
3,767	3,405	2,953	3,317	3,991	4,420	4,949	28,030	22,762	50,792	18.50	15.93	17.25	17.32	
1,585	1,702	1,468	1,506	1,291	1,490	1,735	11,011	8,497	19,418	34.57	29.79	32.32	34.40	3
1,168	854	1,381	821	872	847	1,032	7,156	5,698	12,854	21.08	17.31	19.24	21.92	4
657	465	676	578	610	569	623	3,800	3,533	7,333	19.43	19.76	19.59	21.18	5
685	886	661	545	655	617	570	4,125	3,544	7,669	26.62	23.83	25.26	21.47	6
774	704	689	760	612	807	518	4,439	3,788	8,227	12.16	11.64	11.92	15.68	7
510	481	590	540	502	562	374	3,256	2,828	6,084	13.07	12.85	12.97	15.44	8
5,379	5,152	5,465	4,750	4,542	4,892	4,842	33,847	27,798	61,645	20.82	18.73	19.83	21.85	
9,146	8,557	8,418	8,067	8,533	9,312	9,791	61,877	50,560	112,437	19.70	17.36	18.57	19.74	

*Dysentery and Diarrhœa in the districts of Assam during each month of the year 1920.*

June.	July.	August.	September.	October.	November.	December.	Total.			Ratio of deaths per 1,000 of population.			Mean ratio per 1,000 of previous five years.	Number.
							Male.	Female.	Total.	Male.	Female.	Total.		
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
76	53	81	74	75	84	71	476	373	849	1.93	1.69	1.80	2.44	1
196	250	200	254	314	345	295	1,821	1,333	3,154	1.43	1.10	1.27	2.14	2
272	303	281	328	389	429	366	2,297	1,706	4,003	1.51	1.19	1.36	2.19	
30	28	17	22	17	15	17	169	105	214	.34	.37	.34	.46	3
35	36	25	43	40	30	39	245	156	401	.72	.47	.60	1.00	4
109	180	151	166	206	136	149	856	665	1,521	4.31	3.72	4.03	4.46	5
47	78	42	40	42	49	35	278	185	463	1.79	1.24	1.52	1.72	6
232	268	267	249	244	268	174	1,307	1,089	2,396	3.58	3.34	3.47	4.60	7
202	265	235	224	201	215	145	1,320	925	2,145	4.69	4.20	4.57	5.41	8
655	855	737	744	759	713	559	4,015	3,125	7,140	2.47	2.10	2.29	2.85	
927	1,158	1,018	1,072	1,139	1,142	925	6,312	4,831	11,143	2.61	1.65	1.84	2.53	

## 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	127	149	160	203	110	105
2	Sylhet ...	23	23	10,781	522	307	340	374	284	241
	Total ...	31	29	11,884	649	456	500	577	394	346
ASSAM VALLEY.										
3	Goalpara ...	21	18	2,137	67	70	23	82	185	52
4	Kamrup ...	15	14	1,954	126	17	34	56	15	36
5	Darrang ...	12	11	1,406	216	162	157	240	230	101
6	Nowgong ...	10	9	1,495	31*	71	97	237	124	126
7	Sibsagar ...	15	12	2,143	246	198	337	459	472	248
8	Lakhimpur ...	13	12	1,702	175	253	405	622	487	357
	Total ...	86	76	10,837	861	771	1,053	1,696	1,513	920
	Total for the Province ...	117	105	22,721	1,510	1,227	1,553	2,273	1,907	1,266

\* Manuas.

## 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 ...	23	...	10,781	...	...	...	...	...	...
	Total ...	31	...	11,884	...	...	...	...	...	...
ASSAM VALLEY.										
3	Goalpara ...	21	...	2,137	...	...	...	...	...	...
4	Kamrup ...	15	...	1,954	...	...	...	...	...	...
5	Darrang ...	12	...	1,406	...	...	...	...	...	...
6	Nowgong ...	10	...	1,495	...	...	...	...	...	...
7	Sibsagar ...	15	...	2,143	...	...	...	...	...	...
8	Lakhimpur ...	13	...	1,702	...	...	...	...	...	...
	Total ...	86	...	10,837	...	...	...	...	...	...
	Total for the Province ...	117	...	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 age 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	245	33.69	27.68	174	114	19.80	12.97	2	1
Hailakandi ...	1,462	45	47	30.78	32.14	36	27	24.62	18.46	1	1
Sylhet ...	14,457	582	378	40.26	26.14	339	310	24.83	21.44	37	28
Karimganj ...	3,052	260	99	39.32	32.43	58	44	19.00	14.41	17	13
Maulvi Bazar ...	2,369	77	64	32.50	27.01	42	34	17.72	14.35	8	8
Habiganj ...	6,244	222	148	35.55	23.70	141	128	22.58	20.49	26	20
Sunamganj ...	4,620	145	141	31.38	30.51	111	100	24.02	21.64	30	17
Dhubri ...	5,808	191	211	32.88	36.32	169	136	29.09	23.41	35	31
Goalpara ...	5,964	197	219	33.03	36.72	173	156	29.00	26.15	26	18
Gauhati ...	12,481	409	410	32.77	32.84	429	316	34.37	25.31	54	20
Barpeta ...	10,739	482	536	44.88	49.91	304	301	28.30	28.02	36	26
Tezpur ...	5,355	167	165	31.18	30.81	97	48	18.11	8.96	10	10
Mangaldai ...	654	*	14	*	21.40	26	11	39.75	16.81	4	3
Nowgong ...	5,433	185	198	34.05	36.44	179	118	32.94	21.71	11	10
Sibsagar ...	5,764	213	145	36.95	25.15	69	59	11.97	8.67	...	...
Nazira ...	2,583	*	51	*	19.74	25	25	9.67	9.67	...	...
Jorhat ...	5,231	192	182	36.70	34.79	107	74	20.45	14.14	27	4
Golaghat ...	2,236	88	70	39.35	31.30	79	53	35.33	23.70	3	3
Dibrugarh ...	14,563	543	358	37.28	24.58	316	152	21.69	10.43	36	24
Doom Dooma ...	1,056	*	24	*	22.72	23	23	21.78	21.78	...	...
North Lakhimpur...	1,645	*	69	*	41.94	55	43	33.43	26.13	...	...
Total ...	120,501	4,294	3,774	34.96	31.31	2,972	2,263	24.66	18.77	363	237

\* Not available.

## Resolution on the Annual Sanitary Report of the province of Assam for the year 1920.

---

*Extract from the Proceedings of the Governor of Assam and the Minister of Education in the Education Department, Sanitation Branch, No. 2868E., dated the 2nd July 1921.*

### READ—

The Sanitary Report for the year 1920.

---

### RESOLUTION.

1. DURING the year under review climatic conditions were, for the most part, normal. The provincial birth-rate was 31.53 per mille as compared with 30.52 in 1919, and with an average of 32.19 during the past five years. As regards its death-rate this province showed a more rapid recovery from the abnormal conditions of 1919 than any other in India. The figure was 28.98 per mille, the corresponding figures for 1919 and the preceding quinquennium being 50.09 and 36.54.

According to the returns furnished from tea gardens the birth-rate on them was 23.89 and the death-rate 31.54 per mille. The constituent elements of the population of tea gardens differ greatly from those of the general population. Moreover the death-rate on many gardens still shows the effects of the influx of unhealthy labour which took place in 1919.

2. Mortality from each of the principal diseases except fever was below that of the previous ten years. There is little doubt that many of the deaths shown under fever were really due to *kala-azar*. Influenza was not seriously epidemic. Except in certain areas in the Sylhet district, cholera was less prevalent than it has been for many years. On tea gardens, though the ratio of deaths from this disease was very much lower than in 1919, it was higher than for the ten years ending with April 1917. All new coolies were inoculated with anti-cholera vaccine before they came into the province while some of the old coolies were inoculated on the gardens. The relatively high mortality (6.5) from dysentery on the tea gardens, on most of which no latrine system exists, points to the necessity of improving sanitary arrangements as soon as financial conditions permit.

Special anti-malarial measures were carried out at Haflong, Lumding and Pasi-ghat; the results were satisfactory. The medical officer of the Assam Sugar Estates in the Kamrup district made an investigation into the conditions responsible for the prevalence of malaria in that tract. It is hoped that his work will form a useful basis for a scheme of improvement.

The death-rate from small-pox during the year was below the decennial average, but slightly higher than in 1919. The areas chiefly affected by this disease were certain parts of the Habiganj subdivision in which vaccination had not been effectively carried out. Vaccination was not compulsory, and there was considerable opposition to it. With the help of a Government grant-in-aid made to the Habiganj Local Board, a number of additional vaccinators were employed in the infected area.

3. The outstanding feature of the year's work was the strenuous campaign which was conducted against *kala-azar*. While the death-rate from this disease as recorded this year was as high as 2.798, there is evidence that it was in fact very much higher. More deaths were recorded than in any year since 1905, the greatest number being in the districts of Kamrup, Nowgong and Goalpara.

Till the year under review segregation was the main though not the only measure used for controlling the disease. The system of treatment by intravenous injection of tartar emetic had been tried but only on a small scale. It was found to be more popular and efficacious than segregation. Towards the end of the year facilities for its use were, therefore, greatly extended.

In infected areas treatment was given at most of the dispensaries under the Medical Department, while temporary *kala-azar* dispensaries were provided in areas not effectively served by existing dispensaries. New hospitals as well as wards in connection with existing dispensaries were opened for the indoor treatment of cases. It was at the same time necessary to train and strengthen the medical staff. The District Medical staff co-operated closely with the Sanitary Department, and the special thanks of Government are due to the Civil Surgeons and others, including the staff of the Pasteur Institute, who contributed so much to the success of the work. Over seven thousand cases were treated during the year, the known mortality among them was only five per cent. The work is being developed so rapidly that it is probable that some twenty thousand cases will come under treatment during the present year.

A matter which deserves mention is that in August 1920 revised *kala-azar* regulations were published. Under these regulations Government may notify areas, within which sufferers from *kala-azar*, subject to proper safeguards for the liberty of the individual, may be ordered to undergo a course of treatment. The penal powers under these regulations were intended to be and have, in fact, been used most sparingly.

4. Satisfactory progress was made with the installation of the new water-works at Dhubri. This is the only large sanitary scheme which is at present being carried out in the Province. Substantial grants were, however, given by Government to Local Boards for the improvement of water-supply in rural areas. Sanction was given during the year to the training of four Health Officers for rural areas.

5. The new appointment of Deputy Sanitary Commissioner for Assam was taken up in August by Captain S. R. Rao. Major McCombie Young was in charge as Sanitary Commissioner till the middle of August 1920 and Major Taylor for the rest of the year. The thanks of Government are due to these officers for good and energetic work. The excellent service which has been done in connection with *kala-azar* cannot be too highly commended.

---

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

By order of the Government of Assam,

A. R. EDWARDS,

*Second Secretary to the Government of Assam.*



