

Annual sanitary report of the Province of Assam.

Contributors

Assam (India)

Publication/Creation

Shillong : [Government Press] (Printed at the Assam Secretariay Printing Office), [1903]

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ANNUAL SANITARY REPORT

OF THE

PROVINCE OF ASSAM

FOR THE YEAR

1903.

BY

COLONEL DAVID WILKIE, *M.B., I.M.S.*,
PRINCIPAL MEDICAL OFFICER AND SANITARY COMMISSIONER, ASSAM.



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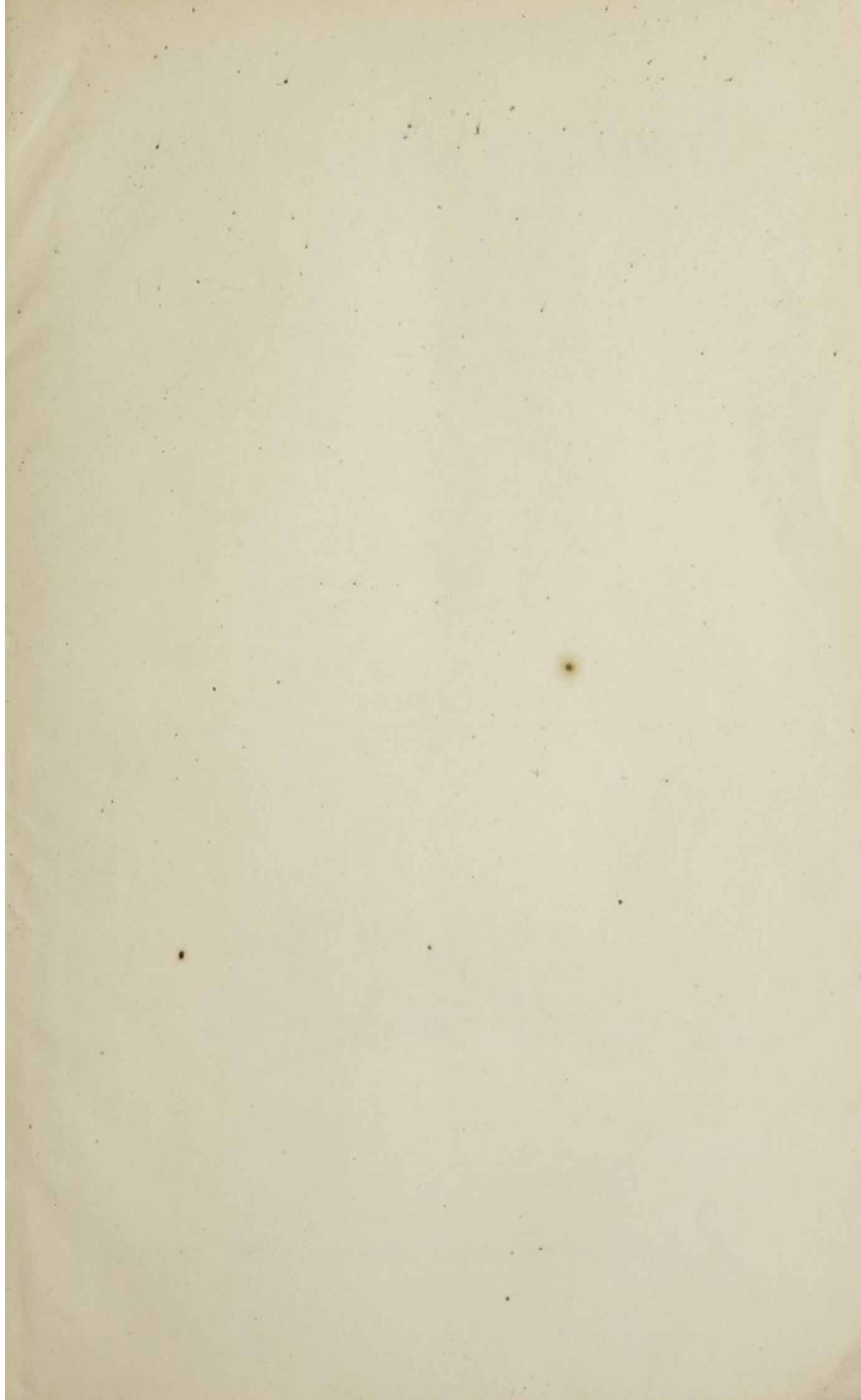
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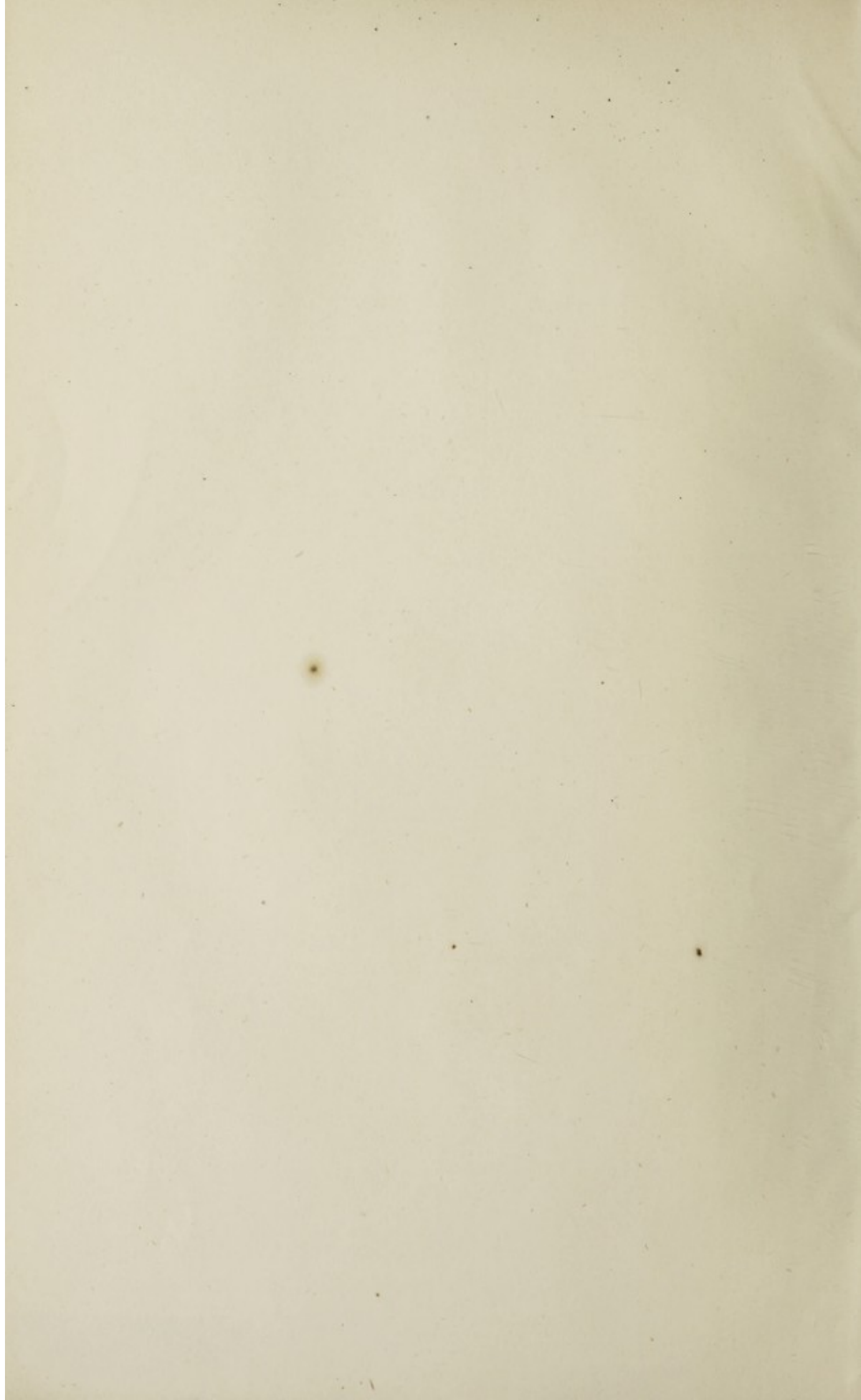
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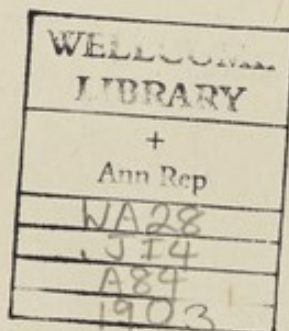
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ANNUAL SANITARY REPORT OF THE PROVINCE OF ASSAM

FOR THE YEAR

1903.

SECTION I.

METEOROLOGY.

[See para. 2.]

SECTION II. EUROPEAN ARMY.

[No remarks.]

SECTION III. NATIVE ARMY.

[No remarks.]

SECTION IV. JAILS.

[No remarks.]

SECTION V.

GENERAL POPULATION—VITAL STATISTICS.

Colonel Carr-Calthrop, I.M.S., was Principal Medical Officer of the Assam District and Sanitary Commissioner of Assam up to the evening of the 3rd August, when I took over charge from him. Both of us made tours of inspection.

2. "The climate of the province is damp at all times of the year. The rainfall is heavy, and falls in eight or nine months of the year; and neither is the summer very hot nor the winter very cold, but in the latter season fogs are very prevalent."—
Meteorology and price of food-grains.
(Blanford). Out of 114 stations which recorded their rainfall both in 1902 and in 1903, 75 reported less rain in the latter year than in the former; and there was a reduction of rainfall in all the districts dealt with in the tables of this report. Temperature was high in the Surma Valley and in Goalpara, and low in Darrang and Sibsagar. Food was cheap, and wages unchanged or higher. The general death-rate of Assam was lowered, as were the rates from cholera, small-pox, fevers, and bowel complaints. In most districts the rainfall is noted as having been seasonal and regularly distributed. The greatest reduction in rainfall was in Goalpara, and then, in order, in Darrang, Cachar, Sylhet, Kamrup, Nowgong, Lakhimpur, and Sibsagar. Total mortality was diminished in the Surma Valley and in Kamrup, and raised in the other districts of the Brahmaputra Valley. Goalpara had increased mortality from cholera, fevers, and bowel complaints; Sylhet diminished mortality from all three; Sibsagar increased mortality from cholera, but a lower death-rate from bowel complaints and fevers. In the sadr stations of Sibsagar, Silchar, and Gauhati the rainfall was greater than in 1902, in the other five sadr stations less. In five of these eight cases total mortality fell when the rainfall rose and *vice versa*, while in six of them dysentery mortality fell when the rainfall fell and *vice versa*. At Sibsagar food was cheap; the rainfall was the highest and the mean daily temperature the lowest in four years; and the mortality from dysentery was more than doubled. At Dhubri rice was dear; in four years the rainfall was only lower than that of 1902; in the same period the mean daily temperature was greater than that of 1902 only; and there was an increase in mortality from cholera and dysentery.

3. The total census population of the province is 6,126,343; that of the areas under registration 5,357,630; and that of the Brahmaputra and Surma Valleys, which is used as the divisor in calculating the provincial ratios, 5,275,706. To the population of the registration area the Khasi and Jaintia Hills contribute 47,294, the Garo Hills 38,625, and the Naga Hills (Kohima only) 3,093. The non-registration area includes 477,160 in the North Cachar and Lushai Hills and the other three hill tracts, and 284,465 in the Manipur State.

4. The Assam birth-rate, calculated for a total of 187,669 births, was higher than in 1902, and, like that of each of the other provinces, was higher than the quinquennial ratio. As compared with that of the other provinces, it occupies a position somewhat below the average of 1903 and the average of the quinquennium. Both sexes shared in the increase of ratio. The district ratios which approached nearest to the standard were those of Goalpara and Sylhet, especially the former, and the lowest were those of Sibsagar and Lakhimpur. Only in Darrang did the death-rate exceed the birth-rate, and it was in that district that *kalá-ázár* was in 1903 most prevalent and malignant. The number of male births to 100 female for the province was 106.72, the ratio being somewhat higher

Province.	Births registered.		
	1897-1901.	1902.	1903.
	Birth-rate.	Birth-rate.	Birth-rate.
Assam ...	32.21	34.21	35.57
Bengal ...	37.19	40.14	39.00
Central Provinces ...	...	48.29	45.11
Madras ...	28.9	28.2	31.30
Burma ...	34.68	31.57	33.54
Bombay ...	30.57	34.16	31.22
United Provinces ...	39.65	45.84	46.13
Punjab ...	40.0	43.8	42.91
North-Western Frontier Province.	30.7	33.6	31.56

* Not available.

in the Brahmaputra Valley than in the Surma Valley, highest of all in Sibsagar and Nowgong, and lowest in Cachar.

5. Either for the year or for the lustrum, the registered death-rate of Assam was considerably below the average of the Indian provinces. It was also lower than in either of the periods named, the decrease being shared by the two sexes. The highest ratios were those of Darrang and Goalpara, the height of the former being due to unhealthiness, that of the latter to unhealthiness combined with tolerably good registration. As in the case of births, the lowest ratios were those of Sibsagar and Lakhimpur. The ratio of male deaths to 100 female for the province was 107.64, the proportion being highest in Kamrup, lowest in Cachar, and higher in the Brahmaputra than in the Surma Valley. Chief among the causes of death were fevers. The total number of deaths

Province.	Deaths registered.		
	1897-1901.	1902.	1903.
	Death-rate.	Death-rate.	Death-rate.
Assam ...	33.99	29.01	26.55
Bengal ...	30.53	33.43	33.33
Central Provinces ...	...	25.82	35.52
Madras ...	22.2	20.2	22.20
Burma ...	25.79	21.16	24.13
Bombay ...	42.40	39.04	43.91
United Provinces ...	32.48	32.54	40.28
Punjab ...	33.71	44.11	49.01
North-Western Frontier Province.	23.7	24.43	28.40

* Not available.

registered in the province, excluding still births, was 140,069.

6. The local government is actively engaged in providing for the improvement of registration, both in compulsory and in other areas.

After consulting the Superintendent of Census Operations (1901), the Hon'ble the Chief Commissioner has reduced the birth standards laid down in paragraphs 6 and 8 of the Resolution on the Sanitary Report of 1895, so that the standard birth-rate per thousand of population will now be 45 instead of 48, and the probable number of births per thousand of married women between the ages of 15 and 40 will be taken as 286 instead of 320. But the census officer informs me that he does not recommend any reduction in the provincial death standard, which will perhaps therefore for the present remain at 42 per mille of population, though he considers 42 somewhat high for urban areas.

Registration is compulsory only in municipalities and in tea gardens. Of the towns shown in Appendix I, Silchar, Tezpur, and Dhubri recorded very defective birth-rates; whereas those of Karimganj, Sunamganj, Sibsagar, and Dibrugarh were all high, higher than the estimated rate in the last three. (In 1897, the ratios of Karimganj and

Hailakandi were higher than the estimated rates.) Omitting four towns, the total estimated birth-rate for municipal areas was 34.03, and that based on registration 25.86. Highest of all the municipal birth ratios was that of Barpeta. Low death-rates were returned from Silchar, Sunamganj, and Barpeta; and high ratios from Nowgong, Golaghat, Dibrugarh, and North Lakhimpur. Nowgong suffered from cholera, Dibrugarh from plague and fever, and Golaghat and North Lakhimpur from fever. All the municipalities had ratios lower than the quinquennial, except Hailakandi, Maulvi Bazar, Habiganj, Nowgong, and Sibsagar. However defective registration may have been in some municipalities a frequent cause of the lowering of ratios was the comparative absence of fatal disease. I made personal inquiry at Barpeta, and found that there was not the least foundation for the idea that women from other places resort to Barpeta for their accouchement, and so swell the number of births. The Subdivisional Officer, Mr. G. C. Nag, confirms this, and points out that there is an excess of females in the population of Barpeta. The census tables show that Barpeta is alone in this respect, that the excess of females occurs from the age of 15 onwards, and that 73 per cent. of those between 15 and 40 are married. This, then, appears to be the true reason of the high birth-rate at Barpeta. Mr. Nag attributes the low registered death-rate to the fact that male inhabitants not infrequently die when absent on trading expeditions; but the proportion of male to female deaths registered indicates rather a deficiency in female deaths. The same is the case in the five other municipalities which had the highest number of deaths; except Karimganj, where the proportion of male to female deaths was only 86 to each 100. Appendix I shows that in no less than ten of the municipalities the death-rate of column 9 was greater than the registered birth-rate, which in two of these cases was lower than the death ratio of column 10 and in one equal to it.

The registered birth-rate of the tea gardens was 28.33, almost the same as that of the municipal areas; but the death-rate was 2.11 per mille less. The birth and death-rates in the gardens of Kamrup as a whole, and the birth-rates in those of Nowgong were very low. The returns from Sibsagar are on the whole the most satisfactory. For Lakhimpur, Nowgong, and Darrang the death-rates were higher than the birth-rates. In Nowgong there was a death-rate of 25.91, against a birth-rate of only 17.77. The birth-rates varied from 30.62 in Sibsagar and 30.11 in Lakhimpur to 16.30 in Kamrup, and the death rates from 30.81 in Lakhimpur to 12.35 in Kamrup.

7. For the rural areas as a whole the birth-rate was 35.73 and the death-rate 26.56. The highest birth-rate was 43.71 in Goalpara; the rates of Sylhet, Cachar, Darrang, and Nowgong were all above 35; and there was no rate lower than 27.72, which was that of Sibsagar. The probable reason why the birth-rates in the rural areas are on the whole more satisfactory than in the compulsory areas is that in the former the proportion of females to males is greater, as may be seen in the census tables. The high death ratio of Darrang, 38.22, is probably due to *kalá-ázár*. The next highest ratios are those of the three districts with a chaidari reporting agency, the lowest those of Sibsagar and Lakhimpur. While in Nowgong, I was informed by the Civil Surgeon that, owing to the personal interest taken in the matter by the Sub-Deputy Collector, Mr. G. H. Gosai, registration in the Roha tahsil was unusually accurate; and I found reason to be satisfied with the result of a personal house-to-house visitation of one quarter of the village of Roha. Therefore I may note here that the birth-rate in that tahsil was 45.50 and the death-rate 27.91.

8. As stated in paragraph 3, a certain amount of registration is effected in some portions of the hill districts. The figures furnished for 1903 show for a part of the Khasi and Jaintia Hills a birth-rate of 30.24 and a death-rate of 18.33, against 25.56 and 21.36; for the Garo Hills 30.45 and 23.87, against 28.38 and 21.78; and for the small town of Kohima in the Naga Hills 21.02 and 20.69, against 35.89 and 21.99. The death-rate in the Khasi and Jaintia Hills is too low, and is accompanied by too rapid a rise in the birth-rate; the birth-rate in Kohima is too low, and has fallen nearly 15 per mille; the birth and death-rates in the Garo Hills are in good proportion one to the other, but it is possible that they again include items from non-registration areas.

9. The maximum months of total mortality were December, November, and July; of cholera and dysentery mortality, May and June; of small-pox mortality, January and April; and of fevers, July and December. But in Nowgong the cholera maximum was in November and July, and the small-pox maximum in June.

10. For 1903 the male and female mortalities of infants under one year are even

Mortality at different ages.

Province.	1903.		
	Male.	Female.	Both sexes.
Assam ...	193'83	183'38	188'77
Bengal ...	203'51	185'14	194'57
Central Provinces ...	200'71	201'23	276'32
Madras ...	186'7	168'2	177'6
Burma ...	220'52	168'12	195'27
Bombay ...	219'38	206'70	213'38
United Provinces ...	279'26	269'13	274'38
Punjab ...	260'0	270'0	265'02
North-Western Frontier Province.	203'0	199'0	201'0

Name of district.	Death-rate per mille among children under one year of age calculated on the number of births registered.		
	Male.	Female.	Both sexes.
Cachar ...	199'41	191'93	195'76
Sylhet ...	226'58	209'97	218'52
Surma Valley ...	222'66	207'35	215'23
Goalpara ...	249'32	241'35	245'43
Kamrup ...	143'65	141'90	142'80
Darrang ...	201'41	192'59	197'11
Nowgong ...	118'47	115'21	116'93
Sibsagar ...	107'90	97'11	102'81
Lakhimpur ...	106'63	100'12	103'51
Brahmaputra Valley ...	161'17	155'71	158'58
Assam ...	193'83	183'38	188'77

lower than usual, 194'73 and 170'27, probably because the year was a healthy one. The marginal tables deal with the infantile mortality, that is, the mortality calculated on the registered number of births for the year, and not on the census population under one year of age. Here the reduction of total ratio is still more striking, and amounts to 7 per cent.; but Goalpara, Darrang, Lakhimpur, and Sibesar,* recorded an increased infantile mortality. As usual, the Goalpara ratios appear to be the most correct, and after them those of Sylhet. The most defective ratios are those of Sibesar, and then those of Lakhimpur. In all districts the male mortality was greater than the female, though the difference did not nearly reach 17, except in the case of Sylhet, and was particularly small in that of Kamrup and Nowgong. The fact of increase or decrease of infantile mortality agrees, in the case of every district except Nowgong, with the fact of increase or decrease of mortality at all ages; and this also points to the influence of climatic conditions. The greatest reductions of infantile mortalities were in Sylhet and Cachar, and in the other valley three of the total increases were less than either of the total decreases. In both sexes mortality was high below 5 and above 50 years of age; and in both sexes mortality was low between 5 and 15. At ages between 5 and 50 the greatest male mortality was from 30 to 50,

the greatest female mortality from 15 to 30. Again, the death-rate of men was greater than that of women at all ages except between 15 and 40, that is, the child-bearing period.

* The 1902 Sibesar total ought to have been printed 102'49.

11. The following table shows the results of the inspection of registers of vital statistics by police officers and by Inspectors of Vaccination during the year 1903 :—

Name of district.	Investigated by the police.								Investigated by Inspectors of Vaccination.							
	Number of days spent.	Number of villages examined.	Number of births looked up.	Number unreported.	Percentage unreported.	Number of deaths looked up.	Number unreported.	Percentage unreported.	Number of days spent.	Number of villages examined.	Number of births looked up.	Number unreported.	Percentage unreported.	Number of deaths looked up.	Number unreported.	Percentage unreported.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Cachar ...	409	876*	7,388	97	1'31	6,671	118	1'77	†	45	279	...	...	265	...	...
Sylhet ...	933	2,703	21,358	790	3'70	15,462	515	3'33	†	217	2,590	18	0'69	1,955	5	0'25
Goalpara ...	2,410	2,816	15,866	312	1'97	11,507	204	1'77	†	86	1,184	51	4'31	854	2	0'22
Kamrup ...	488	657	3,474	1,273	36'64	2,253	840	37'55	12	28	105	37	35'24	74	17	22'97
Darrang ...	199	461	1,042	52	4'99	1,067	115	10'78	†	188	442	105	23'75	221	59	26'70
Nowgong ...	486	1,084	2,970	76	2'56	2,254	49	2'17	†	312	1,226	87	7'10	1,247	120	9'62
Sibsagar ...	672	852	2,296	27	1'18	1,446	13	0'90	†	225	1,083	295	27'24	601	125	20'80
Lakhimpur ...	360	643	2,234	22	0'98	1,113	6	0'54	†	78	232	44	18'97	152	31	20'39

* Chaukidari beats. † Not available.

The table shows strikingly at the first glance how defective registration is in Kamrup and Darrang. It also shows that the police were most active in this branch

of work in Goalpara and Sylhet; that the work said to have been done by the Inspector of Vaccination in Cachar was absolutely valueless; that the work of the vaccination inspectors of Sylhet and Goalpara, especially the former, does not compare favourably with that done in the same districts by the police or with that done by the Inspectors of Vaccination in the other districts. At the same time, it must be mentioned that there was decided improvement in the results of inspection by the vaccination officials in Nowgong, Sibsagar, and Sylhet, in the order named. The improvement in Nowgong is the work of the new Inspector. In Sylhet in 1902 the presence of epidemic cholera and small-pox in the Sunamganj and South Sylhet subdivisions had proved a hindrance. The tahsildars, mauzadars, supervisor kanungoes, and mandals examined the registers of 913 villages in the Darrang district; but the result is not stated in the return.

SECTION VI.

GENERAL HISTORY OF THE CHIEF DISEASES.

12. Judged by the death-rate, the health of the population of Assam was decidedly

Chief causes of mortality.

Diseases.	Total number of deaths.				Ratio per mille.	
	1891-1900.	1901.	1902.	1903.	1891-1900.	1903.
Cholera ...	19,283	7,468	12,658	8,360	3'66	1'58
Small-pox ...	3,269	3,274	6,673	1,111	0'62	0'21
Plague ...	...	...	...	28	...	0'01
Fevers ...	93,991	83,696	77,679	75,004	17'82	14'22
Dysentery and diarrhoea ...	15,791	11,576	11,213	10,516	2'99	1'99
Respiratory diseases ...	...	...	584	445	...	0'08
Injuries ...	1,819	1,768	1,835	1,745	0'34	0'33
All other causes ...	37,849	39,157	42,428	42,860	7'17	8'13
All causes ...	172,002	146,939	153,070	140,069	32'60	26'55

better than in 1902, and the ratio compares very favourably with that of the decennium. There was a decrease in mortality from every head of disease in this table, except plague and "All other causes," both in comparison with the ratios of the preceding year and in comparison with those of the decennium. But the return of respiratory diseases has been made only for two years, so that a decennial ratio cannot yet be worked out.

13. The mortality ratio of the province was lower than the ratios for the decennium,

Cholera.

District.	Census population of 1901.	Death-rates from cholera.			
		1891-1900.	1901.	1902.	1903.
Cachar ...	414,781	3'24	2'84	2'09	1'34
Sylhet ...	2,241,848	3'06	1'25	3'93	1'03
Surma Valley ...	2,656,629	3'09	1'50	3'64	1'08
Goalpara ...	462,052	4'21	0'46	0'60	1'04
Kamrup ...	589,187	6'05	2'88	2'51	1'83
Darrang ...	337,313	4'62	1'01	0'73	3'76
Nowgong ...	261,160	6'50	0'13	0'08	6'73
Sibsagar ...	597,969	2'62	0'66	0'89	1'21
Lakhimpur ...	371,396	2'01	2'18	1'16	0'49
Brahmaputra Valley...	2,619,077	4'23	1'33	1'14	2'10
Assam ...	5,275,706	3'66	1'42	2'40	1'58

and for the year 1902, but higher than the ratio for 1901. The Brahmaputra Valley only had an increase of cholera mortality, as compared with the two years preceding. All the districts of this valley, except Kamrup and Lakhimpur, had a death-rate higher than in the two preceding years; but in Nowgong there was in addition an increase over the decennial figure. Only once in the last ten years has the mortality of 1903 been exceeded in Nowgong. It was about three times greater in 1900. The Civil Surgeon states that the disease first appeared about three or

four miles below Silghat on the Kallang river, and travelled downstream. The chief incidence was on the thanas of Samaguri and Nowgong. The seasonal distribution was abnormal. The disease was sporadic in April, May, and June; but suddenly assumed a more epidemic character from July onwards. Of all the towns in Assam, Nowgong recorded the highest death-rate. In the Darrang district, Behali and Sutia suffered most. The epidemic cholera of the Sibsagar district occurred in Nikarigaon and Bongram of the Golaghat subdivision; and in Kamargaon, Babajia, Titabar, and some other villages of the Jorhat subdivision. The Civil Surgeon of Sylhet lays stress on the help in combating the disease he has obtained from *daily* reports.

14. The cholera mortality among tea-garden coolies was less than in the general

Cholera in tea gardens.

population of Assam, and the same relation held good in each valley. Only in the Kamrup, Sibsagar, and Lakhimpur districts was the tea-garden mortality the greater. In Nowgong the mortality of the

general population was nearly seven times greater than that of the gardens; in Darrang nearly two and a half times; but in Lakhimpur the coolies suffered death nearly fourteen times more than the general population. The Civil Surgeon of the last-named district believes that newly-imported cholera-infected batches spread the disease, but offers no proof. The comparative immunity of the tea gardens in the Nowgong district is attributed by the Civil Surgeon to the fact that all the gardens except two are remote from the river Kallang, to the banks of which the disease was for the most part confined; and to the adoption by the garden managers of early and active measures of sanitation and prevention, including in some cases the permanganating of the wells. In fact, half the garden deaths, 11 out of 22, occurred in the two gardens, Amluckie and Capanalla, which are near the Kallang, the number of gardens liable to inspection in the district being 35.

15. The ratio of mortality from cholera among immigrant tea coolies in steamers

Cholera on steamers and in riverside depôts.

Year.	Number of immigrants.	Number of deaths on steamers.	Number of deaths at depôts.	Total number of deaths.	Deaths per mille of immigrants.
1894 ...	30,086	31	86	117	3.9
1895 ...	34,801	89	119	208	6.0
1896 ...	42,384	282	411	693	16.4
1897 ...	66,952	371	750	1,121	16.7
1898 ...	33,762	26	58	84	2.5
1899 ...	24,449	21	51	72	2.9
1900 ...	44,534	177	351	528	11.9
1901 ...	22,242	18	40	58	2.6
1902 ...	24,344*	6†	17	23	0.9
1903 ...	26,808	8	36	44	1.6

* Information not available from Kamrup.

† Ditto ditto from Kamrup and Darrang.

and riverside depôts was lower than in any years of record except 1902, 1893, and 1895. The occurrence of low ratios so long ago is a warning not to be too ready to attribute low ratios nowadays to recent sanitary improvements. It will probably be found that a high ratio will occur occasionally in future years, as it did in 1900. The raised ratio in 1903 is coincident with increased mortality in certain districts, but with diminished mortality in the province as a whole.

16. The mortality from small-pox was unusually low, the only districts showing an

Small-pox.

District.	Census population of 1901.	Death-rates from small-pox.			
		1891-1900.	1901.	1902.	1903.
Cachar ...	414,781	0.28	0.20	2.71	1.06
Sylhet ...	2,241,848	0.31	1.13	2.34	0.15
Surma Valley ...	2,656,629	0.30	0.99	2.40	0.30
Goalpara ...	462,052	1.36	0.46	0.27	0.17
Kamrup ...	589,187	1.15	0.09	0.15	0.08
Darrang ...	337,313	0.72	0.54	0.08	0.09
Nowgong ...	261,160	1.23	0.05	0.16	0.52
Sibsagar ...	597,969	0.66	0.11	0.03	0.05
Lakhimpur ...	371,396	0.52	0.33	0.03	0.02
Brahmaputra Valley ...	2,619,077	0.94	0.25	0.12	0.13
Assam ...	5,275,706	0.62	0.62	1.26	0.21

increase being Darrang, Nowgong, and Sibsaigar. The ratios of the first and last were high only as compared with the ratios of the preceding year, and there was no marked epidemic. The mortality ratio of Nowgong, though lower than the decennial figure, was more than three times higher than the ratio of 1902, and more than ten times higher than that of 1901. The Civil Surgeon remarks that the disease "appears to have taken root in Nonoï, a hot-bed of obstruction to vaccination," and that many inhabitants of the district not only disbelieve in the protective efficacy of vaccination, but suspect it of producing small-pox. The table shows that, though Cachar is one of the districts in which there was a great decrease in small-pox, its small-pox mortality ratio remains nevertheless the highest in the province. Among towns, Hailakandi had the highest death-rate, and it is said to be visited by *Ganak* inoculators.

17. On the 16th of May a case of plague was detected in the *Kayahpati* of

Plague.

Dibrugarh, the diagnosis being initiated by Assistant Surgeon Atul Chandra Ray of the medical school. This was supposed to have been really the second case, and within the next few days two other cases were discovered. It had been noticed for a few days that rats were dying in great numbers. On the morning of the 18th the body of a dead rat was brought to the medical school, and from it, by bacteriological methods, the plague bacillus was obtained and identified. As the first cases and most of the others occurred in the foreign grain bazar, and as it was in the same neighbourhood that dead rats were found, the suspicion naturally arose that the outbreak was due to the importation of infected grain or rats, and the first measures taken were based on that supposition. In all,

37 cases with 28 deaths were recorded, the last case occurring on the 28th June and the last death on the 3rd July, and the disease did not appear in any other part of Assam during the year. None of the persons who died had been inoculated with the plague prophylactic. A special medical officer, Mr. Baron, was appointed to have charge of the preventive operations; vigilance committees were formed, not only in Dibrugarh but in all the larger towns in communication with it; and every endeavour was made to gain the sympathy and co-operation of the people, the result being that there was no popular opposition. Afterwards, Mr. Baron, with a disinfecting gang, visited Tezpur, Gauhati, and Dhubri, and there explained and demonstrated the methods of disinfection in granaries, etc., placed at his disposal by some of the more intelligent merchants.

18. Fever mortality was less than in the two years preceding, and the ratio was

Fevers.

District.	Census population of 1901.	Death-rates from fevers.			
		1891-1900.	1901.	1902.	1903.
Cachar ...	414,781	13'23	14'18	10'57	11'20
Sylhet ...	2,241,848	15'37	13'08	12'05	11'30
Surma Valley ...	2,656,629	15'04	13'24	12'33	11'28
Goalpara ...	462,052	29'26	29'70	27'54	28'48
Kamrup ...	580,187	22'95	16'07	16'42	16'99
Darrang ...	337,313	22'54	23'89	25'71	24'90
Nowgong ...	261,160	38'21	19'84	16'19	14'39
Sibsagar ...	597,069	10'58	12'73	9'95	9'88
Lakhimpur ...	371,396	9'05	10'60	9'19	10'20
Brahmaputra Valley ...	2,619,077	20'63	18'52	17'16	17'19
Assam ...	5,275,706	17'82	15'86	14'72	14'22

lower than that of the decennium. Even Darrang recorded a lowered mortality, which was not due to finer discrimination of *kalá-ásár*, because mortality from that was also reduced. On the other hand, the reduction in the Sylhet district was at least partly due to this change of diagnosis. Since the health of Nowgong improved, Goalpara has been the district of greatest fever mortality, Darrang coming next, and Sibsagar last. Every district except Darrang and Lakhimpur had a ratio lower than for the decennium; and the districts with higher ratios

than in the preceding year were Cachar, Goalpara, Kamrup, and Lakhimpur. Of all the towns of Assam, Golaghat registered much the highest fever mortality. The deaths from fevers showed two maxima, one in July and one in December. It seems hardly credible that any village should for a whole year have no death from "fever." Yet, in Table IX, Goalpara is the only district in which over 90 per cent. of the villages returned fever deaths. This indicates that the high fever mortality ratio of Goalpara district is due to more correct return rather than to greater unhealthiness.

19. Notwithstanding the increase of morbidity and mortality from *kalá-ásár* in the returns from the Sylhet district, there was a great reduction for Assam as a whole.

Kalá-ásár.

TABLE NO. I.

Showing the number of cases of *kalá-ásár* and malarial fevers treated during the past ten years in dispensaries in the districts of Sylhet, Goalpara, Kamrup, Darrang, and Nowgong.

District.	1894.		1895.		1896.		1897.		1898.		1899.		1900.		1901.		1902.		1903.	
	Kalá-ásár.	Malarial fever.	Kalá-ásár.	Malarial fever.	Kalá-ásár.	Malarial fever.	Kalá-ásár.	Malarial fever.	Kalá-ásár.	Malarial fever.	Kalá-ásár.	Malarial fever.	Kalá-ásár.	Malarial fever.	Kalá-ásár.	Malarial fever.	Kalá-ásár.	Malarial fever.	Kalá-ásár.	Malarial fever.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Sylhet ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1,803	46,452	2,108	40,017	547	39,268
Goalpara ...	10	11,093	24	11,082	11	13,074	...	12,035	...	10,792	...	8,372	...	10,744	14	13,085	4	11,779	4	14,796
Kamrup ...	984	7,437	841	5,194	820	8,202	747	9,164	143	9,353	90	8,505	47	7,441	19	9,070	23	8,662	14	11,071
Darrang ...	16	10,613	1,311	9,954	794	12,801	1,182	14,406	605	13,771	379	16,567	272	10,147	339	12,452	234	13,917	188	15,809
Nowgong ...	6,350	13,543	6,645	20,139	4,180	22,876	6,378	30,311	4,206	25,519	3,237	20,886	1,507	18,500	353	24,367	153	13,360	80	16,411
Total ...	7,859	57,103	8,681	46,767	5,814	56,956	8,307	65,916	5,551	58,915	3,712	45,530	1,886	46,812	2,579	105,416	2,570	87,935	813	97,355

The disease is at present most active in the northern Kachari mauzas of the Mangaldai subdivision of the Darrang district; and I understand that the hill tribes

beyond British territory have suffered severely. The total number of deaths in 1903 (Table IX) was 5,054. A severe outbreak is reported among the Lhota Nagas in the village of Serkha.

TABLE NO. II.

Showing the number of deaths from kalá-ázár registered during the last ten years in the districts of Sylhet, Goalpara, Kamrup, Darrang, and Nowgong.

District.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.
1	2	3	4	5	6	7	8	9	10	11
Sylhet ...	2	9	4	...	3	...	3	147	168	721
Goalpara ...	384	265	298	232	134	161	110	62	49	44
Kamrup ...	2,149	2,059	2,244	2,756	1,693	1,745	1,262	830	1,014	651
Darrang ...	1,992	2,477	2,471	3,597	4,113	4,101	2,979	2,446	3,391	2,657
Nowgong ...	8,585	11,037	10,588	12,012	10,515	8,192	4,661	2,346	1,697	960
Total ...	13,112	15,847	15,605	18,597	16,458	14,199	9,015	5,831	6,319	5,033

It will be noticed that the number of cases shown for 1903 in the first of these two tables is for every district much lower than the deaths shown in the second. The explanation is simple, and is suggested by the headings of the tables. The first table shows only cases which have been treated in dispensaries, the second all deaths reported from anywhere in the district. The tables, therefore, do not deal with the same classes of data, and should not be expected to show any agreement.

On the 22nd December, I received a telegram from Dr. Bentley, of the Borjuli tea garden, that he had discovered recently by splenic puncture in cases of *kalá-ázár* parasitic bodies similar to those described by Major Donovan of Madras. Dr. Bentley sent specimens to Major Donovan, who confirmed his opinion. Some typical cases of *kalá-ázár* and specimens of the parasites obtained from their spleens were also kindly demonstrated to me by Dr. Bentley. Similar bodies had been previously discovered in the spleens of chronic febrile cases of India and China by Leishman, Donovan, and Marchand. In a febrile case of disputed nature at Dibrugarh, in which the diagnosis *kalá-ázár* was upheld by Assistant Surgeon Atul Chandra Ray, a man of large *kalá-ázár* experience, splenic puncture was performed by Dr. Bentley, who succeeded in demonstrating the presence of the parasitic bodies to the Principal and staff of the medical school. There was no known source of infection at Dibrugarh, and the patient had come direct from Dacca, and had never been in Assam before. It seems to me that Dr. Bentley's discovery, following that of Donovan, gives a fresh basis for research into the nature and causation of *kalá-ázár* and chronic fevers in general.

20. In the province as a whole, and in each of the great valleys, dysentery and

Dysentery and diarrhoea.

District.	Census population of 1901.	Death-rates from dysentery and diarrhoea.			
		1891-1900.	1901.	1902.	1903.
Surma Valley—					
Cachar ...	414,781	4'01	2'68	2'59	2'43
Sylhet ...	2,241,848	3'02	1'80	1'96	1'73
Total ...	2,656,629	3'18	1'94	2'05	1'84
Brahmaputra Valley—					
Goalpara ...	462,052	0'63	0'29	0'19	0'20
Kamrup ...	580,187	1'16	0'84	1'14	1'23
Darrang ...	337,313	3'55	3'91	3'06	2'77
Nowgong ...	261,160	2'74	1'53	1'10	1'21
Sibsagar ...	597,969	4'19	3'90	3'32	3'17
Lakhimpur ...	371,396	5'27	4'72	4'55	4'50
Total ...	2,619,077	2'81	2'46	2'20	2'15
Assam ...	5,275,706	2'99	2'19	2'13	1'99

diarrhoea mortality was lower than in either of the two years preceding and the decennium. Of the individual districts, only Kamrup had a ratio higher than for any of those three periods, while only Goalpara and Nowgong had ratios higher than in 1902. As usual, the ratios of Lakhimpur and Sibsaagar were highest, and those of Darrang and Cachar high. For the general population also, excluding tea-garden coolies, the highest ratios were those of Lakhimpur, Sibsaagar, and Darrang;

so that the high ratios in those districts are not entirely due to the ravages of bowel complaints in tea gardens. Both civil surgeons and European garden doctors are of opinion that the return of dysentery from tea gardens is in its way quite as inaccurate as that from villages. Apparently, the *gaonbura* tends to return too many deaths under "fever," the garden baboo too many under "dysentery." This is supported by the fact that fever mortality in the general population in 1902 was 3·6 times greater than among the garden coolies, 3·7 times in 1901, and 3·5 times in 1900. Dr. Warren Crowe, of Chhota Pupui, took, as far as possible, the history of every case registered as dysentery during the year, and found that perhaps one in every ten died of acute dysentery, the other nine suffering almost without exception from anæmia and dropsy, and developing dysenteric symptoms during the last few days or week of their lives, and is of opinion that such cases should rather be returned as *ankylostomiasis*. The experience of Dr. Dodds Price, of Salonah, similar to that of jail medical officers, is that most coolies who have suffered from any disease which tends to anæmia succumb to a discharge from the bowel lasting ten or twelve days or longer before death ensues; and that, though this is merely a mode of dying, such cases are entered by the doctor baboos as dysentery. Major Hall also considers that many of the cases registered as dysentery should have been placed under the heading "*ankylostomiasis*." Again, in a certain garden Major Hall found that out of 75 deaths really due to pneumonia, 36 had been returned as pneumonia, 33 as dysentery, 5 as diarrhoea, and 1 as dropsy. It is the experience of Dr. Glover of Scottpore, that many deaths due to pneumonia and *ankylostomiasis* are entered under dysentery and diarrhoea, though the latter were merely terminal symptoms. Dr. Bentley of Borjuli considers that dysentery and diarrhoea rank third among the principal causes of death in gardens, anæmia and pneumonia usually taking first and second place respectively. Notwithstanding all this, there is evidently among medical officers, official and non-official, a belief which, after a study of the statistics and reports, I share, that there is greater mortality from dysentery in tea gardens than elsewhere. The reasons assigned which seem to me to be the most valid are as follows. Coolies are strangers imported in adult life to new surroundings, new food, new climate, new work, new habits; and dysentery is more common in newcomers than in old resident coolies. Coolies are of low castes, and of careless and dirty habits as to cleanliness of water, food, clothes; and they are, being drawn from the poorer and often half-starved classes of their country, by nature more liable to bowel complaints than the well-to-do villagers of Assam. Many coolies stint themselves in both quantity and quality of food for the purpose of saving money. They are often hurried and careless in their cooking, especially in the busy season, and sometimes cook at one time for four or five days, thus giving their food opportunity to ferment, decompose, or become contaminated. Many of them will eat tainted flesh without hesitation. They sometimes spend too much on alcohol, and so get less food; or, being drunk, lie about exposed to chill. They defecate among the tea bushes, and carry infection on their feet or hands; and they are sometimes earth-eaters. They are not opium-eaters, like the Assamese. They lead a machine life, having to work whether they feel inclined or not; and they have to work regardless of exposure, the busiest season being in the rains. Some of them are exposed to a high temperature in the tea-house, and then go out into the cold and wet. The density of population is really greater in the lines than in a native village, and there is a want of segregation and disinfection.

21. The registration of respiratory diseases, only in force for two years, is still very imperfect. No deaths at all were returned under this head from four districts.

Respiratory diseases.

22. The mortality ratio from injuries differs but little from the average. Accidents

Injuries.

	1891-1900.	1903.
Surma Valley ...	0·37	0·37
Brahmaputra Valley ...	0·32	0·29
Assam ...	0·34	0·33

contributed most to this heading, and next damage inflicted by snakes and wild beasts. There is no record to show whether any of the accidents occurred in connexion with the machinery employed in tea-houses. The greatest proportion was returned from the Sylhet district.

23. There was again a rise in the ratio of deaths registered under the head of All other causes. Among the 42,860 deaths, 1,941 were from anæmia and 461 from *ankylostomiasis*, which are headings of great importance in Assam. Lakhimpur and Cachar returned the highest numbers under *ankylostomiasis*; and Lakhimpur, Sylhet, Sibsagar, and Cachar under anæmia.

All other causes.

SECTION VII.

VACCINATION.

(Published separately.)

SECTION VIII.

SANITARY WORKS.

24. No one very large sanitary work was undertaken in 1903; and there is at present no provincial scheme of any importance under consideration. During the touring season I inspected the sanitary condition of all the headquarter stations and of nearly all the subdivisional towns, and in some left behind a written criticism for the information and guidance of those in charge of the local sanitation. The amount spent on conservancy varied from 41·06 per cent. of total income in the urban areas of Sylhet to 24·57 in those of Sibsagar.

25. Excluding the towns of Hailakandi, Sunamganj, Karimganj, and Maulvi Bazar, which have no separate income of their own, the aggregate actual income of the municipalities, stations, unions, and towns in Assam during the year under report was Rs. 2,36,623, and the expenditure on sanitary works was Rs. 1,84,775, or 73·07 per cent. of the total income, against 75·77 per cent. in 1902. The expenditure on direct sanitation, which excludes Rs. 57,665 spent on roads and bridges, was Rs. 1,27,120, or 49·68 per cent. of the total income, against 53·81 in the previous year. Rupees 2,577 were expended on vaccination, Rs. 11,083 on drainage, Rs. 19,286 on water-supply, Rs. 72,965 on conservancy, and Rs. 21,094 on other sanitary works. Golaghat Union spent the greatest percentage on direct sanitation, 85·78 per cent. Next to came the municipality of Tezpur and the town of Mangaldai, with percentages of 79·47 and 77·73, respectively. The Silchar, Gauhati, and Nowgong municipalities devoted more than half of their income to this object. All the other municipal bodies, except the town of North Lakhimpur, laid out more than one-third of their income on sanitation proper. The rate for the town of Lakhimpur was only 15·26, being the lowest proportion spent by any public body on sanitary works.

26. *Silchar Local Board*.—A sum of Rs. 1,375 was spent in constructing, repairing and improving a number of tanks and in repairing a latrine.

Hailakandi Local Board.—Nothing was spent on village sanitation.

North Sylhet Local Board.—The total expenditure on village sanitation amounted to Rs. 4,483. Of this, Rs. 3,820 were devoted to digging and improving a number of tanks; Rs. 493 to conservancy; and the rest to the improvement of village sites and "other objects calculated to improve the health, safety, comfort, and convenience of the rural population."

Karimganj Local Board.—The board resolved to excavate seven tanks at places where the want of water-supply was keenly felt. The work of five tanks is in progress.

South Sylhet Local Board.—A sum of Rs. 6,901 was laid out for water-supply by excavating two new tanks, completing those undertaken in 1902, and fencing 19 others with barbed wire. The old tanks and wells were maintained.

Habiganj Local Board.—Some tanks were reclaimed, some repaired, and some others provided with barbed wire fencing. The total expenditure was Rs. 2,424.

Sunamganj Local Board.—A sum of Rs. 1,517 was expended in digging three tanks, two in the Deraï and one in the Dharmapasa registration circle. A further sum of Rs. 1,170-7-9 was spent in repairing a number of village roads.

Dhubri Local Board.—Two pucca wells were constructed and completed at a cost of Rs. 983. A sum of Rs. 491 was spent for the up-keep of the existing wells.

Goalpara Local Board.—A sum of Rs. 1,963 was laid out for clearing jungle, executing annual repairs to old wells, and constructing two masonry wells.

Gauhati Local Board.—Repairs were executed to a large number of tanks, wells, drains, and market-sheds at a total cost of Rs. 2,059.

Barpeta Local Board.—This board spent Rs. 457 in repairing pucca wells and tubes, in sinking two earthen ring wells, and in constructing market-sheds.

Tespur Local Board.—Drainage was instituted and old drains cleared out in different market-places and other places at a cost of Rs. 253. Market-sheds were repaired and where necessary renewed; and an establishment of two sweepers was maintained to sweep market-places.

Mangaldai Local Board.—A sum of Rs. 57 was spent in the improvement of water-supply and drainage.

Nowgong Local Board.—This board incurred an outlay of Rs. 799 for repairing the existing *pucca* wells, 33 in number.

Sibsagar Local Board.—Two tanks were dug at a total cost of Rs. 500. A sum of Rs. 1,224 was spent in repairing the 43 existing tanks, two *bunds*, two market-sheds, and a drain. A further sum of Rs. 77 was spent on the purchase of barbed wire to fence the eleven existing tanks.

Jorhat Local Board.—An outlay of Rs. 1,387 was incurred in digging two new tanks, in improving two others, and in repairing the existing wells and tanks. A further sum of Rs. 578 was spent in constructing and repairing *bunds* and market sheds.

Golaghat Local Board.—Rupees 479 were spent in repairing the existing tanks.

Dibrugarh Local Board.—This board spent Rs. 995 in constructing two *pucca* wells, in re-constructing the platform of a well, and in improving certain market-places and drains. An expenditure of Rs. 4,119 was incurred for repairs to wells, market-places, and drains.

North Lakhimpur Local Board.—Three *pucca* wells and two *pucca* platforms were constructed and three ring wells repaired, at a total cost of Rs. 1,985.

27. In the Goalpara, Sibsaagar, and Lakhimpur districts the sanitary books were submitted regularly. The Civil Surgeon of Lakhimpur suggests "that some of the books may be made over to schoolmasters and hospital assistants of the localities, and that the executive officers should take action on the remarks of the civil surgeon, otherwise it is useless to submit these books to the civil surgeon." There was an improvement in Sylhet in the matter of the submission of the books. The greatest neglect was shown in the districts of Kamrup and Darrang. The Civil Surgeons of Sylhet, Darrang, and Nowgong express the opinion that these books are of no practical value.

SECTION IX.

GENERAL REMARKS.

28. In the Surma Valley, the total number of packages sold was 678, against 707 in 1902; in the Brahmaputra Valley 345, against 265; and in the Khasi and Jaintia Hills 524, against 462. In the whole province the sale increased by 113 packages. The question of how to increase the sale is under consideration. In all the districts except one increase or decrease of quinine sale accompanied increase or decrease of fever mortality.

29. Some municipalities and local boards considered the question of forming mosquito brigades, but it was allowed to drop, chiefly on account of inability to provide the requisite funds. The local conditions are not favourable to the establishment and success of mosquito brigades. At military stations, especially Kohima, real efforts were made, but reduction of fever is not yet strikingly apparent.

30. The sanitary arrangements of coolie camps of over 200 strength on the Assam-Bengal Railway were from time to time inspected by the civil surgeons. Of the ten coolie camps, seven were in the district of Cachar, the civil surgeon of which reported favourably on the medical and sanitary arrangements. The Civil Surgeon of Sibsaagar inspected the contractors' camps at Santok and Dikhu ballast siding, and found the arrangements as satisfactory as could be expected under the circumstances. But his report on the Katalguri coolie camp, which belonged to a contractor, and was not directly under the railway, was unfavourable. The matter was brought to the notice of the railway authorities, in order that they might bring pressure to bear upon the contractor.

The Dhubri-Gauhati extension of the Eastern Bengal State Railway has been placed under the administrative medical charge of the Civil Surgeon of the Goalpara District, and government has lately sanctioned the replacement of a Bengal by an Assam medical staff so as to have the whole extension under provincial medical control. At my inspection, I saw that Captain Anderson was making earnest efforts to secure sanitary surroundings and medical attendance for the coolies.

The arrangements for the coolies on the Dwara-Tharia line were inspected by the Civil Surgeon of the Khasi and Jaintia Hills, and found on the whole satisfactory.

31. No meetings of the Sanitary Board were held. The Sanitary Commissioner was consulted unofficially on all measures relating to sanitation.

Sanitary Board.

32. In conclusion, I desire to bear witness to the good work done by my head clerk, Babu Ram Chandra Datta, and my other clerks, and to thank them for the care and trouble taken in compiling the tables and figured statements attached to this report.

Shillong,

The 30th April 1904.

DAVID WILKIE, Colonel, I.M.S.,

Principal Medical Officer and Sanitary
Commissioner, Assam.

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- STATEMENT NO. II.—Showing the births and deaths in the province of Assam during the year 1903.
- STATEMENT NO. III.—Deaths registered in the province of Assam during each month of the year 1903.
- STATEMENT NO. IV.—Deaths registered according to age in the province of Assam during the year 1903.
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Annual Form No. I.—Statement showing the Births registered

1	2	3			4		
No.	District.	Population according to the census of 1901.			Number of births registered.		
		Male.	Female.	Total.	Male.	Female.	Total.
	SURMA VALLEY.						
1	Cachar	216,806	197,975	414,781	7,407	7,065	14,472
2	Sylhet	1,141,060	1,100,788	2,241,848	44,047	41,505	85,552
	Total	1,357,866	1,298,763	2,656,629	51,454	48,570	100,024
	BRAHMAPUTRA VALLEY.						
3	Goalpara	242,685	219,367	462,052	10,232	9,737	19,969
4	Kamrup	292,869	296,318	589,187	10,038	9,514	19,552
5	Darrang	176,030	161,283	337,313	6,092	5,800	11,892
6	Nowgong	132,995	128,165	261,160	4,845	4,340	9,185
7	Sibsagar	316,985	280,984	597,969	8,786	7,847	16,633
8	Lakhimpur	199,359	172,037	371,396	5,430	4,984	10,414
	Total	1,360,923	1,258,154	2,619,077	45,423	42,222	87,645
	Total for the Province	2,718,789	2,556,917	5,275,706	96,877	90,792	187,669

Annual Form No. II.—Statement showing the Births and

1	2	3	4	5			6		7		
No.	District.	Area, in square miles.	Average population per square mile.	Population, census (1901).			Births.		Number of deaths registered.		
				Male.	Female.	Total.	Total number.	Birth-rate per 1,000 of population.	Male.	Female.	Total.
	SURMA VALLEY.										
1	Cachar	2,063	201	216,806	197,975	414,781	14,472	34.89	5,817	5,769	11,586
2	Sylhet	5,443	412	1,141,060	1,100,788	2,241,848	85,552	38.16	31,333	29,472	60,805
	Total	7,506	354	1,357,866	1,298,763	2,656,629	100,024	37.65	37,150	35,241	72,391
	BRAHMAPUTRA VALLEY.										
3	Goalpara	3,961	117	242,685	219,367	462,052	19,969	43.22	7,987	7,269	15,256
4	Kamrup	3,858	153	292,869	296,318	589,187	19,552	33.19	7,181	6,213	13,394
5	Darrang	3,418	99	176,030	161,283	337,313	11,892	35.26	6,764	6,086	12,850
6	Nowgong	3,843	68	132,995	128,165	261,160	9,185	35.17	3,536	3,438	7,024
7	Sibsagar	4,996	122	316,985	280,984	597,969	16,633	27.81	5,700	5,200	10,900
8	Lakhimpur	4,207	88	199,359	172,037	371,396	10,414	28.04	4,245	4,009	8,254
	Total	24,283	108	1,360,923	1,258,154	2,619,077	87,645	33.46	35,463	32,215	67,678
	Total for the Province ...	31,789	166	2,718,789	2,556,917	5,275,706	187,669	35.57	72,613	67,456	140,069*

* Those born dead are not included in

in the Province of Assam during the year 1903.

5			6	7	8	9		
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.
17'86	17'03	34'89	104'81	6'96	...	16'80	16'25	33'05
19'65	18'51	38'16	106'12	11'04	...	18'50	17'35	35'85
19'37	18'28	37'65	105'94	10'40	...	18'24	17'17	35'41
22'15	21'07	43'22	105'08	10'20	...	21'46	20'25	41'71
17'04	16'15	33'19	105'51	10'46	...	16'05	14'89	30'94
18'06	17'20	35'26	105'03	...	2'84	16'09	15'06	31'15
18'55	16'62	35'17	111'64	8'27	...	14'61	13'41	28'02
14'69	13'12	27'81	111'97	9'58	...	12'86	11'70	24'56
14'62	13'42	28'04	108'95	5'82	...	13'22	12'16	25'38
17'34	16'12	33'46	107'58	7'62	...	15'74	14'59	30'33
18'36	17'21	35'57	106'72	9'02	...	17'00	15'90	32'90

Deaths in the Province of Assam during the year 1903.

8	9											10		
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 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.
100'83	1'34	1'06	...	11'20	2'43	0'20	0'37	11'33	26'83	29'14	27'93	27'82	26'86	27'36
106'31	1'03	0'15	...	11'30	1'73	0'09	0'37	12'45	27'46	26'77	27'12	33'34	30'62	32'01
105'42	1'08	0'30	...	11'28	1'84	0'10	0'37	12'28	27'36	27'13	27'25	32'46	30'05	31'28
109'88	1'04	0'17	...	28'48	0'20	...	0'33	2'80	32'91	33'14	33'02	35'52	35'30	35'42
115'58	1'83	0'08	...	16'99	1'23	...	0'30	2'30	24'52	20'97	22'73	27'19	23'18	25'17
111'14	3'76	0'09	...	24'90	2'77	...	0'33	6'25	38'43	37'72	38'10	39'80	37'93	38'90
104'30	6'73	0'52	...	14'39	1'21	0'02	0'27	3'76	26'96	26'83	26'90	43'81	37'39	40'66
109'62	1'21	0'05	...	9'88	3'17	0'27	0'25	3'40	17'98	18'51	18'23	20'38	20'80	20'58
105'89	0'49	0'02	0'08	10'20	4'50	...	0'28	6'65	21'29	28'30	22'22	23'40	23'83	23'60
110'08	2'10	0'13	0'01	17'19	2'15	0'06	0'29	3'91	26'06	25'61	25'84	29'79	28'19	29'02
107'64	1'58	0'21	0'01	14'22	1'99	0'08	0'33	8'13	26'71	26'38	26'55	31'12	29'13	30'16

this or any of the other statements.

Annual Form No. III.—Deaths registered in the Province

1	2							
No.	District.			January.	February.	March.	April.	May.
	SURMA VALLEY.							
1	Cachar	...	...	1,065	722	725	954	1,064
2	Sylhet	...	...	6,129	4,416	4,315	4,233	4,843
	Total	...	...	7,194	5,138	5,040	5,187	5,907
	BRAHMAPUTRA VALLEY.							
3	Goalpara	...	...	1,105	1,119	1,224	1,247	1,373
4	Kamrup	...	...	923	895	901	1,248	1,418
5	Darrang	...	...	898	745	899	1,052	1,312
6	Nowgong	...	...	364	343	335	420	523
7	Sibsagar	...	...	655	650	748	873	983
8	Lakhimpur	...	...	526	499	486	590	619
	Total	...	...	4,451	4,251	4,593	5,430	6,228
	Total for the Province	...	...	11,645	9,389	9,633	10,617	12,135
	Ratio of deaths per 1,000 in each month	...	...	2.21	1.78	1.83	2.01	2.30

Annual Form No. IV.—Deaths registered according to Age

1	2		3		4		5		6	
No.	District.		Under 1 year.		1 year and under 5.		5 and under 10.		10 and under 15.	
			Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
	SURMA VALLEY.									
1	Cachar	...	1,477	1,356	712	707	350	284	243	197
2	Sylhet	...	9,980	8,715	3,043	3,232	1,816	1,475	1,464	1,057
	Total	...	11,457	10,071	3,755	3,939	2,166	1,759	1,707	1,254
	BRAHMAPUTRA VALLEY.									
3	Goalpara	...	2,551	2,350	1,111	1,177	515	460	286	209
4	Kamrup	...	1,442	1,350	1,056	1,101	634	492	441	295
5	Darrang	...	1,227	1,117	970	905	477	402	331	248
6	Nowgong	...	574	500	568	606	439	364	279	216
7	Sibsagar	...	948	762	964	858	378	340	253	210
8	Lakhimpur	...	579	499	667	676	254	222	156	155
	Total	...	7,321	6,578	5,336	5,323	2,697	2,280	1,746	1,333
	Total for the Province	...	18,778	16,649	9,091	9,262	4,863	4,039	3,453	2,587
	Ratio per 1,000 living	...	194.73	170.27	31.51	30.54	11.68	9.90	11.09	10.47

of Assam during each month of the year 1903.

3							4
June.	July.	August.	September.	October.	November.	December.	Total deaths registered during the year.
1,188 4,175	1,148 4,860	1,003 4,453	849 4,988	1,002 5,715	873 6,053	993 6,625	11,586 60,805
5,363	6,008	5,456	5,837	6,717	6,926	7,618	72,391
1,609 1,532 1,548 532 1,032 644	1,663 1,377 1,255 809 912 717	1,196 1,005 1,154 728 931 778	1,076 985 953 536 998 841	1,023 1,040 1,005 653 1,048 845	1,245 1,031 990 934 931 972	1,376 1,059 1,039 847 1,139 737	15,256 13,394 12,850 7,024 10,900 8,254
6,897	6,733	5,792	5,389	5,614	6,103	6,107	67,678
12,260	12,741	11,248	11,226	12,331	13,029	13,815	140,069
2'32	2'41	2'13	2'13	2'34	2'47	2'62	26'55

in the Province of Assam during the year 1903.

7		8		9		10		11		12	
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.
208 1,476	446 2,428	628 3,236	1,133 4,659	762 2,936	658 2,361	529 1,858	311 1,221	341 1,828	279 1,360	567 3,696	398 2,964
1,684	2,874	3,864	5,792	3,698	3,019	2,387	1,532	2,169	1,639	4,263	3,362
265 334 263 195 230 152	341 316 290 216 308 258	587 655 797 395 574 701	698 734 1,002 580 921 1,001	785 781 1,010 403 783 798	549 644 879 349 726 612	581 724 808 338 636 468	401 493 565 287 445 302	522 644 562 239 583 298	444 465 439 173 365 199	784 470 319 156 351 172	640 323 239 147 265 85
1,439	1,729	3,709	4,936	4,560	3,759	3,555	2,493	2,848	2,085	2,252	1,699
3,123	4,603	7,573	10,728	8,258	6,778	5,942	4,025	5,017	3,724	6,515	5,061
15'34	20'50	16'13	20'96	18'97	19'66	23'13	20'02	35'96	31'35	64'28	50'95

Annual Form No. V.—Deaths registered according to Classes

1	2	3								
No.	District.	Population according to census of 1901.								
		Muhammadans.	Hindus.	Christians.	Other classes.	Total.				
SURMA VALLEY.										
1	Cachar	...	...	...	...	126,698	278,964	957	8,162	414,781
2	Sylhet	...	...	...	...	1,180,324	1,049,248	744	11,532	2,241,848
	Total	...	...	...	...	1,307,022	1,328,212	1,701	19,694	2,656,629
BRAHMAPUTRA VALLEY.										
3	Goalpara	...	...	...	...	128,388	203,696	3,495	126,473	462,052
4	Kamrup	...	...	...	...	53,701	407,363	1,479	126,644	589,187
5	Darrang	...	...	...	...	17,372	239,318	1,358	79,265	337,313
6	Nowgong	...	...	...	...	12,578	167,709	593	80,280	261,160
7	Sibsagar	...	...	...	...	24,878	529,480	2,489	41,122	597,969
8	Lakhimpur	...	...	...	...	11,925	333,484	3,112	22,875	371,396
	Total	...	...	...	...	248,842	1,881,050	12,526	476,659	2,619,077
	Total for the Province	...	...	...	...	1,555,864	3,209,262	14,227	496,353	5,275,706

Annual Form No. VI.—Deaths registered from different Causes in the

No.	District and town.	Population according to census of 1901.	Cholera.	Small-pox.	Plague.	Fever.	Dysentery and diarrhoea.	Respiratory diseases.	Suicide.	
									Male.	Female.
A.—DISTRICTS.										
SURMA VALLEY.										
1	Cachar	404,187	547	440	...	4,575	991	82	7	...
2	Sylhet	2,211,016	2,287	341	...	24,982	3,819	183	14	13
	Total	2,615,203	2,834	781	...	29,557	4,810	265	21	13
BRAHMAPUTRA VALLEY.										
3	Goalpara	452,028	451	79	...	13,035	69	...	1	1
4	Kamrup	566,710	1,056	46	...	9,695	634	...	17	10
5	Darrang	331,555	1,256	30	...	8,320	927	1	6	1
6	Nowgong	256,730	1,696	137	...	3,715	300	5	3	2
7	Sibsagar	586,999	721	28	...	5,784	1,842	160	13	1
8	Lakhimpur	358,671	176	3	...	3,595	1,618	...	18	4
	Total	2,552,693	5,356	323	...	44,144	5,390	166	58	19
	Total of Districts carried over	5,167,896	8,190	1,104	...	73,701	10,200	431	79	32

in the Province of Assam during the year 1903.

4					5				
Number of deaths registered.					Ratio of deaths per 1,000 of population.				
Mohammad-ans.	Hindus.	Christians.	Other classes.	Total.	Mohammad-ans.	Hindus.	Christians.	Other classes.	Total.
3,759	6,375	8	1,444	11,586	29.67	22.85	8.36	176.92	27.93
32,557	26,889	5	1,354	60,805	27.58	25.63	6.72	117.41	27.12
36,316	33,264	13	2,798	72,391	27.78	25.04	7.64	142.07	27.25
4,090	5,799	58	5,309	15,256	31.85	28.47	16.60	41.98	33.02
1,164	9,131	23	3,076	13,394	21.68	22.41	15.55	24.29	22.73
551	6,817	23	5,459	12,850	31.72	28.49	16.94	68.87	38.10
296	4,592	11	2,125	7,024	23.53	27.38	18.55	26.47	26.90
383	8,319	38	2,160	10,900	15.39	15.71	15.27	52.53	18.23
204	6,982	39	1,029	8,254	17.11	20.94	12.53	44.98	22.22
6,688	41,640	192	19,158	67,678	26.88	22.14	15.33	40.19	25.84
43,004	74,904	205	21,956	140,069	27.64	23.34	14.41	44.24	26.55

Districts and Towns of the Province of Assam during the year 1903.

10			11	12	13									
Injuries.			All other causes.	Total deaths from all causes.	Ratio of deaths per 1,000 of population.									
Wounding or accident.	Snake-bite or killed by wild beasts.	Total.			Cholera.	Small-pox.	Plague.	Fever.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	All other causes.	From all causes.	
													For the year.	Mean of previous five years.
128	14	149	4,622	11,406	1'35	1'09	...	11'32	2'45	0'20	0'37	11'44	28'22	27'37
710	81	818	27,628	60,058	1'03	0'15	...	11'30	1'73	0'08	0'37	12'50	27'16	31'98
838	95	967	32,250	71,464	1'08	0'30	...	11'30	1'84	0'10	0'37	12'33	27'32	31'27
101	44	147	1,210	14,991	1'00	0'17	...	28'84	0'15	...	0'32	2'68	33'16	35'46
104	37	168	1,241	12,840	1'86	0'08	...	17'11	1'12	...	0'30	2'19	22'66	24'85
73	29	109	2,026	12,669	3'79	0'09	...	25'09	2'80	...	0'33	6'12	38'22	38'80
43	22	70	932	6,855	6'61	0'53	...	14'47	1'17	0'02	0'27	3'63	26'70	40'71
109	18	141	1,927	10,603	1'23	0'05	...	9'85	3'14	0'27	0'24	3'28	18'06	20'38
68	6	96	2,338	7,826	0'49	0'01	...	10'02	4'51	...	0'27	6'52	21'82	23'18
498	156	731	9,674	65,784	2'10	0'13	...	17'29	2'11	0'06	0'29	3'79	25'77	28'88
1,336	251	1,698	41,924	137,248	1'59	0'21	...	14'26	1'98	0'08	0'33	8'11	26'56	30'09

Annual Form No. VI.—Deaths registered from different Causes in the

1	2	3	4	5	6	7	8	9	10	
No.	District and town.	Population according to census of 1901.	Cholera.	Small-pox.	Plague.	Fever.	Dysentery and diarrhoea.	Respiratory diseases.	Suicide	
									Male.	Female.
	Brought forward	5,167,896	8,190	1,104	...	73,701	10,200	431	79	32
	B.—TOWNS.									
	SURMA VALLEY.									
1	Silchar, district Cachar	9,256	8	...	...	56	15	...	...	...
2	Hailakandi, " "	1,338	...	1	...	13	3	...	...	...
3	Sylhet, " Sylhet	13,893	16	...	...	214	16	14	3	...
4	Karimganj, " "	5,692	1	...	...	53	21	...	...	...
5	Moulvi Bazar, " "	2,481	1	...	...	20	4	...	...	...
6	Habiganj, " "	5,236	8	...	...	45	12	...	...	...
7	Sunamganj, " "	3,530	2	...	...	22	...	...	...	...
	Total	41,426	36	1	...	423	71	14	3	...
	BRAHMAPUTRA VALLEY.									
8	Dhubri, district Goalpara	3,737	10	...	...	32	14	...	1	...
9	Goalpara, " "	6,287	19	...	...	62	10	...	...	...
10	Gauhati, " Kamrup	11,661	19	...	...	183	61	...	2	...
11	Barpeta, " "	10,816	2	...	...	133	29	...	...	...
12	Tezpur, " Darrang	5,047	10	...	...	69	7	...	...	...
13	Mangaldai, " "	711	1	...	...	10	2	...	...	...
14	Nowgong, " Nowgong	4,430	61	...	...	3	16	...	...	...
15	Sibsagar, " Sibsaigar	5,712	...	1	...	46	30	...	...	...
16	Jorhat, " "	2,899	...	...	...	23	17	...	2	...
17	Golaghat, " "	2,359	5	...	...	57	6	...	...	...
18	Dibrugarh, " Lakhimpur	11,227	7	5	28	161	52	...	...	...
19	North Lakhimpur, district "	1,498	...	...	...	31	1	...	...	...
	Total	66,384	134	6	28	880	245	...	5	...
	Total of Towns	107,810	170	7	28	1,303	316	14	8	...
	Total for the Province	5,275,706	8,360	1,111	28	75,004*	10,516	445	87	32

* Includes 5,054 deaths
† Includes 2,402 deaths from anæmia and ankylostomiasis

Annual Form No. VII.—Deaths registered from Cholera

1	2	3	4	5	6	7	8	9	10	11
No.	District.	Circles of registration.		Villages.		January.	February.	March.	April.	May.
		Number in each district.	Number from which deaths from cholera were reported.	Number in each district.	Number from which deaths from cholera were reported.					
	SURMA VALLEY.									
1	Cachar	8	7	380	60	58	8	33	37	125
2	Sylhet	22	21	8,704	564	621	141	91	183	285
	Total	30	28	9,084	624	679	149	124	220	410
	BRAHMAPUTRA VALLEY.									
3	Goalpara	12	10	1,461	59	10	38	1	137	181
4	Kamrup	9	9	1,718	190	34	10	24	111	290
5	Darrang	12	11	1,423	96	5	3	23	126	317
6	Nowgong	7	7	1,117	205	...	...	...	8	103
7	Sibsagar	9	6	2,109	78	2	7	10	74	192
8	Lakhimpur	7	4	1,123	163	3	1	6	29	19
	Total	56	47	8,951	791	54	59	64	485	1,102
	Total for the Province	86	75	18,035	1,415	733	208	188	705	1,512

Districts and Towns of the Province of Assam during the year 1903—concluded.

10			11	12	13									
Injuries.			All other causes.	Total deaths from all causes.	Ratio of deaths per 1,000 of population.									
Wounding or accident.	Snakebite or killed by wild beasts.	Total.			Cholera.	Small-pox.	Plague.	Fever.	Dysentery and diarrhoea.	Respiratory diseases.	Injuries.	All other causes.	From all causes.	
													For the year.	Mean of previous five years.
1,336	251	1,698	41,924	137,248	1'59	0'21	...	14'26	1'98	0'08	0'33	8'11	26'56	30'09
5	...	5	65	149	0'86	...	...	6'05	1'62	...	0'54	7'02	16'09	28'41
1	...	1	13	31	...	0'75	...	9'71	2'25	...	0'75	9'71	23'17	19'43
8	...	11	86	357	1'15	...	...	15'41	1'15	1'01	0'79	6'19	25'70	43'76
...	...	...	76	151	0'18	...	...	9'31	3'69	...	...	13'35	26'53	29'16
2	...	2	24	51	0'40	...	...	8'06	1'61	...	0'81	9'67	20'55	19'35
1	...	1	61	127	1'53	...	...	8'59	2'29	...	0'19	11'65	24'25	22'91
...	...	...	37	61	0'57	...	...	6'23	...	...	...	10'48	17'28	26'61
17	...	20	362	927	0'87	0'02	...	10'22	1'71	0'34	0'48	8'74	22'38	31'98
1	...	2	46	104	2'68	...	...	8'56	3'74	...	0'54	12'31	27'83	44'68
2	...	2	38	161	3'02	...	...	14'63	1'59	...	0'32	6'05	25'01	18'16
3	...	5	86	354	1'63	...	...	15'69	5'23	...	0'43	7'38	30'36	36'36
3	...	3	33	200	0'18	...	...	12'30	2'68	...	0'28	3'05	18'49	30'14
1	...	1	74	161	1'98	...	...	13'67	1'39	...	0'20	14'56	31'90	44'78
...	...	...	7	20	1'41	...	...	14'06	2'81	...	...	9'85	28'13	42'19
1	...	1	48	169	13'77	...	...	9'71	3'61	...	0'23	10'83	38'15	37'47
...	...	...	48	125	...	0'18	...	8'05	5'25	...	...	8'40	21'88	20'83
2	...	4	37	81	...	...	...	7'93	5'87	...	1'38	12'76	27'94	32'77
2	...	2	21	91	2'12	...	...	24'16	2'54	...	0'85	8'90	38'57	55'01
5	...	5	122	380	0'62	0'45	2'49	14'34	4'03	...	0'45	10'87	33'85	33'94
1	1	2	14	48	...	...	...	20'69	0'67	...	1'34	9'34	32'04	44'06
21	1	27	574	1,894	2'01	0'09	0'42	13'26	3'69	...	0'41	8'65	28'53	34'56
38	1	47	936	2,821	1'58	0'06	0'26	12'09	2'93	0'13	0'44	8'68	26'17	33'57
1,374	252	1,745	42,860†	140,069	1'58	0'21	0'01	14'22	1'99	0'08	0'33	8'13	26'55	30'16

from *kadd-andr*,
and 3 deaths from measles and chicken-pox.

in the Province of Assam during each month of the year 1903.

5							6			7			8
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.
							Male.	Female.	Total.	Male.	Female.	Total.	
137	85	29	23	8	7	5	294	261	555	1'36	1'32	1'34	2'29
106	43	81	246	133	223	162	1,199	1,116	2,315	1'05	1'01	1'03	2'25
243	128	110	269	141	230	167	1,493	1,377	2,870	1'10	1'06	1'08	2'26
36	13	12	3	1	4	44	253	227	480	1'04	1'03	1'04	2'03
297	210	36	19	12	8	26	582	495	1,077	1'09	1'07	1'08	3'73
375	207	95	63	18	26	9	685	582	1,267	3'89	3'61	3'76	2'88
154	316	272	110	183	359	252	844	913	1,757	6'35	7'12	6'73	5'36
276	90	17	29	18	7	4	376	350	726	1'19	1'25	1'21	1'08
20	18	18	24	26	15	4	93	90	183	0'47	0'52	0'49	1'41
1,158	854	450	248	258	419	339	2,833	2,657	5,490	2'08	2'11	2'10	2'55
1,401	982	560	517	399	649	506	4,326	4,034	8,360	1'59	1'58	1'58	2'40

Annual Form No. VIII.—Deaths registered from Small-pox in

1	2	3	4							
No.	District.	Circles of registration.		Villages.		January.	February.	March.	April.	May.
		Number in each district.	Number from which death & from small-pox were reported.	Number in each district.	Number from which deaths from small-pox were reported.					
	SURMA VALLEY.									
1	Cachar	8	5	380	79	143	62	69	61	41
2	Sylhet	22	13	8,704	148	83	44	59	65	44
	Total	30	18	9,084	227	226	106	128	126	85
	BRAHMAPUTRA VALLEY.									
3	Goalpara	12	4	1,461	26	...	2	9	9	14
4	Kamrup	9	4	1,718	22	5	8	4	7	5
5	Darrang	12	4	1,423	13	1	1	2	3	1
6	Nowgong	7	3	1,117	80	9	9	2	16	18
7	Sibsagar	9	3	2,109	5	2	...	1	1	7
8	Lakhimpur	7	4	1,123	5	2	...	...	...	...
	Total	56	22	8,951	151	19	20	18	36	45
	Total for the Province ...	86	40	18,035	378	245	126	146	162	130

Annual Form No. IX.—Deaths registered from Fevers in the

1	2	3	4							
No.	District.	Circles of registration.		Villages.		January.	February.	March.	April.	May.
		Number in each district.	Number from which deaths from fevers were reported.	Number in each district.	Number from which deaths from fevers were reported.					
SURMA VALLEY.										
1	Cachar	8	8	380	292	371	299	283	367	396
2	Sylhet	22	22	8,704	6,326	2,262	1,722	1,711	1,724	1,739
	Total	30	30	9,084	6,618	2,633	2,021	1,994	2,091	2,135
BRAHMAPUTRA VALLEY.										
3	Goalpara	12	12	1,461	1,411	1,015	957	1,104	948	1,019
4	Kamrup	9	9	1,718	1,375	679	710	714	978	926
5	Darrang	12	12	1,423	1,272	661	569	701	695	769
6	Nowgong	7	7	1,117	721	260	256	245	304	311
7	Sibsagar	9	9	2,109	700	357	344	411	491	469
8	Lakhimpur	7	6	1,123	723	244	235	200	263	277
	Total	56	55	8,951	6,202	3,216	3,071	3,375	3,679	3,771
	Total for the Province ...	86	85	18,035	12,820	5,849	5,092	5,369	5,770	5,906

* Includes 5,054

the Province of Assam during each month of the year 1903.

5							6			7		8			9
June.	July.	August.	September.	October.	November.	December.	Total.			Number of these deaths among children.		Total ratio of deaths per 1,000 of population.			Mean ratio per 1,000 of previous five years.
							Male.	Female.	Total.	Under 1 year.	1 to 10 years.	Male.	Female.	Total.	
35 22	10 15	2 6	2 1	... ...	3 ...	13 2	222 176	219 165	441 341	89 55	140 170	1'02 0'15	1'11 0'15	1'06 0'15	0'59 0'79
57	25	8	3	...	3	15	398	384	782	144	310	0'29	0'30	0'30	0'76
17 2 6 28 0 2	9 4 4 14 6 ...	7 2 1 4 1 ...	4 4	1 2 1 16 4 ...	1 1 ... 9 1 2	6 6 10 8 ... 2	43 25 19 68 13 4	36 21 11 69 16 4	79 46 30 137 29 8	7 11 9 37 4 3	20 18 13 77 18 1	0'18 0'09 0'11 0'51 0'04 0'02	0'16 0'07 0'08 0'54 0'06 0'02	0'17 0'08 0'09 0'52 0'05 0'02	0'27 0'30 1'25 2'32 0'19 0'11
61	37	15	8	24	14	32	172	157	329	71	147	0'13	0'13	0'13	0'57
118	62	23	11	24	17	47	570	541	1,111	215	457	0'21	0'21	0'21	0'66

Province of Assam during each month of the year 1903.

5							6			7			8
June.	July.	August.	September.	October.	November.	December.	Total.			Total ratio of deaths per 1,000 of population.			Mean ratio per 1,000 for previous five years.
							Male.	Female.	Total.	Male.	Female.	Total.	
483 1,981	568 2,502	472 2,132	315 2,077	392 2,528	294 2,438	404 2,520	2,427 13,410	2,217 11,926	4,644 25,336	11'19 11'75	11'20 10'83	11'20 11'30	11'71 14'27
2,464	3,070	2,604	2,392	2,920	2,732	2,924	15,837	14,143	29,980	11'66	10'89	11'28	13'87
1,413 993 853 259 427 249	1,523 953 788 352 463 348	1,034 775 725 347 581 371	958 756 592 285 573 366	905 801 633 308 579 380	1,111 854 748 402 518 487	1,172 872 665 429 697 367	6,836 5,334 4,514 1,970 3,192 1,983	6,323 4,677 3,885 1,788 2,718 1,804	13,159 10,011 8,399 3,758 5,910 3,787	28'17 18'21 25'64 14'81 10'07 9'95	28'82 15'78 24'09 13'95 9'67 10'49	28'48 16'99 24'90 14'39 9'88 10'20	29'40 17'37 24'93 27'85 10'84 16'19
4,194	4,427	3,833	3,530	3,606	4,120	4,202	23,829	21,195	45,024	17'51	16'85	17'19	19'00
6,658	7,497	6,437	5,922	6,526	6,852	7,126	39,666	35,338	75,004*	14'59	13'82	14'22	16'42

deaths from kala-dar.

Annual Form No. X.—Deaths registered from Dysentery and Diarrhœa

1	2			3		4						
No.	District.			Circles of registration.		Villages.		January.	February.	March.	April.	May.
				Number in each district.	Number from which deaths from dysentery and diarrhoea were reported.	Number in each district.	Number from which deaths from dysentery and diarrhoea were reported.					
SURMA VALLEY.												
1	Cachar	...	...	8	8	380	125	62	49	42	118	119
2	Sylhet	...	...	22	20	8,704	2,266	383	278	254	315	528
	Total	...	...	30	28	9,084	2,391	445	327	296	433	647
BRAHMAPUTRA VALLEY.												
3	Goalpara	...	...	12	11	1,461	39	2	2	1	10	17
4	Kamrup	...	...	9	9	1,718	279	52	32	41	45	103
5	Darrang	...	...	12	11	1,423	236	41	39	42	54	96
6	Nowgong	...	...	7	6	1,117	260	15	14	28	22	20
7	Sibsagar	...	...	9	8	2,109	374	107	126	113	121	161
8	Lakhimpur	...	...	7	6	1,123	672	93	57	82	109	128
	Total	...	...	56	51	8,951	1,860	310	270	307	361	525
	Total for the Province	...	...	86	79	18,035	4,251	755	597	603	794	1,172

in the Province of Assam during each month of the year 1903.

5							6			7			8
June.	July.	August.	September.	October.	November.	December.	Total.			Ratio of deaths per 1,000 of population.			Mean ratio per 1,000 for previous five years.
							Male.	Female.	Total.	Male.	Female.	Total.	
124	86	85	88	88	75	73	530	479	1,009	2'44	2'42	2'43	3'01
282	276	265	244	347	331	369	2,055	1,817	3,872	1'80	1'65	1'73	2'33
406	362	350	332	435	406	442	2,585	2,296	4,881	1'90	1'77	1'84	2'44
8	12	6	1	8	9	17	59	34	93	0'24	0'15	0'20	0'33
126	82	65	61	49	35	33	423	301	724	1'44	1'02	1'23	1'09
124	100	100	115	108	45	72	493	443	936	2'80	2'75	2'77	3'60
20	48	30	30	28	30	31	172	144	316	1'29	1'12	1'21	1'49
163	161	169	188	207	176	203	973	922	1,895	3'07	3'28	3'17	4'27
172	164	156	193	169	200	148	903	768	1,671	4'53	4'46	4'50	5'30
613	567	526	588	569	495	504	3,023	2,612	5,635	2'22	2'08	2'15	2'68
1,019	929	876	920	1,004	901	946	5,608	4,908	10,516	2'06	1'92	1'99	2'56

SHILLONG : Printed and published by E. HILL, Press Superintendent, Assam, at the Secretariat Printing
Office: (Genl.) No, 81-328+1-6-6-1904.

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Resolution on the Sanitary Report of Assam for 1903.

Extract from the Proceedings of the Chief Commissioner of Assam in the General Department, No. 5719G, dated Shillong, the 25th June 1904.

Read—

The Sanitary Report of the Province of Assam for 1903.

RESOLUTION.

THE year 1903 was healthy, the death-rate being considerably less than the average of previous years. The rainfall was seasonal and regularly distributed, and these climatic conditions may perhaps be connected with the general healthiness of the year. The registered death-rate was 25.55 per mille, compared with 29.01 in 1902, and 33.90 for the five years ending 1901. The registered birth-rate rose from 34.21 in 1902 to 35.57, the average for the five years ending 1901 being 32.21. The higher birth-rate suggests an improvement in registration, which is, however, still very defective.

2. The recorded death-rate in municipal areas, where registration is compulsory, was 26.17 per thousand, compared with 28.52 in 1902, and the birth-rate, 28.24, against 27.43. There appears to have been some improvement in the registration of births in these areas, and the lower recorded death-rate may perhaps be attributed to the comparative healthiness of the year. The town of Barpeta recorded an unusually high birth-rate, 48.45 per thousand. The Sanitary Commissioner reports that there is no foundation for the theory that women resort to Barpeta from other places for their accouchment, and that the high birth-rate there is due to its being the only town in the province where the female population is in excess of the male. Karimganj, Sunamganj, Sibsagar, and Dibrugarh also recorded high birth-rates. In Tezpur, Silchar, Sylhet, and Dhubri, registration was very defective. The work has evidently been grossly neglected in Silchar, where, for the second year in succession, there was no prosecution for failure to report vital occurrences, although special attention was drawn to the matter in the Chief Commissioner's Resolution on the Sanitary Report for 1902. The Chief Commissioner has lately instituted enquiries to ascertain whether registration in towns would not be improved were the people permitted to make reports through the agency of town chaukidars, gaonburas, or the conservancy staff, instead of being put to the trouble of reporting at the police station.

3. The registered birth-rate on tea gardens was 28.33, nearly the same as that of towns, and seems to point to defective registration. It was especially low in Kamrup (16.30) and Nowgong (17.77). The death-rate reported for all tea gardens was 24.06, the correctness of which figure is equally open to question. The registered birth-rate for rural areas was 35.73. After careful consideration of the results of the last census, the Chief Commissioner has come to the conclusion that 45 per thousand may be taken as the standard birth-rate for the province as a whole. The recorded birth-rate for the year in Goalpara was 43.22, which may be regarded as approximately accurate. The next highest rate was that of Sylhet, 38.16. The great fall in the Sylhet death-rate, from 33.98 to 27.16, is probably in part the result of a healthier year, but the figures must be far below the truth. In Darrang the comparatively high recorded death-rate is doubtless due to *kalá-ázár*, but an increase in the birth-rate appears also to indicate improved registration. In other districts it does not appear to have improved much, and the statistics are so obviously faulty that no inference can be drawn from them. In the upper districts of the Assam Valley the only agency for registration is that of gaonburas, who have hitherto received no remuneration for their services, but there does not seem to be any reason why recorded birth and death-rates should be so low in Cachar, where there is a regular force of paid village chaukidars. With the sanction of the Government of India, the Chief Commissioner has recently decided that the services of gaonburas shall in future be remunerated by an annual remission of land revenue not exceeding eight rupees. Mr. Fuller hopes that this measure may lead to better registration of vital statistics in the Assam Valley. He is at present engaged in an examination of the procedure and machinery employed with a view to its improvement and simplification in matters of detail.

4. There was a severe epidemic of cholera in the Nowgong district, which affected the villages along the Kalang river and raised the district rate of mortality from this cause to the high figure of 6.73 per mille. In Sylhet, on the other hand, it fell from 3.93 to 1.03. The mortality from small-pox was unusually low, giving a rate of 0.21 per 1,000, against 1.26 in the preceding year. The disease was most prevalent in Cachar and Nowgong. The Goalpara district shows the highest death-rate from fevers, 28.48, but this, as Colonel Wilkie says, is probably due to registration being more accurate than in other districts. Darrang came next, with a ratio of 24.90, which reflects the prevalence of *kalá-ázár*. This disease is most active in the Kachari mauzas north of the Mangaldai subdivision. The Chief Commissioner regrets to hear that an outbreak is reported from the Naga Hills. In Sylhet the figures of cases of *kalá-ázár* treated at the dispensaries show a marked decrease, and the increase of deaths from this disease reported is evidently due to a change of diagnosis. An event of interest was the discovery, by Dr. Bentley of the Borjuli tea estate, of parasitic bodies in the spleens of *kalá-ázár* subjects, similar to those found by Major Donovan in chronic febrile cases in Madras. The death-rate from diarrhoea and dysentery fell from 2.13 in 1902 to 1.99, the mortality being highest in the Lakhimpur and Sibsagar districts, in which the tea-garden population bears a higher proportion to total than in other districts of the Assam Valley. In paragraph 4 of the Resolution on the Sanitary Report for 1902 the Sanitary Commissioner was requested to make further enquiry as to the correct explanation of the fact that the mortality from diarrhoea and dysentery was higher on tea gardens than among the general population, and it was subsequently suggested by the Government of India that the ages and sexes of all persons belonging to the communities regarding which the enquiry was to be made should be accurately recorded, together with the ages and sexes of those among them dying from dysentery. After consultation with Civil Surgeons and the Medical Officers of tea gardens, however, the Sanitary Commissioner reported that accurate information on the subject was practically unattainable, dysentery being often shown in the tea garden returns as the cause of death in cases where it was really due to other diseases, merely because dysenteric symptoms developed in the final stage. At the same time, it seems probable that, for the reasons given in the report, dysentery is actually more prevalent on tea gardens than elsewhere.

5. During the year plague made its first appearance in the province at Dibrugarh, the outbreak lasting from the 16th May to the 3rd July, during which time there were 37 cases and 28 deaths. The preventive operations, initiated while the Hon'ble Mr. Bolton was officiating as Chief Commissioner, were successful in stamping out the disease, and the manner in which they were carried out reflects credit on Major Hall, the Civil Surgeon, who directed them at the beginning of the outbreak, on Mr. Baron, the special Medical Officer afterwards entertained, and on Mr. Cornes, who was officiating as Deputy Commissioner at the time. The Administration is much indebted to Mr. Melitus, the Commissioner, for efforts in personally directing the operations. The attitude of the people was satisfactory throughout, and there was no opposition to precautionary measures.

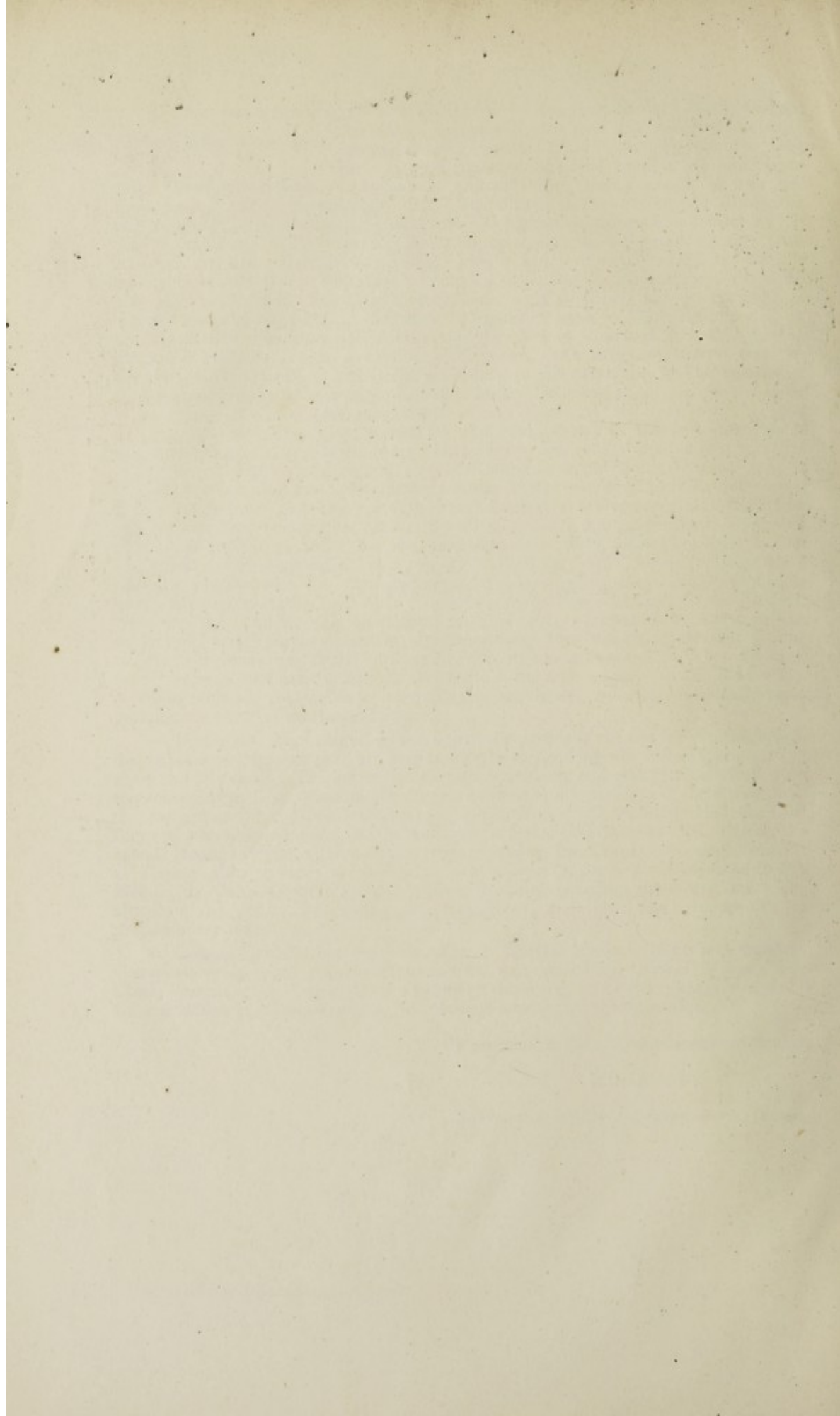
6. Colonel Carr-Calthrop held the office of Principal Medical Officer and Sanitary Commissioner up to the 3rd August, when he was succeeded by Colonel Wilkie. The Chief Commissioner desires to acknowledge the energy and thoroughness with which Colonel Wilkie has been inspecting the Medical institutions of the province.

By order of the Chief Commissioner of Assam,

F. J. MONAHAN,

Secretary to the Chief Commissioner of Assam.







ANNUAL SANITARY REPORT

OF THE

PROVINCE OF ASSAM

FOR THE YEAR

1903.

BY

COLONEL DAVID WILKIE, *M.B., I.M.S.*,
PRINCIPAL MEDICAL OFFICER AND SANITARY COMMISSIONER, ASSAM.



SHILLONG:

PRINTED AT THE ASSAM SECRETARIAT PRINTING OFFICE.

1904.

Price 1s.] 1

[Price Eleven Annas.