

Triennial report on vaccination, Bihar and Orissa.

Contributors

Bihar and Orissa (India)

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TRIENNIAL REPORT

ON

VACCINATION,

BIHAR AND ORISSA,

FOR THE YEARS

1911-12, 1912-13 & 1913-14.

BY

Lieutenant-Colonel E. C. HARE, I.M.S.,
Sanitary Commissioner, Bihar & Orissa.



RANCHI:

PRINTED AT THE BIHAR AND ORISSA GOVERNMENT BRANCH PRESS.

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FROM

LIEUTENANT-COLONEL E. C. HARE, I.M.S.,
SANITARY COMMISSIONER FOR BIHAR AND ORISSA,

TO

THE SECRETARY TO THE GOVERNMENT OF
BIHAR AND ORISSA, MUNICIPAL DEPARTMENT.

Dated Ranchi, the 29th June 1914.

SIR,

I HAVE the honour to submit the Triennial Report on Vaccination
for the years 1911-12, 1912-13 and 1913-14.

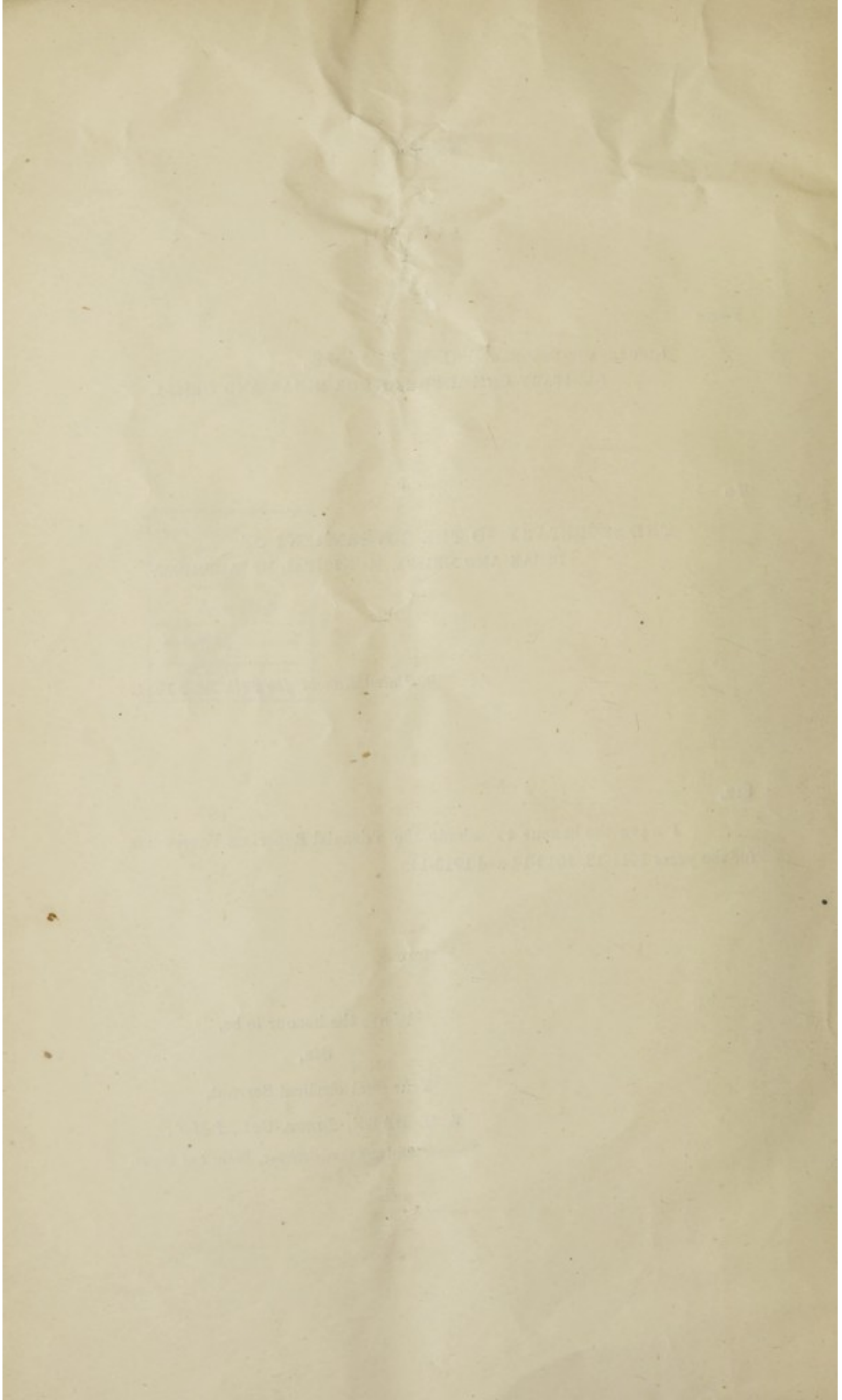
I have the honour to be,

SIR,

Your most obedient Servant,

E. C. HARE, *LIEUT.-COL., I.M.S.,*

Sanitary Commissioner, Bihar and Orissa.



TRIENNIAL REPORT
ON
VACCINATION,
BIHAR AND ORISSA,
FOR THE YEARS
1911-12, 1912-13 and 1913-14.

1. THE VACCINATION STAFF.

Vaccination in the Province of Bihar and Orissa is carried on chiefly by a special Vaccination staff, the members of which are either licensed or paid. Licensed Vaccinators are employed throughout the *mufassil* in the Patna, Tirhut, Bhagalpur and Chota Nagpur Divisions and in some parts of the Orissa Division. Paid Vaccinators are employed in all Municipal towns and in the Puri and Sambalpur districts of Orissa. In some instances also the District Boards employ a certain number of paid Vaccinators throughout the year for emergent work in the *mufassil* at times when licensed Vaccinators are not available.

The average number of Vaccinators employed each year during the three years 1912-14 was 1,154. This number is slightly in excess of the average number employed during the previous three years 1909-11. Of these Vaccinators 1,022 were licensed and 132 were paid.

2. OPERATIONS PERFORMED BY THE VACCINATION STAFF.

The average number of operations performed each year between 1912-14 was 1,311,674, while between 1909-11 the average number was 1,276,949. Of these operations 97·48 per cent. were primary and 2·51 re-vaccinations.

There was a remarkable and unexplained fall of 93,152 in the number of re-vaccinations performed. The fall was shared by every district in the Province except the Santal Parganas, and in that district the increase was under 300. It was greatest in Cuttack in which district the number of re-vaccinations fell short by 26,755 and in the three hill districts.

The average number of operations performed annually by each Vaccinator was 1,137.

3. HIGH RATES OF MORTALITY FROM SMALL-POX IN THE DISTRICTS AND THEIR RELATION TO VACCINATION.

The provincial death rate from small-pox during the last five years was ·27. It was highest in the districts of the Patna Division (·66). In the districts of the Tirhut Division it was ·12, in those of the Bhagalpur Division ·24, in the Chota Nagpur Division ·27 and in the Orissa Division ·16.

Patna Division.

In the *Patna district* the rate of mortality from small-pox during the last five years (1·26) was double that of any other district in the Province, and the number of vaccinations performed there during the last three years fell by 6,734 in comparison with the number performed in the previous period. Captain Brown, the Deputy Sanitary Commissioner, Bihar Circle,

inspected vaccination work in some of the villages of this district in the neighbourhood of Bankipore in November 1913, and reported that he found a large proportion of the children under six years of age to be unvaccinated. Other information which has been obtained about the state of vaccination in this area shows that the villagers are assuming an active opposition to the operation, and that conditions are springing up which will be a source of danger in future years to the inhabitants of the Capital unless they are dealt with and it is possible that the compulsory Vaccination Act may have to be introduced.

In the *Gaya* and *Shahabad* districts also vaccination work is not satisfactory. The rate of mortality from small-pox in the *Gaya* district for the last five years ('62) is higher than that of any other district in the Province except *Patna* and the number of operations has decreased by 15,414. In *Shahabad* also there was a decrease of 5,323. In both the *Gaya* and *Shahabad* districts the Civil Surgeons report great difficulty in getting the higher castes, especially the Rajputs, to accept vaccination and in *Shahabad* the difficulty is increased by having to employ as Vaccinators men of the *Mali* caste who in this district are said to be particularly dirty and incompetent, and it seems that no men of a better class can be found to replace them at present.

Tirhut Division.

Judging by the increase in the number of operations reported and by the low rate of mortality from small-pox during the last five years ('12), vaccination in the districts of the *Tirhut* Division appears on the whole to have made progress.

In *Saran*, the number of operations increased by 11,312, and this increase occurred in spite of the heavy annual mortality from plague. In *Muzaffarpur*, an increase of 2,859 is reported and in *Darbhanga* 21,818. On the other hand, in *Champaran* the number of vaccinations performed during the last three years fell short of the number performed in the previous period by 3,200, but the Civil Surgeon reports that the work improved very much during the last year and that the staff performed 7,766 operations in excess of the number recorded in 1912-13.

Bhagalpur Division.

The rate of mortality from small-pox in all the districts of the *Bhagalpur* Division is rather high ('24) and is due to the persistence of the disease in certain areas which include the *diaras* of the *Ganges* and *Kosi*, in which it seems difficult to get the people vaccinated.

In *Monghyr* an increase of 18,000 operations is recorded which is said to have been due to "the unflinching exertions on the part of the Vaccinators and to the strict supervisions exercised by the Inspecting staff." In *Bhagalpur*, though there was on the whole an increase of 5,515 operations over the record of the previous period, vaccination work during the last year has suffered very severely, especially in *Bhagalpur* town and the *Sadr* subdivision, from the presence of plague and cholera and by high floods in the *Kosi* river.

In the *Santal Parganas* a heavy fall of 13,618 operations is reported. The Civil Surgeon has not given any explanation of the defect.

Orissa Division.

The ratio of mortality from small-pox in this Division ('16) for the last five years is not high and vaccination work on the whole seems to be making fair progress.

The number of operations in *Cuttack* and *Balasore* have increased during the last three years by 31,000 and 63,000, respectively, while in *Puri* and in *Sambalpur* the number has decreased. In *Puri* the fall was over 11,000 and the Civil Surgeon reports that vaccination in the *Khurda* subdivision is unsatisfactory. Vaccination in *Sambalpur* is carried on with

vaccine taken from calves which are vaccinated by the Vaccinators in the villages according to the system which is in force in the Central Provinces. The system is well suited to the habits of the people and the results appear to be satisfactory. Glycerinated vaccine made in the Central Depot which is preferable in many ways to that prepared by the local Vaccinators will be gradually introduced.

Chota Nagpur Division.

The rate of mortality from small-pox in this Division during the last five years was 27. In each of the five districts the number of operations performed during the last three years has decreased in comparison with that of the previous period.

The decrease was most marked in *Palamanu* (—16,141) where the work is said to be carried on under great difficulties owing to the hilly nature of the country and the scanty population, but the Deputy Sanitary Commissioner who inspected the work reports that the Vaccination staff is not properly supervised and that the quality of their work is very poor.

In *Singhbhum* small-pox is becoming endemic in an area round the Tata Steel and Iron Company's works at Sakchi. This place has sprung into existence very rapidly during the last six years and a miscellaneous collection of some 12,000 people of various nationalities has settled there. It is difficult to get them vaccinated under the voluntary system and a recommendation has been made to Government to extend the provisions of the Bengal Vaccination Act to this area.

The Jheria Coal Field in the *Manbhum* district is another densely populated area in which vaccination work is not satisfactory and in which outbreaks of small-pox are of frequent occurrence. The vaccination of the people living in this area will be supervised by the Medical Officer to the Mines Board of Health when that body comes into existence.

4. THE INSPECTING STAFF.

There were 20 Inspectors and 59 Sub-Inspectors in permanent employment on the staff during the period under report, *viz.*, one Inspector for each district (except in Angul, in which the Inspector of Vaccination is a Sub-Assistant Surgeon) and one Sub-Inspector for each subdivision except in Sambalpur in which there was no Sub-Inspector for the Sadr subdivision. An additional officer for this area has been appointed since the close of the year.

Difficulty is experienced at the present time in finding officers who are suitable for District Inspectorships. Many of the senior grade Sub-Inspectors are unfit for promotion by reason of their age and of their inability to understand English which is an essential qualification for the post, and those of the junior grade are still too young and inexperienced for promotion. It is probable that some direct appointments to the Inspectors' grade will have to be made.

As soon as the Vaccine Depot, which is now under construction, has been opened for work, arrangements will be made to put all Sub-Inspectors and a certain number of selectal Vaccinators from each district through a course of training in vaccination which should go far towards increasing their efficiency. At the present time there are no facilities for training them.

5. PERCENTAGE OF SUCCESSFUL OPERATIONS PERFORMED BY THE VACCINATORS AND ITS VERIFICATION BY THE INSPECTING STAFF.

The percentage of successful operations reported by the Vaccinators during the last three years was 99.25 in primary vaccinations and 61.74 in re-vaccinations.

The Deputy Sanitary Commissioner of the Bihar Circle inspected 4.25 per cent. of the total operations, the District Inspectors 30.27 per cent. and Sub-Inspectors 50.46 per cent.

The Deputy Sanitary Commissioner reported the percentage of success to be 94.48 in primary operations and 12.85 in re-vaccinations and the Inspectors reported it to be 97.59 in primary operations and 70.99 in re-vaccinations. The Deputy Sanitary Commissioner's inspections during the last two years have had to be confined to a large extent to operations in compulsory areas owing to the pressure of other sanitary work.

6. VACCINATION IN COMPULSORY AREAS.

Bengal Act V of 1880 which provides for compulsory vaccination in Municipal towns was extended to the Forbesganj Municipality in the Purnea district and to the Civil Station of Doranda in the Ranchi district in 1913; and it is now in force throughout the Province except in Sambalpur in which the Central Provinces Municipal Act is in force.

Statement VII shows that during the year 1913-14 out of 30,344 children under one year of age available for vaccination 23,578 or 77.70 per cent. were successfully vaccinated. The number of successful vaccinations as compared with the number of children available varies very considerably in different areas. On the one hand, in *Patna, Gaya* and *Darbhanga*, three of the most important towns in the Province, only about half the children available appear to have been vaccinated and in the town of *Bhagalpur* the proportion is as low as one-fifth. On the other hand, in *Muzaffarpur, Bettiah* and *Monghyr* more children were vaccinated than were recorded as being available. In the absence of any information to show the basis on which the calculations have been made it is impossible to criticise these figures to any purpose; but, judging from the absence of small-pox generally in Municipal areas, and from the inspection notes on vaccination which the Deputy Sanitary Commissioners make in their municipal reports, I believe that Municipal vaccination is on the whole fairly well performed, though of course there is much room for improvement.

In future Health Officers will be responsible for the supervision of vaccination in the towns to which they have been appointed.

7. COST OF THE DEPARTMENT.

The cost of the Department during the year 1913-14 was Rs. 93,373 of which Rs. 82,541 was paid from the Provincial funds, Rs. 6,383 from Local funds, Rs. 4,557 from Municipal funds and Rs. 192 by Native States.

8. VACCINATION IN THE ORISSA FEUDATORY STATES.

For many years past, vaccination has been quietly developing in the Feudatory States under the direction and encouragement of the Political Officer, though no mention appears to have been made of the work in any of the previous vaccination reports. The following figures which are taken from the administration report of the Feudatory States of Orissa and Chota Nagpur for the year 1912-13 give some idea of the progress which has been made during the last eight years :—

				Total number of vaccinations.	Total number of re-vaccinations.
1905-06	...	...	...	117,619	.....
1906-07	...	...	...	165,967	48,498
1907-08	...	...	...	187,150	69,685
1908-09	...	...	...	226,042	97,078
1909-10	...	...	...	269,728	142,911
1910-11	...	...	...	310,962	163,162
1911-12	...	...	...	341,701	179,688
1912-13	...	...	...	387,190	215,438

This is a remarkable record, especially as regards the number of the re-vaccinations. An important feature of vaccination work in some of the States is the employment of female Vaccinators to vaccinate the women of the upper classes, and they are said to have proved a great success. The example of these States might with advantage be followed by Municipal Bodies throughout the Province; and the attention of the local authorities will be invited to the matter. In some of the States low caste Vaccinators are specially employed for the lower classes, who cannot be vaccinated by the ordinary Vaccinators.

Great interest is said to be taken in the spread of vaccination by the Chiefs, and the Political Officer estimates that 52 per cent. of the entire population of the States is protected. Chief among the States in vaccination work is Patna in which 58,193 operations were performed in 1912-13. This State is followed on the list by Keonjhar (56,258), Gangpur (44,719) and Kalahandi (44,130) in the order mentioned.

9. SUPPLY OF VACCINE.

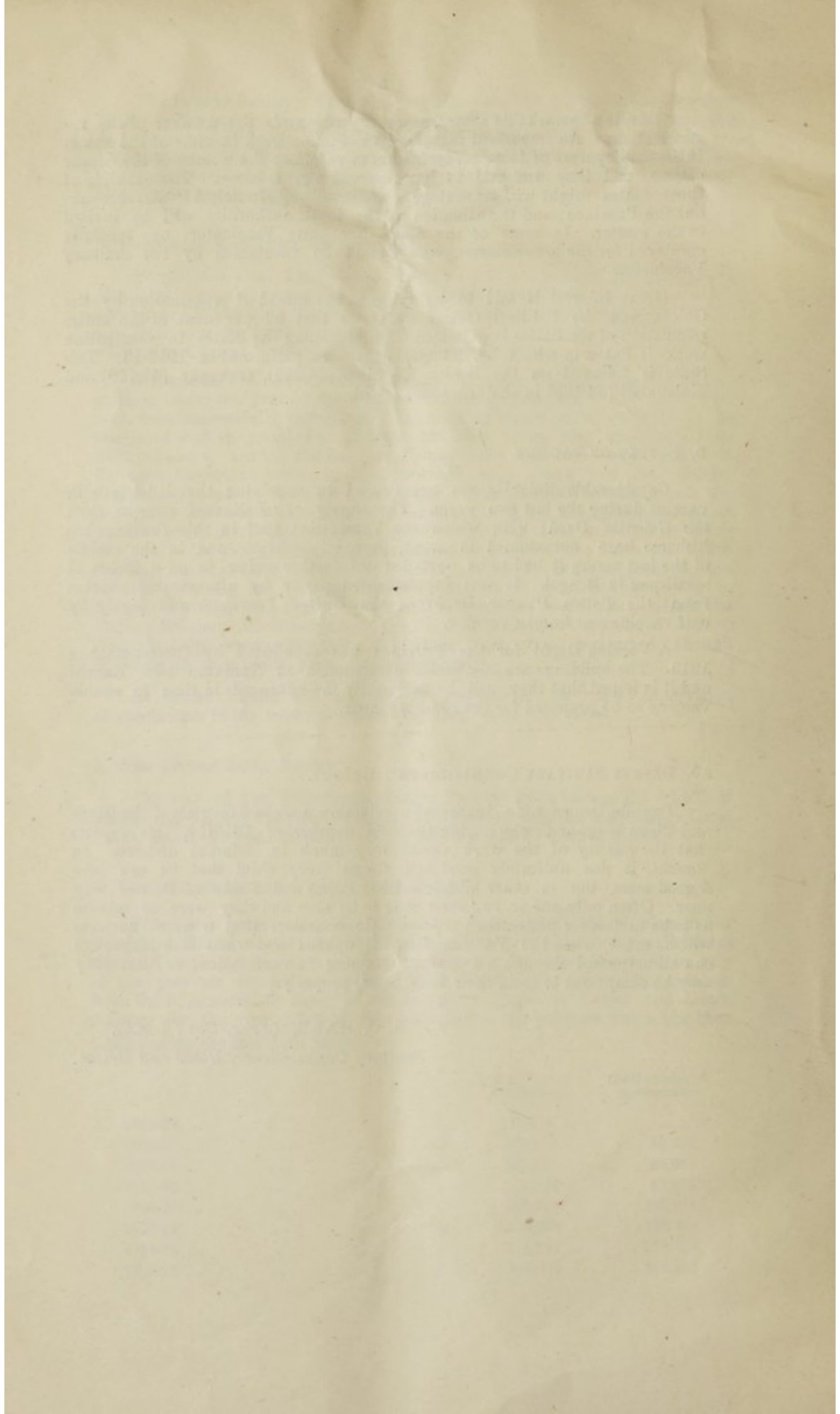
Considerable difficulty was experienced in supplying the districts with vaccine during the last two years. The supply of lanolinated vaccine from the Calcutta Depôt with which the Vaccination staff in this Province has hitherto been accustomed to work, proved insufficient, and in the middle of the last season it had to be curtailed still further owing to an outbreak of small-pox in Bengal. It was supplemented partly by glycerinated vaccine from the Patwa Dangar Depôt in the United Provinces and partly by calf vaccine and human vaccine.

A Vaccine Depôt for the Province was sanctioned by Government in 1913. The buildings are now under construction at Namkum near Ranchi and it is hoped that they will be sufficiently far advanced in time to enable vaccine to be prepared for the coming season.

10. DEPUTY SANITARY COMMISSIONER'S REPORT.

Captain Brown, I.M.S., inspected vaccination work in 5 districts of the Bihar and Chota Nagpur Circles during the cold weather of 1913-14. He reports that the quality of the work varied very much in different districts. In *Ranchi*, it was uniformly good and almost every child that he saw bore 4 good scars, but in other districts like *Patna* and *Shahabad*, it was very poor. Often only one or two scars were to be seen and they were so minute as to be useless for protective purposes. He considers that a great advance will be made when the Vaccine Depôt is opened and when Sub-Inspectors can all be passed through a course of training in vaccination, so that they may be competent to train their Vaccinators properly.

E. C. HARE, *LIEUT.-COL., I.M.S.,*
Sanitary Commissioner, Bihar and Orissa,



STATEMENTS.

Statement No. I.—Showing particulars of Vaccination in the

No.	District.	Population of district according to the census of 1911.	Average population per square mile.	Average number of vaccinators employed throughout the season.	Total number of persons vaccinated.			Average number of persons vaccinated by each vaccinator.	Total.
					Male.	Female.	Total.		
1	2	3	4	5	6			7	8
<i>Patna Division.</i>									
1	Patna ...	1,000,631	7	9	3,073	2,724	5,797	644	5,675
	{ By paid Vaccinators ...							22,065	20,727	42,812	620	42,742
	{ By licensed Vaccinators ...								
2	Gaya ...	2,150,406	453	12	3,725	3,818	7,543	1,213	7,662
	{ By paid Vaccinators ...							30,229	30,162	60,391	713	60,391
	{ By licensed Vaccinators ...								
3	Shahabad ...	1,865,690	426	9	2,043	1,653	3,696	400	3,401
	{ By paid Vaccinators ...							26,414	23,773	50,187	501	60,155
	{ By licensed Vaccinators ...								
	Total of Patna Division { By paid Vaccinators ...	5,634,789	505	30	8,841	8,195	17,036	567	16,553
	{ By licensed Vaccinators ...							78,728	71,662	153,390	626	153,288
<i>Tirhut Division.</i>									
4	Saran ...	2,280,778	533	5	1,578	1,107	2,685	537	2,685
	{ By paid Vaccinators ...							43,574	36,293	79,867	1,174	79,865
	{ By licensed Vaccinators ...								
5	Champan ...	1,508,385	540	3	599	552	1,151	575	1,151
	{ By paid Vaccinators ...							1,690	30,028	61,628	1,232	61,696
	{ By licensed Vaccinators ...								
6	Munafarpur ...	2,545,514	607	7	2,245	1,973	4,218	692	3,876
	{ By paid Vaccinators ...							50,536	48,168	98,704	1,618	98,677
	{ By licensed Vaccinators ...								
7	Darbhanga ...	2,920,662	675	7	1,430	1,332	2,762	394	2,768
	{ By paid Vaccinators ...							6,338	44,474	50,812	1,513	50,865
	{ By licensed Vaccinators ...								
	Total of Tirhut Division { By paid Vaccinators ...	9,973,359	791	22	5,852	4,964	10,816	491	10,410
	{ By licensed Vaccinators ...							172,948	158,063	331,011	1,384	331,013
<i>Bhagalpur Division.</i>									
8	Monghyr ...	2,132,803	543	4	1,807	1,443	3,250	885	3,511
	{ By paid Vaccinators ...							42,190	43,008	85,298	4,364	85,298
	{ By licensed Vaccinators ...								
9	Bhagalpur ...	2,139,318	500	2	1,607	616	2,223	836	1,565
	{ By paid Vaccinators ...							36,819	35,813	72,632	1,396	72,246
	{ By licensed Vaccinators ...								
10	Purnea ...	1,969,537	508	4	897	817	1,714	428	1,565
	{ By paid Vaccinators ...							30,032	28,372	58,404	1,191	58,546
	{ By licensed Vaccinators ...								
11	Santal Farganas ...	1,862,973	344	4	762	677	1,439	359	1,363
	{ By paid Vaccinators ...							24,091	21,316	45,407	991	60,325
	{ By licensed Vaccinators ...								
	Total of Bhagalpur Division { By paid Vaccinators ...	8,144,621	437	14	4,613	3,733	8,346	508	7,944
	{ By licensed Vaccinators ...							143,132	138,599	281,731	1,506	276,907

districts of Bihar and Orissa during the year 1913-14.

Primary vaccination.				Re-vaccination.			Percentage of successful cases in which the results were known.		Persons successfully vaccinated per 1,000 of population.	Percentage of unknown cases to total cases.		Average annual number of persons successfully vaccinated during previous five years.		Average annual number of deaths from small-pox during previous five years.	
Successful.				Total.	Successful.	Unknown.	Primary.	Re-vaccination.		Primary.	Re-vaccination.	Number.	Ratio per 1,000.	Number.	Ratio per 1,000.
Under one year.	Over one and under six years.	Total of all ages.	Unknown.						16							17	18	19	20	21	22	23	24
2,906	2,613	5,439	128	122	132	...	97.92	100.00	29.79	2.25	...	48,214	29.95	2,029	1.26
12,184	29,373	42,374	171	70	23	23	90.33	48.93							
3,036	3,808	7,402	88	61	28	32	90.70	90.55	31.27	.77	53.42	67,681	31.3	1,353	.62
17,733	41,370	60,111	163	...	...	...	90.60	...							
2,545	781	3,377	9	295	228	33	90.55	87.02	28.67	.26	11.18	42,628	24.18	330	.18
29,655	15,581	40,859	45	32	32	...	90.49	...							
6,907	7,202	10,211	195	478	379	65	90.07	91.52	29.20	1.17	19.59	158,523	28.13	3,722	.66
53,342	86,223	152,344	379	162	55	23	90.63	69.62							
1,864	706	2,542	120	...	...	...	90.10	...	35.54	4.46	...	79,512	34.72	599	.26
35,375	41,897	78,857	649	2	2	...	90.54	100.							
605	335	1,151	...	...	...	...	100.	...	32.77	...	...	59,767	30.66	227	.11
25,611	35,404	61,384	199	22	21	...	90.89	95.46							
2,661	1,041	2,740	87	412	313	99	100.	100.	36.33	1.49	24.02	101,681	36.41	95	.05
57,763	60,346	98,308	369	17	11	6	100.	100.							
1,611	1,143	2,755	1	1	1	...	90.56	100.	31.97	.63	...	86,899	29.65	399	.12
55,117	34,465	99,631	8	32	13	...	90.75	46.62							
6,611	3,225	10,197	178	4.3	314	19	90.65	100.	34.06	1.70	29.97	328,153	32.90	1,221	.12
17,583	159,202	329,189	1,126	73	47	6	90.79	70.14							
2,339	1,163	3,562	9	29	22	7	100.	100.	41.61	.25	24.13	83,572	39.18	513	.24
31,617	54,222	65,221	49	...	...	...	100.	...							
394	901	1,435	14	168	72	11	97.98	45.85	33.46	.93	6.54	7,622	35.61	549	.25
40,501	31,614	72,171	15	384	235	...	99.01	97.65							
920	580	1,540	2	161	61	...	99.19	37.88	30.45	.12	...	61,828	31.07	477	.23
37,583	20,488	58,383	16	1,313	594	12	99.74	45.23							
693	419	1,327	11	76	46	2	98.15	62.14	34.26	.80	2.63	64,370	34.18	431	.22
58,436	21,203	60,023	156	5,082	3,195	1,092	99.77	82.54							
4,576	3,052	7,833	36	434	201	29	99.05	48.55	35.37	.45	4.60	217,392	36.99	1,970	.24
147,507	127,717	275,809	236	9,779	4,224	1,104	99.87	74.43							

No.	District.	Population of district according to the census of 1911.	Average population per square mile.	Average number of vaccinators employed throughout the season.	Total number of persons vaccinated.			Average number of persons vaccinated by each vaccinator.	Total.	
1	2	3	4	5	6			7	8	
					Male.	Female.	Total.			
<i>Orissa Division.</i>										
12	Cuttack ...	2,109,139	577	{	10	7,483	6,377	13,860	1,386	12,474
	{ By paid Vaccinators ...				63	64,063	58,133	1,22,196	1,940	123,101
13	Balasore ...	1,855,568	506	{	1	556	356	912	912	794
	{ By Licensed Vaccinators ...				47	37,327	32,432	69,759	1,484	68,585
14	Angul ...	199,480	118	{	14	4,550	4,253	8,803	628	7,862
15	Puri ...	1,023,402	409	{	29	26,650	20,797	47,447	1,636	46,724
16	Sambalpur ...	744,183	194	{	12	12,634	12,416	25,050	2,087	24,416
Total of Orissa Division {		5,131,752	373	{	52	47,323	39,946	87,269	1,678	84,338
By licensed Vaccinators ...					124	106,940	94,818	200,758	1,619	198,538
<i>Chota Nagpur Division.</i>										
17	Hazaribagh ...	1,288,609	183	{	3	738	712	1,450	483	1,306
	{ By licensed Vaccinators ...				49	22,406	21,211	43,617	1,090	43,605
18	Ranchi ...	1,387,516	194	{	3	1,168	904	2,072	690	1,661
	{ By licensed Vaccinators ...				44	24,136	23,351	47,487	1,070	47,393
19	Palamu ...	687,267	130	{	5	1,320	743	1,963	393	643
	{ By licensed Vaccinators ...				26	10,868	9,637	20,523	789	20,040
20	Manbhanu ...	1,547,376	373	{	3	768	681	1,449	483	1,315
	{ By licensed Vaccinators ...				41	20,357	29,161	49,518	1,451	58,945
21	Singbham ...	604,394	178	{	1	467	270	766	766	241
	{ By licensed Vaccinators ...				18	12,324	10,973	23,297	1,294	21,778
22	Political States of Singbham—By licensed Vaccinators ...	144,934	248	{	4	3,176	2,544	5,720	1,430	5,587
Total of Chota Nagpur Division. {		5,750,296	207	{	16	4,381	3,319	7,700	513	8,258
By licensed Vaccinators ...					173	169,285	96,877	269,162	1,157	197,348
Total Vaccine Department. {		34,635,017	304	{	133	71,010	60,177	131,187	986	124,500
By licensed Vaccinators ...					968	603,133	563,009	1,167,042	1,806	1,196,594
Total					1,101	674,143	624,086	1,298,229	1,179	1,281,100
Total Dispensary Department ...		...	...	...	92	94	186	...	186	
Total Railways ...		...	...	...	6,114	3,012	10,626	...	495	
Total Cooly Depot ...		...	...	...	1,046	720	2,426	...	185	
Total Jails and Cantonments ...		...	...	...	10,862	630	11,522	...	1,591	
GRAND TOTAL ...		34,635,017	304	1,101	692,887	629,802	1,322,389	1,301	1,283,347	

Primary Vaccination.				Re-vaccination.			Percentage of successful cases in which the results were known.		Persons successfully vaccinated per 1,000 of population.	Percentage of unknown cases to total cases.		Average annual number of persons successfully vaccinated during previous five years.		Average annual number of deaths from small-pox during previous five years.				
Successful.				Total.	Successful.	Unknown.	Primary.	Re-vaccination.		Primary.	Re-vaccination.	Number.	Ratio per 1,000.	Number.	Ratio per 1,000.			
Under one year.	Over one and under six years.	Total of all ages.	Unknown.						10							11	12	13	14	15	16	17	18	19	20	21	22	23	24
5,052	6,012	12,352	72	1,456	512	246	90.44	42.31	63.55	.58	10.96	134,491	61.43	179	.08			
50,398	55,175	121,249	381	95	35	26	90.60	50.71								.31	27.96	
253	529	781	13	118	85	33	100.	100.	65.24	1.63	27.96	53,552	50.76	393	.37			
23,627	43,517	67,344	1,241	1,174	656	518	100.	100.								1.93	44.12	
3,146	3,079	7,225	225	951	720	84	94.72	81.17	39.63	2.88	6.72	7,802	39.11	...	...	
16,543	24,342	40,398	149	723	537	18	99.55	78.17								45.83	.31	2.48	53,453	62.23	212	.20
17,913	6,320	24,251	112	634	568	22	99.78	91.17	33.37	.45	3.47	20,496	39.63	29	.03			
39,767	3,709	63,652	346	2,031	1,722	319	99.59	60.02								55.05	.41	10.88	277,995	54.16	812	.16
77,471	102,671	185,909	1,847	2,520	1,411	608	99.55	67.03	.93	27.28								
706	668	1,369	2	54	31	3	99.64	60.78			34.91	.14	5.55	45,544	35.34	417	.02	
26,006	17,385	43,564	20	12	12	...	99.95	100.	.04	24.81								
919	703	1,629	2	411	309	102	100.	100.			35.03	.12	21.27	50,811	36.26	529	.06	
37,721	9,534	47,282	11	94	74	20	100.	100.	.02	6.61								
224	290	424	17	1,320	1,067	81	67.73	80.11			30.85	2.64	6.13	25,153	30.60	339	.07	
16,123	3,171	19,294	59	465	412	32	96.56	93.56	.29	4.71								
510	752	1,304	10	124	79	17	99.72	67.63			29.34	.76	12.68	60,558	39.48	162	.12	
23,007	25,368	48,895	44	573	383	27	99.93	70.14	.07	1.77								
169	59	219	15	525	167	9	99.90	36.24			33.54	6.22	1.71	21,819	31.42	98	.14	
13,118	9,309	21,717	8	1,519	1,170	27	99.75	78.41	.03	3.76								
3,068	2,459	5,578	3	133	76	...	99.89	87.14			39.91	.05	...	4,854	33.29	...	...
2,518	2,382	4,905	46	2,444	1,673	219	98.05	74.95	35.63	.87								8.67	208,229	68.21	1,505	.27
129,043	60,116	186,400	145	2,814	2,137	106	99.59	78.91			.07	3.76						
62,679	53,667	122,868	801	6,700	3,268	715	99.33	71.64	37.08	.64			19.59	...	...	...	...
567,459	534,929	1,149,619	3,713	11,988	7,874	1,847	99.71	77.64			.32	60.91						
650,138	688,596	1,272,447	4,534	18,088	12,162	2,562	99.67	75.41	...	.35			13.70	1,220,308	35.23	9,200	.27
195	50	156	100
206	165	463	8	9,521	5,798	370	96.09	65.47	...	1.61			3.88	...	...	...	...
...	185	2,241	...	2,241	...	100.			...	100.						100.
218	519	1,282	105	9,631	5,976	1,274	93.00	69.03	...	6.59			12.82	...	...	...	...
636,788	590,330	1,274,463	4,832	60,291	24,136	6,447	99.65	71.10			37.49	.37						15.95

Summary.

	Total number of persons vaccinated.		Total number of operations performed.		Percentage of successful cases in which the results were known.		Average number of persons vaccinated by each vaccinator.		Number of children successfully vaccinated.		Ratio of successful vaccinations per 1,000 of population.	Total cost of Department.	Average cost of each successful case.	
	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Vaccinators employed.	Persons vaccinated by each vaccinator.	Under 1 year.	One and under 6 years.				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
BY SPECIAL STAFF.														
Licensed ...	1,155,094	11,968	1,156,594	11,968	99.71	77.64	928	1,205	557,459	534,029				
BY DISPENSARY STAFF.														
Municipalities, Jails, Cantonments, Dispensaries and Railways.	44,323	25,594	44,371	25,526	98.98	67.05	77	908	23,675	18,118	37.49	93,373 0 0	0 1 1	
BY OTHER AGENCIES.														
District Board ...	82,592	2,808	82,592	2,808	99.44	78.87	53	1,525	39,654	35,283				
Total ...	1,281,999	40,390	1,283,557	40,391	99.68	71.10	1,161	1,301	650,788	589,330				

STATEMENT No. II.

Statement No. II.—Showing the cost of vaccination in the

Number.	Circle and District.	European supervising officers.	Expend										
			Pay.	Native supervising officers.	Pay.	Paid vaccinators.	Pay.	Licensed vaccinators.	Pay.	Clerks.	Pay.	Poons, etc.	Pay.
1	2	3	4	5	6	7	8	9	10	11	12	13	14
			Rs. a. p.		Rs. a. p.		Rs. a. p.		Rs. a. p.		Rs. a. p.		Rs. a. p.
PATNA DIVISION.													
1	Patna			5	1,723 0 0	9		69					
2	Gaya			5	1,783 5 8	12	930 8 0	76				1	72 0 0
3	Shahabad			5	2,048 5 4	9	634 0 0	100					
	Total of Patna Division			15	5,554 11 0	30	1,564 8 0	245				1	72 0 0
TIRHUT DIVISION.													
4	Saran			4	1,985 10 4	5	660 0 0	68					
5	Champaran			3	1,300 0 0	3	240 0 0	50	53 8 0				
6	Muzaffarpur			5	2,075 11 2	7		61					
7	Darbhanga			4	1,584 10 0	7		60					
	Total of Tirhut Division			16	5,944 0 3	22	900 0 0	239	58 8 0				
BHAGALPUR DIVISION.													
8	Monghyr			4	1,449 9 4	4	338 0 0	20	59 0 0			1	36 0 0
9	Bhagalpur			5	2,274 6 4	3		52	66 8 0				
10	Parosia			4	1,560 0 0	4	448 0 0	49	71 4 0				
11	Sental Parganas			7	2,436 13 6	4	365 4 3	65					
	Total of Bhagalpur Division			20	7,720 13 2	14	1,161 4 3	187	216 12 0			1	36 0 0
ORISSA DIVISION.													
12	Cuttack			4	1,429 12 3	10	586 0 0	63					
13	Balasore			3	1,129 15 9	1	120 0 0	47					
14	Angul			3	2,272 2 5			14					
15	Puri			3	1,200 0 0	29	3,733 9 4						
16	Sambalpur			2	900 0 0	11	1,410 3 2	12				2	50 0 0
	Total of Orissa Division			15	6,961 14 5	51	5,871 12 6	136				2	50 0 0
CHOTA NAGPUR DIVISION.													
17	Hazaribagh			4	1,525 0 0	3	259 0 0	40					
18	Ranchi			4	1,289 0 0	3	516 0 0	44					
19	Palamanu			3	1,153 6 2	5	61 10 8	26					
20	Manbhum			3	1,517 8 6	3		41	40 0 0				
21	Singbhum (Political State, Singbhum.)			3	1,200 0 0	1	102 0 0	22	64 8 0				
	Total of Chota Nagpur Division			17	6,575 14 8	15	938 10 8	173	104 8 0				
	Total of Vaccine Circle			83	33,629 5 6	132	10,445 3 5	990	379 12 0			4	158 0 0
DEPARTMENT OF THE DEPUTY SANITARY COMMISSIONER, BHAR CIRCLE.													
	Ditto	ORISSA CIRCLE		1	5,000 0 0					2	906 6 6	3	280 10 9
	Ditto	CHOTA NAGPUR CIRCLE		1	3,346 0 6					2	739 10 10	2	172 6 1
	Total			1	8,346 0 6					6	1,645 16 7	7	452 16 10
	Total of the Province			85	42,005 6 0	132	10,445 3 5	990	379 12 0	6	1,645 16 7	11	789 0 10

Districts of Bihar and Orissa during the year 1913-1914.

Total.					Paid from						Number of successful vaccination and revaccination.	Average cost of each successful case.
Total pay of establishment.	Travelling Allowance.	Contingencies.		Total cost.	Imperial Fund.	Provincial Fund.	Local Fund.	Municipality.	Native States.	Total.		
		Cost of lymph.	Other contingencies.									
15	16	17	18	19	20	21	22	23	24	25	26	27
Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	No.	Rs. a. p.
1,733 0 0	831 9 2	...	73 14 6	2,638 7 8	...	2,638 7 8	...	...	...	2,638 7 8	48,489	0 0 10
2,785 13 8	972 12 0	...	194 8 8	3,953 2 4	...	2,929 10 4	656 0 0	376 8 0	...	3,953 2 4	67,817	0 0 11
2,682 5 4	1,030 15 6	...	287 6 6	3,990 11 4	...	3,329 4 10	...	661 6 6	...	3,990 11 4	53,812	0 1 2
7,301 3 0	2,835 4 8	...	533 13 8	10,672 5 4	...	8,888 6 10	656 0 0	1,027 14 6	...	10,572 5 4	1,70,109	0 1 0
2,645 10 4	445 1 6	...	234 0 0	3,324 11 10	...	2,505 11 10	...	819 0 0	...	3,324 11 10	81,639	0 0 7
1,507 8 6	700 10 6	...	64 2 6	2,272 5 0	...	2,019 5 0	...	253 0 0	...	2,272 5 0	61,100	0 0 6
2,075 11 2	392 15 0	...	100 0 0	2,568 10 2	...	2,568 10 2	...	...	...	2,568 10 2	1,03,032	0 0 4
1,584 10 9	708 11 10	...	82 13 6	2,496 4 1	...	2,496 4 1	...	...	...	2,496 4 1	93,735	0 0 5
7,813 8 3	2,337 6 10	...	481 0 0	10,631 15 1	...	9,539 15 1	...	1,072 0 0	...	10,631 15 1	3,41,568	0 0 6
1,902 9 4	794 14 9	...	160 15 0	2,858 7 1	...	2,309 10 1	...	488 13 0	...	2,858 7 1	69,024	0 0 6
2,300 14 4	708 9 0	...	128 12 6	3,138 3 10	...	3,138 3 10	...	...	...	3,138 3 10	75,244	0 0 8
2,009 4 0	985 14 6	...	60 0 0	3,116 2 6	...	2,618 2 6	...	408 0 0	...	3,116 2 6	60,587	0 0 8
2,902 1 9	1,982 3 7	...	139 8 5	4,923 13 9	...	4,025 5 1	...	298 8 8	...	4,923 13 9	61,815	0 1 2
9,134 13 5	4,472 9 10	...	483 3 11	14,096 11 2	...	12,811 5 6	...	1,285 5 8	...	14,096 11 2	2,39,670	0 0 9
2,025 12 3	890 12 1	...	135 0 0	3,051 8 4	...	2,445 8 4	606 0 0	...	...	3,051 8 4	1,34,227	0 0 4
1,239 15 9	256 4 6	...	75 0 0	1,591 4 3	...	1,471 4 3	...	120 0 0	...	1,591 4 3	69,059	0 0 3
2,272 2 2	1,240 3 0	...	74 14 6	3,587 3 11	...	3,587 3 11	...	...	...	3,587 3 11	7,945	0 7 3
4,935 9 4	1,013 3 0	...	162 12 3	6,151 8 7	...	2,388 2 6	3,599 0 4	163 12 0	...	6,151 8 7	47,369	0 2 1
2,260 3 2	180 0 0	...	31 0 6	2,571 3 8	...	1,111 0 6	1,660 3 2	...	...	2,571 3 8	25,063	0 1 8
12,873 10 11	3,589 6 7	...	498 11 3	16,962 12 9	...	11,003 3 6	5,965 12 6	289 12 9	...	16,962 12 9	2,83,263	0 0 11
1,784 0 0	778 9 7	...	90 11 3	2,653 4 10	...	2,383 9 7	...	269 11 3	...	2,653 4 10	61,777	0 0 10
1,806 0 0	953 8 0	...	54 14 0	2,814 6 0	...	2,368 6 0	...	516 0 0	...	2,814 6 0	49,939	0 0 11
1,215 0 10	704 6 8	...	45 0 0	1,964 7 6	...	1,002 12 10	61 10 8	...	...	1,964 7 6	21,459	0 1 5
1,307 8 6	441 0 6	...	45 0 0	1,843 9 0	...	1,839 9 0	...	...	...	1,843 9 0	61,316	0 0 5
1,300 9 0	568 2 7	...	74 9 0	2,007 4 1	...	1,713 1 1	...	162 0 0	192 3 0	2,007 4 1	29,150	0 1 1
7,619 1 4	3,423 11 4	...	310 2 9	11,352 15 5	...	10,211 6 6	61 10 8	867 11 3	192 3 0	11,352 15 5	2,13,691	0 0 10
44,642 4 11	16,649 7 3	...	2,314 15 7	63,606 11 9	...	52,474 5 5	6,383 7 2	4,806 12 2	192 3 0	63,606 11 9	12,08,619	0 0 9
10,463 9 4	2,554 8 9	...	572 13 0	13,590 15 1	...	13,590 15 1	...	...	...	13,590 15 1	...	...
8,075 9 3	1,885 3 9	...	766 10 10	8,707 7 10	...	8,707 7 10	...	...	...	8,707 7 10	...	...
4,256 1 5	2,319 14 0	...	900 0 0	7,477 15 5	...	7,477 15 5	...	...	...	7,477 15 5	...	...
20,787 4 0	6,739 10 6	...	2,219 7 10	29,766 6 4	...	29,766 6 4	...	...	...	29,766 6 4	...	...
65,429 8 11	22,409 1 0	...	4,334 7 5	93,373 2 1	...	92,340 11 9	6,283 7 2	4,806 12 2	192 3 0	93,373 2 1	12,03,619	0 1 1

B.—DISPENSARY VACCINATION.

Statement No. III.—Showing Dispensary Vaccination in the Districts of Bihar and Orissa during the year 1913-14.

District.	Number of dispensaries in each district to which a vaccinator is attached.	Average number of vaccinators attached to dispensaries during the year.	Total number of persons vaccinated.	Area of number of persons vaccinated by each vaccinator.	Primary vaccination.					Re-vaccination.			Percentage of successful cases in which the results were known.		Percentage of unknown cases to total cases.	
					Total.	Successful.			Unknown.	Total.	Successful.	Unknown.	Primary.	Re-vaccination.	Primary.	Re-vaccination.
						Under one year.	Over one and under six years.	Total of all ages.								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Faina
Gaya
Shahabad
Faran
Champoran
Muzaffarpur
Darbhanga	...	1	1	186	186	186	136	50	186	...	...	...	100	...	...	...
Monghyr
Bhagalpur
Purnea
Santal Parganas
Cuttack
Balasore
Angul
Puri
Sambalpur
Hazaribagh
Ranchi
Palaman
Manbhūm
Singhbhum
Total	...	1	1	186	186	186	136	50	186	...	...	...	100	...	...	...

1913		1914		1915		1916		1917		1918	
Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

COMPARATIVE STATEMENT No. IV.

Comparative Statement No. IV.—Showing the number of persons primarily vaccinated, and the number undermentioned

Establishment.	Persons primarily										
	1904-05.		1905-06.		1906-07.		1907-08.				
	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.			
1	2	3	4	5	6	7	8	9			
Government		
Dispensaries	2,155	2,007	1,735	1,565	1,107	1,088	961	806
Municipal	40,851	37,280	45,590	41,683	42,540	38,555	44,882	40,850
Local Funds	78,047	76,298	75,156	73,423	76,148	74,194	93,113	92,340
Licensed Vaccinators	989,109	1,018,930	1,009,268	1,012,355	974,710	983,054	985,176	983,384
Apprentices
Native States	5,303	5,332	5,676	5,633	4,920	4,903	4,080	3,987
Total	1,106,505	1,139,847	1,137,795	1,134,659	1,099,425	1,101,794	1,128,212	1,126,967

of those persons who were successfully vaccinated, in the Province of Bihar and Orissa in each of the official years.

vaccinated.

1908-09.		1909-10.		1910-11.		1911-12.		1912-13.		1913-14.	
Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.
10	11	12	13	14	15	16	17	18	19	20	21
...
689	591	586	472	516	415	384	303	188	185	186	186
48,330	44,769	46,047	43,550	44,961	43,522	45,282	43,212	43,379	42,311	44,167	42,480
96,959	97,104	92,201	91,182	97,189	95,788	96,690	95,323	86,551	85,965	82,592	81,790
1,005,512	994,418	1,053,044	1,052,100	1,102,620	1,110,281	1,111,968	1,123,171	1,133,310	1,126,927	1,149,467	1,143,922
...
5,581	5,377	4,269	4,245	4,970	4,956	4,964	4,943	4,641	4,581	5,587	5,573
1,157,071	1,142,259	1,196,237	1,191,549	1,250,356	1,254,962	1,259,288	1,266,952	1,268,069	1,259,969	1,281,999	1,273,916

Statement No. V.—Showing particulars of vaccination verified by

District.	Total number of persons vaccinated.		Total number inspected.							
			By Deputy Sanitary Commissioners or Civil Surgeons.				By Native Superintendents or other Inspecting Officers.			
			Deputy Sanitary Commissioners.		Civil Surgeons.		District Inspectors.		Sub-Inspectors.	
	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.
1	2	3	4	5	6	7	8	9	10	11
Patna	48,740	575	5,378	...	202	465	9,105	...	21,488	...
Gaya	67,873	499	...	...	7,761	287	20,173	...	33,038	...
Shahabad	53,038	888	6,316	...	3,901	...	14,301	...	35,599	...
Saran	82,550	430	...	...	3,794	349	38,865	...	67,296	...
Champaran	62,607	633	508	...	8,338	...	30,339	...	26,210	...
Muzaffarpur	102,494	1,321	...	...	10,925	892	20,380	43	52,708	115
Darbhanga	93,728	271	1,045	...	6,819	227	23,505	...	43,901	...
Monghyr	85,799	340	...	...	2,872	311	20,829	...	48,595	...
Bhagalpur	73,780	2,728	507	...	1,929	...	21,151	60	37,642	122
Purnea	58,644	1,474	...	...	3,180	15	11,676	581	17,429	43
Santal Parganas	61,688	5,460	10,589	...	6,203	629	17,967	1,278	20,782	898
Cuttack	134,871	3,023	7,163	...	6,023	59	42,379	25	60,096	33
Balasore	69,591	1,377	4,506	...	2,434	...	2,487	...	12,452	...
Angul	7,852	951	...	...	1,582	173	3,565	310	5,444	844
Puri	46,862	1,179	3,290	...	2,492	285	18,048	...	23,788	425
Sambalpur	24,424	1,037	...	...	4,203	348	12,187	111	6,108	147
Hazaribagh	45,498	10,375	...	389	2,530	758	6,167	5	13,791	28
Ranchi	49,421	768	3,192	...	7,825	...	9,832	19	26,870	569
Palamu	29,749	2,174	4,326	...	4,289	150	7,167	466	12,459	682
Manbhum	60,342	1,462	...	...	3,148	602	25,432	327	35,469	387
Singbhum	22,021	2,392	...	...	3,084	392	7,975	56	11,448	196
Political States of Singbhum	5,587	133	...	...	574	...	2,717	...	3,704	...
Total	12,81,969	40,390	46,558	389	60,208	5,942	3,05,017	3,231	6,20,526	4,507

Inspecting Officers during the year 1913-14.

Percentage of inspection to total number vaccinated.								Percentage of cases found successful to total number inspected.								Percentage of success reported by vaccinators.	
By Deputy Sanitary Commissioners or Civil Surgeons.				By Native Superintendents or other Inspecting Officers.				By Deputy Sanitary Commissioners or Civil Surgeons.				By Native Superintendents or other Inspecting Officers.					
Deputy Sanitary Commissioners.		Civil Surgeons.		District Inspectors.		Sub-Inspectors.		Deputy Sanitary Commissioners.		Civil Surgeons.		District Inspectors.		Sub-Inspectors.			
Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.		
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
10.82	...	41	89.87	18.08	...	44.08	...	83.14	...	99.59	80.43	98.84	...	99.21	...	99.37	84.87
...	...	11.43	87.51	20.88	...	50.00	...	...	...	99.40	96.00	99.60	...	99.8	...	99.4	69.9
11.77	...	5.59	...	26.60	...	66.36	...	83.10	...	97.40	...	96.36	...	98.42	...	99.37	87.31
...	...	4.59	81.16	47.08	...	69.49	...	...	...	99.57	83.38	99.24	...	98.97	...	98.60	69.76
'80	...	13.24	...	48.29	...	41.64	...	99.80	...	99.91	...	99.06	...	99.59	...	...	...
...	...	10.65	67.44	19.88	3.25	51.48	8.79	...	...	100.00	73.99	99.42	79.07	98.21	67.00	99.57	69.17
1.11	...	7.27	85.45	25.16	...	46.81	...	100.00	...	99.76	65.63	99.58	...	99.52	...	99.73	59.92
...	...	3.23	91.47	23.48	...	54.72	...	...	...	99.61	83.92	99.53	...	99.07	...	99.93	75.86
'68	...	2.61	...	28.81	2.26	51.29	4.47	96.05	...	99.47	...	98.91	71.66	99.00	81.06	99.82	73.73
...	...	5.42	1.01	19.90	30.41	29.83	2.91	...	...	99.43	100.00	99.51	61.83	99.13	33.56	99.78	44.44
17.16	...	10.05	11.82	29.12	23.6	43.38	16.44	...	...	98.46	51.35	98.66	73.79	99.18	82.73	99.48	63.27
5.26	...	4.45	1.80	31.42	69	81.60	84	97.80	...	98.55	85.93	99.63	100.00	98.64	100	99.08	15.01
6.48	...	3.50	...	3.43	...	17.91	...	97.83	...	97.78	...	95.07	...	98.49	...	98.18	59.25
...	...	20.14	18.19	45.40	22.59	69.93	88.74	...	...	93.11	54.91	92.51	69.60	94.51	69.54	92.01	75.70
7.02	...	5.31	25.02	39.79	...	50.78	36.04	98.99	...	97.11	77.54	98.79	...	99.23	78.23	99.15	68.03
...	...	17.29	33.55	49.89	10.70	25.09	14.17	...	...	99.38	64.94	97.97	80.18	69.34	92.51	99.31	77.72
...	3.74	5.56	7.39	13.55	1.04	20.31	25	...	12.85	98.84	39.18	99.07	100.00	99.61	80.76	99.59	84.84
6.45	...	15.83	...	5.73	2.47	54.36	76.69	97.30	...	100.00	...	98.98	57.89	99.44	79.96	99.97	75.65
29.37	...	20.67	6.89	34.54	18.64	60.64	31.37	...	...	100.00	100.00	99.72	83.04	88.74	100.00	99.29	79.72
...	...	5.21	41.17	40.48	22.36	65.46	26.47	...	...	98.73	55.31	98.01	51.68	91.03	92.45	99.84	72.68
...	...	14.00	16.38	35.21	2.24	51.08	8.19	...	...	99.80	68.58	99.08	98.21	98.75	31.63	99.62	65.13
...	...	10.27	...	48.63	...	57.34	...	...	...	100.00	...	19.88	...	99.93	...	89.83	57.14
3.63	1.96	7.27	14.71	28.62	8.00	48.40	11.15	97.07	12.85	98.90	71.31	98.89	62.62	98.86	92.62	99.10	68.95

Statement No. VI.—Showing side by side the ratios, per 1,000 of population, of Deaths from small-pox and the

District,	1904-1905.		1905-1906.		1906-1907.		1907-1908.	
	Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.
1	2	3	4	5	6	7	8	9
Patna	·25	37,099	·32	46,470	·58	50,407	1·69	52,260
Gaya	·24	61,724	·07	66,671	·28	72,720	1·93	73,980
Shahabad	·10	41,734	·06	52,679	·11	52,483	·71	50,939
Saran	·20	53,626	·06	78,502	·11	74,338	·29	65,785
Champaran	·29	51,071	·13	52,610	·10	49,019	·38	57,722
Muzaffarpur	·27	91,137	·13	95,914	·05	99,054	·09	1,01,292
Darbhanga	·26	91,019	·10	87,559	·09	80,126	·11	89,884
Monghyr	·20	78,834	·15	86,390	·46	83,081	1·00	80,846
Bhagalpur	·16	76,681	·35	78,539	·93	79,717	1·25	76,312
Purnea	·35	63,913	·18	60,070	·55	59,430	·41	52,054
Santal Parganas	·11	77,781	·19	68,024	·51	63,023	·66	58,350
Cuttack	·07	93,806	·04	93,420	·14	77,025	·29	95,087
Balasore	·09	45,018	·36	31,835	·80	37,841	1·25	29,806
Angul ... ..	...	5,275	...	10,041	...	8,886	...	8,283
Puri	1·19	39,884	2·84	43,080	4·72	40,682	2·24	55,452
Sambalpur	·11	35,750	·06	26,000	·04	25,024	·14	27,441
Hazaribagh	·01	48,291	·01	48,825	·04	43,816	·23	48,899
Ranchi	·03	46,208	·008	46,295	·02	46,315	·23	53,933
Palamau	·08	16,976	·009	16,713	·02	17,615	·15	16,241
Manbhum	·09	46,896	·007	51,297	·08	54,690	·31	63,508
Singhbhum	·01	18,734	·02	21,041	·09	19,007	·12	18,527
Political States of Singhbhum	...	5,332	...	5,633	...	4,903	...	3,987
Total	·19	127,439	·24	167,608	·39	139,207	·67	1,174,618

number of successful vaccinations during the 10 years ending 1913-1914.

1905-1909.		1909-1910.		1910-1911.		1911-1912.		1912-1913.		1913-1914.	
Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.	Ratio of deaths from small-pox.	Number of successful vaccinations.
10	11	12	13	14	15	16	17	18	19	20	21
2.94	53,570	1.23	51,589	.30	45,635	.03	48,637	.08	48,768	.14	48,480
2.68	72,305	.63	74,725	.07	68,104	.07	69,923	.003	66,965	.03	67,817
1.76	53,759	.67	46,311	.04	39,890	.02	36,809	.006	47,086	.09	53,313
.96	74,035	.04	76,930	.07	86,741	.03	83,221	.006	85,339	.06	81,699
.80	56,143	.44	63,172	.02	59,587	.03	69,354	.07	55,186		63,100
.23	101,612	.22	98,808	.06	101,395	.05	102,535	.04	101,405	.01	103,052
.13	75,833	.29	88,005	.07	84,025	.06	83,313	.01	83,546	.06	93,735
.61	78,938	.30	79,969	.11	85,497	.09	89,123	.08	84,475	.43	89,024
.15	71,382	.24	77,682	.26	74,438	.43	80,294	.41	77,274	.31	75,244
.08	50,937	.36	61,698	.39	63,167	.24	59,409	.14	56,955	.22	60,557
.71	65,509	.36	67,015	.07	67,443	.08	61,909	.19	60,236	.27	64,815
.28	107,434	.12	134,160	.007	139,487	.002	153,747	.01	137,175	.01	134,227
.64	35,811	.56	44,340	.41	53,052	.19	63,287	.06	68,271	.11	69,059
...	9,022	...	7,602	...	9,353	...	8,207	...	5,906	...	7,945
.83	53,920	.16	52,438	.07	53,733	.006	53,519	.02	53,612	.07	47,269
.17	28,205	.04	27,124	.08	33,399	...	33,153	.04	25,955	.05	25,063
1.27	42,294	.42	42,659	.01	50,975	.005	46,544	.02	46,150	.02	51,777
1.48	44,556	.81	46,968	.07	57,541	.02	43,913	.004	51,036	.01	49,989
1.19	27,936	1.42	31,133	.11	21,959	.008	24,782	...	23,633	.07	21,459
.46	62,937	.21	53,169	.01	60,686	.0006	60,420	.005	61,191	.02	61,316
.22	22,721	.42	17,469	.08	23,593	.001	22,741	.05	20,254	.09	23,406
...	5,377	...	4,393	...	4,953	...	4,967	...	4,531	...	5,654
.83	1,194,561	.45	1,240,390	.10	1,288,594	.08	1,298,587	.06	1,275,443	.11	1,298,619

Statement No. VII.—Showing the protection afforded to infants in each town in the Province of Bihar and Orissa during the year 1913-14.

Districts.	Towns.	Number of births during the year.	Number of deaths amongst children under one year during the year.	Number of successful vaccinations on children under one year during the year ending 31st March 1914.	Date of extension of Vaccination Act to town.
1	2	3	4	5	6
Patna	Patna	3,045	831	1,212	1st October 1884.
	Bihar	1,462	244	1,060	1st April 1887.
	Dinapur	1,042	179	325	28th January 1891.
	Barh	251	67	221	1st April 1887.
	Khagole	163	32	72	12th July 1910.
	Total	5,963	1,353	2,890	
Gayā	Gaya	2,260	723	739	1st January 1883.
	Tikari	285	35	161	3rd " 1891.
	Daudnagar	387	91	235	3rd " 1891.
	Total	2,932	849	1,135	
Shahabad	Arrah	1,007	150	861	20th July 1885.
	Buxar	408	68	347	1st April 1887.
	Dumraon	531	80	323	1st April 1887.
	Jagadshpur	321	39	255	20th December 1890.
	Sasaram	866	151	463	1st April 1887.
	Bhabua	230	47	296	1st April 1887.
	Total	3,363	535	2,545	
Total of the Patna Division		12,256	2,737	6,570	
Saran	Chapra	1,603	377	1,092	1st April 1887.
	Revelganj	336	63	352	12th December 1890.
	Siwan	530	103	360	1st April 1887.
	Total	2,469	543	1,804	
Champaran	Motihari	464	120	419	1st April 1887.
	Bettiah	707	114	733	1st April 1887.
	Total	1,171	234	1,151	
Muzaffarpur	Muzaffarpur	1,496	282	1,576	1st January 1886.
	Sitamarhi	370	67	217	1st April 1887.
	Hajipur	811	164	634	1st May 1890.
	Lalganj	385	80	264	1st April 1887.
	Total	3,062	593	2,691	

Statement No. VII.—Showing the protection afforded to infants in each town in the Province of Bihar and Orissa during the year 1913-14—continued.

Districts.	Towns.	Number of births during the year.	Number of deaths amongst children under one year during the year.	Number of successful vaccinations on children under one year during the year ending 31st March 1914.	Date of extension of Vaccination Act to town.
1	2	3	4	5	6
Darbhanga	Darbhanga	2,440	413	1,003	24th May 1884.
	Roserah	391	91	145	3rd January 1891.
	Samastipur	255	35	173	25th July 1910.
	Madhubani	606	111	290	1st April 1887.
	Total	3,693	650	1,611	
Total of the Tirhut Division		10,395	2,020	7,257	
Monghyr	Monghyr	1,605	306	1,703	15th November 1882.
	Jamalpur	1,059	195	636	15th November 1882.
	Total	2,664	501	2,339	
Bhagalpur	Bhagalpur	2,134	309	383	15th February 1884 withdrawn on 16th October 1895 re-extended on 18th August 1898.
	Colgong	163	27	11	15th February 1884 withdrawn on 16th October 1895 re-extended on 19th December 1901.
	Total	2,297	336	394	
Purnea	Purnea	357	56	313	1st July 1887.
	Kissenganj	147	17	132	12th November 1892.
	Katihar	298	33	315	8th August 1910.
	Forbesganj	123	5	160	19th August 1912.
	Total	925	111	950	
Santal Parganas	Sahibganj	529	91	393	1st May 1884.
	Deoghar	295	80	182	1st May 1884.
	Maikapur	263	68	129	22nd August 1910.
	Dumka	268	37	184	Notification dated the 9th April 1884 and 23rd August 1910.
	Total	1,355	276	893	
Total of the Bhagalpur Division		7,241	1,224	4,576	
Cuttack	Cuttack	1,436	274	1,157	1st September 1884.
	Kendrapara	555	123	482	7th February 1888.
	Jajpur	366	70	204	7th February 1888.
	Total	2,357	467	1,843	

Statement No. VII.—Showing the protection afforded to infants in each town in the Province of Bihar and Orissa during the year 1913-14—concluded.

Districts.	Towns.	Number of births during the year.	Number of deaths amongst children under one year during the year.	Number of successful vaccinations on children under one year during the year ending 31st March 1914.	Date of extension of Vaccination Act to town.
1	2	3	4	5	6
Balasore ...	Balasore ...	555	108	259	7th February 1883.
Puri ...	Puri ...	590	182	295	7th February 1883.
Sambalpur ...	Sambalpur ...	348	62	100	7th March 1895.
	Total of the Orissa Division ...	3,350	809	2,587	
Hazaribagh ...	Hazaribagh ...	708	119	318	1st January 1885.
	Chatra ...	390	68	133	1st August 1885.
	Giridih ...	128	24	225	8th September 1910.
	Total ...	1,256	211	706	
Ranchi ...	Ranchi ...	1,200	127	626	1st April 1837.
	Lohardaga ...	251	33	116	25th June 1892.
	Total ...	1,511	160	1,042	
Palaman ...	Daltonganj ...	132	18	171	9th October 1890.
Manbhum ...	Perulia ...	358	40	266	1st January 1887.
	Raghnathpur ...	208	20	134	19th February 1894.
	Jhalda ...	165	18	110	9th July 1892.
	Total ...	732	78	510	
Singhbhum ...	Chaibassa ...	230	33	159	20th June 1892.
	Total of the Chota Nagpur Division ...	3,890	500	2,588	
	Total for the Province ...	37,634	7,290	23,578	

ANNEXURE II.

Provincial Statement.—Showing the different kinds of lymph

District.	Primary										
	Direct from the calf.					With lanoline or glycerine lymph.					
	Total.	Successful.	Unsuccessful.	Unknown.	Percentage of successful cases.	Total.	Successful.	Unsuccessful.	Unknown.	Percentage of successful cases.	
1	2	3	4	5	6	7	8	9	10	11	
Patna	17,205	16,982	264	50	99.19	
Gaya	67,873	67,513	139	221	99.66	
Shahabad	38,810	38,584	175	51	99.42	
Saran	...	8,586	8,427	58	95	98.21	22,004	22,580	121	233	98.45
Champaran	62,937	62,696	199	142	99.53	
Monaharpur	11,899	11,799	...	91	99.23	
Darbhanga	93,819	93,572	238	9	99.79	
Monghyr	6,292	6,283	...	4	99.93	
Bhagalpur	38,467	38,307	78	22	99.74	
Purnea	...	176	173	3	...	98.29	4,916	4,822	87	7	91.98
Santal Parganas	61,688	61,350	161	167	99.46	
Cuttack	1,34,871	1,33,638	583	659	99.08	
Balassore	69,501	68,243	...	1,258	98.18	
Angal	7,632	7,215	492	125	93.01	
Puri	46,862	46,467	216	179	99.15	
Sambalpur	...	23,605	23,533	44	88	99.44	759	724	11	24	95.78
Hazaribagh	42,596	42,528	40	25	99.84	
Ranchi	49,421	49,498	...	13	99.97	
Palaman	18,635	17,622	694	79	99.17	
Manbhum	60,342	60,310	37	56	99.94	
Singbhum	22,021	21,928	60	23	99.02	
Political States of Singbhum	5,567	5,578	6	3	97.83	
Total	...	32,421	32,133	165	183	99.11	685,378	679,163	5,061	3,544	99.18

URE II.

used and their rates of success during the year 1913-14.

vaccination.					Re-vaccination.															
Arm-to-arm vaccination.					Direct from the calf.					With lanoline or glycerine lymph.					Arm-to-arm vaccination.					
Total.	Successful.	Unsuccessful.	Unknown.	Percentage of successful cases.	Total.	Successful.	Unsuccessful.	Unknown.	Percentage of successful cases.	Total.	Successful.	Unsuccessful.	Unknown.	Percentage of successful cases.	Total.	Successful.	Unsuccessful.	Unknown.	Percentage of successful cases.	
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
31,435	31,142	29	244	99.06	...	...	...	...	...	570	355	129	80	62.28	5	1	3	1	29.00
...	...	...	...	...	...	...	...	...	...	490	304	12	183	60.82	...	...	...	...	...
14,828	14,719	98	11	99.11	...	...	...	...	...	868	500	318	61	57.51	...	...	...	...	...
51,008	50,302	293	441	98.73	182	143	11	28	78.73	218	157	49	51	63.30	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	633	434	93	106	68.56	...	...	...	...	...
90,091	90,200	...	335	99.63	...	...	...	...	...	1,293	936	...	330	74.53	25	18	...	7	72.00
...	...	...	...	...	...	...	...	...	...	272	161	57	12	59.92	...	...	...	...	...
82,507	82,423	...	54	99.33	...	...	...	...	...	340	283	...	57	83.23	...	...	...	...	...
35,313	35,596	20	7	99.42	...	...	...	...	...	2,728	1,531	1,013	124	58.32	...	...	...	...	...
55,019	54,937	71	11	99.85	...	...	...	...	...	1,474	655	807	12	44.43	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	5,400	3,455	877	1,128	63.27	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	3,023	593	749	2,585	15.61	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	1,377	816	...	561	59.26	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	951	720	167	64	75.70	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	1,179	802	281	96	68.03	...	...	...	...	...
...	...	...	...	...	620	581	15	22	94.03	417	223	131	63	53.47	...	...	...	...	...
2,562	2,895	5	2	99.75	...	...	...	...	...	10,375	6,354	3,648	373	61.24	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	708	581	...	187	75.65	...	...	...	...	...
2,114	2,104	10	...	99.52	...	...	...	...	...	3,174	1,733	280	161	70.71	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	1,462	1,037	280	96	72.96	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	2,792	558	761	53	65.13	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	133	76	57	...	57.14	...	...	...	...	...
3,65,798	3,64,157	456	1,105	99.57	802	726	26	59	99.66	29,550	23,301	9,779	6,389	69.12	30	19	3	8	63.33	

Date		Description		Amount	
1880	Jan 1	Balance		100	
	Feb 1	Received		50	
	Mar 1	Received		75	
	Apr 1	Received		100	
	May 1	Received		125	
	Jun 1	Received		150	
	Jul 1	Received		175	
	Aug 1	Received		200	
	Sep 1	Received		225	
	Oct 1	Received		250	
	Nov 1	Received		275	
	Dec 1	Received		300	
	Total			2000	

GOVERNMENT OF BIHAR AND ORISSA.

MUNICIPAL DEPARTMENT.

RESOLUTION.

No. 9426M.

Ranchi, the 7th September 1914.

READ—

The Report of the Sanitary Commissioner, Bihar and Orissa, for the year 1913.

Read also the Triennial Report on Vaccination, Bihar and Orissa, for the years 1911-12 to 1912-14.

Lt.-Col. E. C. Hare, I.M.S., was in charge of the Sanitary Department for the whole of the year under review.

2. *Rainfall*.—The year's rainfall was heavy in Western Bihar and in most of the Chota Nagpur Division. In spite of floods in the districts of Patna, Gaya, Muzaffarpur, Balasore and Cuttack which caused considerable temporary distress, particularly in Patna and Gaya, the crops were not seriously affected and the agricultural out-turn was up to the average.

3. *Vital Statistics*.—The year was very healthy. Though some of the figures are not altogether convincing, particularly those of the Monaharpur and Palkot Circles (93.79 and 90.02, respectively), the birth rate (42.10) reported was considerably above the average of the last few years, and the death rate (29.14) was the lowest recorded since 1899. The rate of infant mortality during the year was the lowest recorded in any province in India.

4. *Registration of Vital Occurrences*.—The accurate registration of vital occurrences is essential to a scientific investigation of the incidence of diseases and of the success of the measures taken to combat them. The system obtaining in rural areas depends on the sense of responsibility and the intelligence of the village chaukidar and is therefore admittedly primitive and capable of great improvement, which however can only be carried out at a prohibitive cost. It is more disappointing to find that in certain areas where registration is compulsory the figures are inaccurate and incomplete, and the Lieutenant-Governor in Council will be glad if the Sanitary Commissioner will take in consultation with the local authorities such measures as will ensure more correct returns. The Government of India have recently suggested the desirability of maintaining for a term of years a complete and accurate record of the vital occurrences of a selected population living in an area where conditions are more or less stable, and it is hoped that arrangements will be shortly completed to bring the experiment into operation.

5. The following account shows briefly the incidence of the chief diseases during the year under report.

(i) *Cholera*.—The mortality from this disease was still below the average of the last 10 years. It was most severe in the districts of Puri and Champaran. The former station suffers every year on account of the large concourse of pilgrims, but the mortality in Champaran could not be ascribed to any definite cause. An outbreak in the Jharia Coal Fields was due to the use of polluted water by the coolies employed in the mines. A scheme to supply

filtered water throughout the Jharia field has been administratively approved by Government and a Mines Board of Health has been constituted for the area. It is hoped that these measures will result in a great improvement in the local sanitary conditions and in the public health. His Honour in Council observes with pleasure that the use of permanganate of potash as a preventive measure for disinfecting wells has generally become popular, and he trusts that the use of this simple and effective remedy will continue to be encouraged.

(ii) *Small-pox*.—The rate of mortality from small-pox in 1913 was slightly higher than in the previous year, but considerably below the average of the last decade. The rise was more noticeable in urban than in rural areas, the town which suffered most being Bhagalpur. The death rate was highest in the Monghyr district (49).

The triennial report on vaccination for the years 1911-12, 1912-13, 1913-14 shows that, in spite of a large and unexplained decrease in the number of revaccinations, which only represented 2·51 of the total number of operations, the average number of operations performed in each year was 13,11,674 against an average of 12,76,909 in the three preceding years.

Bengal Act V of 1880, which provides for compulsory vaccination, is now in force in the municipal towns of all districts in the province except Sambalpur, where the Central Provinces Municipal Act gives the necessary powers of compulsion. The Lieutenant-Governor in Council has announced his intention of extending the Act to Sakchi, the settlement of the Tata Steel and Iron Works Company in the Singhbhum District, and he will also be glad to receive a further report from the Sanitary Commissioner on the advisability of extending it to the Jharia Coal-field and to rural tracts in the Patna Division. His Honour in Council notices with much pleasure the remarkable progress in vaccination reported from the Orissa Feudatory States, and he endorses the suggestions of the Sanitary Commissioner that the attention of local bodies should be drawn to the success attending the employment in some of the states of female vaccinators to vaccinate women of the upper classes.

The buildings of the new Vaccine Depot at Nan'um near Ranchi are now nearing completion, and it is hoped that the supply of vaccine for use in Bihar and Orissa next season will be prepared there.

(iii) *Fever*.—The number of deaths from fever during 1913 was 6,23,556 or 18·18 per mille of the population, which is below the average of the previous year and of the previous decade. Although no doubt credited with a large number of deaths due to other causes, "Fever" still claims a larger number of victims in Bihar and Orissa every year than any other of the chief causes of mortality. The highest death rate (25·51) was in Purnea, followed by Bhagalpur with 24·65. Gaya headed the list of towns with a death rate of 27·22 in the thousand.

During the year two Sub-Assistant Surgeons, who had been specially trained to deliver lectures in simple language on the etiology and treatment of malaria, were deputed to Purnea and Shahabad respectively. The Sanitary Commissioner reports that they met with a very favourable reception, and he anticipates that much good will result from the deputation. The sales of quinine showed a considerable increase and it is hoped that the new system of selling the drug in "treatments" instead of in pice-packets and bottles of tablets will further advance its popularity.

The experiment of distributing quinine to Government servants drawing less than Rs. 10 a month in Purnea has been discontinued in its original form, because the absence of any serious attempt to supervise the distribution or to co-ordinate the results obtained rendered it impossible to deduce conclusions of any value as to the success of the system.

(iv) *Plague*.—The mortality from this cause fell during 1913 and the disease showed no sign of establishing itself in new areas. The number of deaths recorded was 36,383 as compared with 58,324 during the previous year. The disease as usual was most severe in Saran, but it also assumed serious proportions in Shahabad, Patna and Monghyr. The increase in the number of inoculations performed was inconsiderable, and it is clear that the operation is generally still regarded with disfavour. The only exception to this remark is furnished by the Bhagalpur District, where indications are not wanting that the people are beginning to realize the protection which they can secure at the cost of very trifling inconvenience. This gratifying development is principally due to the perseverance and sympathetic policy of the local Civil Surgeon, Lieutenant-Colonel Vaughan, I.M.S., and the Lieutenant-Governor in Council takes this opportunity to record his high appreciation of that officer's invaluable services in the matter. Nine itinerant Assistant Surgeons were employed during the year for inoculation work and for the treatment of plague cases. In Saran the evacuation of infected houses continues to be the most popular method of protection, and it proved efficacious wherever it was adopted in time and the people kept strictly aloof from the abandoned houses. A Plague Manual has lately been issued by the Local Government for the guidance of its officers and for the information of the public generally.

(v) *Dysentery and Diarrhœa*.—The number of deaths in 1913 was 25,549 or 74 per mille, as compared with 26,022 or 75 per mille in 1912. The Orissa Division as usual suffered most, and the Lieutenant-Governor in Council would be glad if the Sanitary Commissioner would institute enquiries into the causes underlying the persistent predisposition of the residents of this Division to the disease.

(vi) *Respiratory diseases*.—A slight decrease in mortality is observable under this heading. A special ward for the treatment of tuberculosis has lately been opened in the Bhagalpur Hospital, and His Honour in Council is now considering the advisability of instituting a Sanatorium for the treatment of this disease within the Province.

6. *Travelling dispensaries*.—Six travelling dispensaries modelled on the lines which have proved so successful in the United Provinces were established during the year under report. Four of them worked in the plague-infected areas of Saran and Shahabad, and two in the malarial area of the Kishanganj subdivision of the Purnea district. Much success attended those instituted in the Saran and Shahabad districts. The Purnea dispensaries on the other hand achieved little or nothing, and it has been decided to remove them to other areas where they are likely to be more efficiently conducted and more popular. The officers in charge of the dispensaries are qualified to perform anti-plague inoculations, but in view of the great distrust of inoculation that prevails in the rural areas in which they tour the Lieutenant-Governor in Council is disposed to think that for the present at any rate it would be better to keep them entirely distinct from the inoculating agency.

7. *Sanitary Improvements*.—The total expenditure on sanitation by Municipalities during the year 1912-13 was Rs. 8,68,190 against Rs. 8,29,345 in 1911-12. This included an increase in expenditure under conservancy of Rs. 48,808, of which Rs. 14,941 was spent by the Puri Municipality in connection with the great *Naba Kalabar* festival of 1912. During the year water-works were opened at Gaya and Monghyr. The sketch projects of many important water-works and drainage schemes were completed or were in course of preparation, details of which are given in Section XI of the Report. In this important sphere of activity Government has been greatly handicapped by the inadequacy of the existing engineering staff, but it is hoped that the services of a fully qualified Assistant Sanitary Engineer will soon be available.

8. *Conferences*.—A Sanitary Conference of officials and non-officials was held at Ranchi in August 1913 to discuss the problems of urban and rural sanitation and to advise Government as to the conditions, if any, to be attached

to the assignment of the Public Works Cess to the District Boards as well as to the system of distributing the augmentation grants. Another Conference was held at Bankipore under the Chairmanship of the Sanitary Commissioner to discuss questions relating to school hygiene. The report of this Committee is under consideration by Government. An influential Committee, presided over by the Sanitary Commissioner with the Government of India, visited the chief centres of pilgrimage in the Province in July last year to inspect and advise on their sanitation. Unfortunately their report has been much delayed and its non-receipt has involved the postponement of a number of schemes in course of execution or in contemplation by the Local Government. In view of the large concourse of pilgrims which visits Puri every year and of the outbreaks of sickness which are at present an annual occurrence and a source of danger not only to Bihar and Orissa but to India as a whole, it is hoped that it may be possible to place the Lieutenant-Governor in Council in a position to deal with this very important matter.

9. *Staff.*—There are now three Deputy Sanitary Commissioners, the full complement of the Province. Two first class Health Officers were sanctioned in the course of the year for the Patna and Gaya Municipalities and eight Health Officers of the second class were appointed for the Bhagalpur, Cuttack, Monghyr, Ranchi, Muzaffarpur, Darbhanga, Chapra and Arrah Municipalities. A school for Sanitary Inspectors was opened at Bankipur in charge of one of the Deputy Sanitary Commissioners, and was attended by twenty nominees of various Municipalities.

10. *The Sanitary Board.*—The Sanitary Board was reconstituted in May 1913. The circulation of files having proved a cumbrous and slow method of business, a system of more or less frequent meetings was substituted for it. Five meetings were held before the end of the year 1913, and the reorganization of the Board has been amply justified by results.

By order of the Lieutenant-Governor in Council,

S. R. HIGNELL,

Offg. Secretary to Government.



