

Annual Report on Vaccinations

King Institute

1918-19



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VACCINATION IN THE MADRAS PRESIDENCY

AND ON THE WORK OF THE

VACCINE SECTION OF THE KING INSTITUTE
OF PREVENTIVE MEDICINE, MADRAS

FOR THE YEAR

1918-19.

35 sheets

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OFFICE OF THE SANITARY COMMISSIONER,
MADRAS, 21st August 1919.

From

DR. K. T. MATTHEW, D.H.Y., D.P.H. (CANTAB),
Acting Sanitary Commissioner for the Government of Madras,

To

THE SECRETARY TO GOVERNMENT,
LOCAL AND MUNICIPAL DEPARTMENT.

SIR,

I have the honour to forward herewith the reports of the Director, King Institute, Guindy, on the working of the Vaccine Section of the Institute and the Deputy Sanitary Commissioners, Northern, Central and Southern Ranges, on the progress of vaccination in the Madras Presidency during the official year 1918-19.

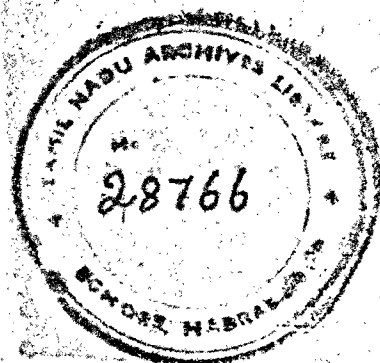
2. *Vaccine Section of the King Institute, Guindy.*—(i) The Director's report on the working of this section is interesting and calls for but few remarks. In paragraph 7 of the report and the several tables and chart attached thereto, the Director shows pretty conclusively that the complaints about the quality of the lymph issued by the Institute are ill-founded and that the reasons for the bad results of vaccination found generally in the Presidency should be sought for elsewhere.

(ii) The cost of working of the section rose from Rs. 43,319 in 1917-18 to Rs. 55,890 in the year under report. The increase occurred mainly under "Establishment Charges" due to the payment during 1918-19 of over three years' arrears of salary to the Acting Assistant Director of the Institute and under "Supplies and Services—Contingencies" due to the high prices that prevailed during the year on account of war. This increased cost had the effect of raising the cost price of vaccine from 4.04 pies per case in 1917-18 to 5.19 pies per case in 1918-19.

(iii) The vaccine was prepared throughout the year on the old method of manufacture, the bulk of the lymph supplied being lanolinated. The supply of glycerinated vaccine was, as usual, restricted to Madras City and Colombo.

The total quantity of vaccine supplied by the Institute during 1918-19 was 2,128,590 cases against 2,090,999 in 1917-18 and 2,113,697, the record figure of 1915-16. The increase was very marked under supplies to the Military Department, the number of cases taken by the said department being 90,375 against 44,655 in the previous year. Supplies to local bodies of lanolinated vaccine were made fortnightly during the whole of the first quarter of 1918-19. From 1st July 1918 tri-monthly issues were made generally, excepting a few tracts, in order to give better effect to the scheme sanctioned in G.O. No. 963 L., dated 4th July 1917, which relieved the vaccinators of all verification work and made them pay their whole attention to vaccination work proper. These frequent supplies did not produce the improvement wished for and much cannot be expected in this direction until the personnel of the present vaccination staff is thoroughly overhauled.

The regrettable feature of the year is the lowest success rate of 76.60 per cent recorded since the King Institute undertook the preparation and supply of vaccine lymph. The Director has dwelt at some length with the causes that operated to bring about this result. His conclusions are, I should say, correct. It is trusted that this matter will engage the serious attention of all those who are responsible for the good working of the department and that they will adopt measures to bring about a better condition of things.



The fall in the success rate was conspicuous in almost all the districts of the Presidency and was particularly so in Kurnool which recorded highest success rates successively for very many years past. The current year's rate in this district was 66.00 per cent against 96.84 per cent in 1917-18. The percentages in this district during the previous four years were 96.65, 96.82, 96.64 and 96.85, respectively. The general decline throughout the Presidency should be attributed primarily to the change in procedure of verification of cases as explained by the Director in paragraph 7 (2) of his report.

3. *Vaccination Department*—(i) *Staff*.—Two Deputy Sanitary Commissioners were on duty—one in charge of Northern and Central Ranges with headquarters at Madras and the other in charge of Southern Range with Coimbatore as his headquarters. The former inspected in all 7 municipalities and 261 villages in nine districts and the latter 18 municipalities and 407 villages in seven districts. The Deputy Sanitary Commissioner, Northern and Central Ranges, had in addition the Special Plague Inspectors' class during the whole of April 1918 and he was also in charge of the Sanitary Commissioner's office for a short period in February 1919. The work and inspections of these officers were satisfactory.

The following table exhibits the subordinate vaccination staffs employed in the Presidency during 1918-19 as compared with the previous year:—

Year.	Deputy Inspectors of Vaccination.			Vaccinators.			Total number of vaccinators.
	First grade.	Second grade.	Third grade.	First class.	Second class.	Third class.	
1917-18 ...	19	20	43	256	440	165	861
1918-19 ...	20	37	49	184	285	180	599

A scheme which offered better pay and prospects to these staffs was introduced during the year under report (G.O. No. 963 L., dated 4th July 1917), but the ultimate object with which it was introduced has not been attained. The Deputy Sanitary Commissioner, Northern and Central Ranges, has given in paragraphs 5 and 6 of his report some details of the new scheme and how it affected the working of the department during 1918-19. It is generally held that until properly qualified vaccinators take the place of the old set of men now on duty, the quality of their work cannot improve. It should, therefore, be the endeavour of all concerned to see that this is brought about with as little delay as possible.

Vaccinators' posts on rates of pay now in force do not seem to attract better class of men. The suggestion of the Deputy Sanitary Commissioner, Northern Range, in paragraph 6 (a) of his report to make these appointments more attractive by raising the scale of their pay may receive early consideration. The Deputy Sanitary Commissioner has not overstated the difficulties now experienced in recruiting proper men to the department.

(ii) *Vaccination*.—The following table exhibits the total vaccination work performed by all agencies throughout the Presidency (including Dispensary Vaccination) during the last three years:—

	1916-17.	1917-18.	1918-19.
Primary vaccination (including secondary) ...	1,431,337	1,432,386	1,333,313
Re-vaccination ...	218,608	274,897	300,520
Total ...	1,650,945 *	1,707,283 *	1,633,833

* Revised figures which include dispensary vaccination.

Compared with the two previous years, the total number of cases vaccinated during 1918-19 showed a decrease. The decline as compared with 1917-18

was 73,450 and was marked under "primary vaccination (including secondary vaccination)," the decrease under this head being as many as 99,073 cases. The districts which showed largest decreases were South Arcot (—20,548), Guntūr (—18,620), Tanjore (—17,116), Coimbatore (—16,734), Trichinopoly (—15,253), and Vizagapatam (—11,600). The considerable fall during the year under report is attributable to the following causes:—

(1) the changes in the subordinate vaccination staff effected by the introduction of the new scheme which for a time seriously interfered with the vaccination work; and

(2) the prevalence of influenza during the second half of the year, for a greater portion of which the work was practically at a standstill.

A few districts had increased number of primary vaccination cases. Prominent among them were South Kanara (+14,242) and Kistna (+10,622).

The increase under re-vaccination should be attributed to the greater prevalence of smallpox in 1918 and the consequent demand for re-vaccination.

(iii) The total successful vaccinations by all agencies and the percentage of successful cases including re-vaccination during the three previous years are shown in the following statement:—

Establishment.	Number of successful vaccinations.						Total of successful vaccinations.		
	1916-17.		1917-18.		1918-19.		1916-17.	1917-18.	1918-19.
	Primary vaccination.	Re-vaccination.	Primary vaccination.	Re-vaccination.	Primary vaccination.	Re-vaccination.			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Local Fund vaccinators ...	1,090,029	97,737	989,157	121,763	787,222	95,333	1,187,768	1,110,920	882,555
Government do. ...	13,900	4,119	15,057	3,024	14,158	3,773	18,019	18,081	17,931
Municipal do. ...	107,323	34,500	113,652	41,074	105,156	47,170	141,826	151,731	152,326
Cantonment do. ...	2,950	1,937	3,427	2,763	2,667	3,892	4,617	6,260	6,559
Dispensaries ...	145	30	189	92	165	70	175	281	225
Medical subordinates ...	213	6,771	103	7,252	375	9,085	6,984	7,355	9,460
Total ...	1,214,563	144,824	1,121,655	175,973	909,733	159,323	1,359,397	1,297,628	1,069,086
Establishment.	Ratio per cent of successful cases.						Ratio per cent of total successful cases.		
	1916-17.		1917-18.		1918-19.		1916-17.	1917-18.	1918-19.
	Primary vaccination.	Re-vaccination.	Primary vaccination.	Re-vaccination.	Primary vaccination.	Re-vaccination.			
(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
Local Fund vaccinators ...	86.2	73.7	82.8	73.4	76.4	59.0	85.3	81.5	73.9
Government do. ...	82.0	80.2	81.8	73.4	82.7	76.7	81.6	80.3	81.3
Municipal do. ...	93.0	68.6	91.0	67.0	91.5	71.9	85.6	83.1	84.4
Cantonment do. ...	87.6	40.9	85.2	41.5	80.0	45.6	62.0	58.1	55.3
Dispensaries ...	98.0	100.0	99.0	87.6	98.7	93.3	98.3	94.9	97.0
Medical subordinates ...	88.0	66.3	52.8	70.5	78.3	72.2	66.8	70.1	72.4
Total ...	86.7	73.4	83.4	70.8	77.9	62.0	85.0	81.4	75.1

A regrettable decline is noticeable in the percentage of success both under primary vaccination and re-vaccination during the year under report. Compared with 1917-18, the fall under primary vaccination was 5.5 per cent and under re-vaccination 8.8 per cent. Causes which led to this are sufficiently explained in paragraph 7 of the report of the Director, King Institute, paragraph 9 of the Northern Range Deputy Sanitary Commissioner's report and paragraph 4 (iv) of the Southern Range Deputy Sanitary Commissioner's report, and it is hoped that the defects on account of which the present state of things exists would be rectified.

without delay and that the department would be able to show better results in the future and retrieve the lost ground.

(iv) *Infantile vaccination*.—When compared with the previous year, there was a fall of 122,981 in the number of children successfully vaccinated under one year of age. The districts which showed a decrease of over 15 per cent in this respect were Ganjam (—59·2 per cent), Tanjore (—31·2 per cent), Kurnool (—27·5 per cent), Rāmnaḍ (—26·8 per cent), Bellary (—26·3 per cent), Cuddapah (—15·8 per cent), and Anantapur (—15·1 per cent). The decrease in all these cases is attributed chiefly to the prevalence of influenza and to the consequent inability of the vaccination staffs to push on vaccination.

Increases under infantile vaccination are noticeable in the following districts: Chingleput (+6·3 per cent), the Nilgiris (+5·6 per cent), Madura (+3·6 per cent) and North Arcot (+0·5 per cent).

Among municipalities where primary vaccination is compulsorily enforced, Peddapuram (+77·0 per cent), Nandyal (+60·8 per cent), Adoni (+52·7 per cent), Kurnool (+38·0 per cent), Narasaraopet (+29·5 per cent), Mangalore (+26·9 per cent), Cannanore (+25·2 per cent), Bodinayakkanur (+23·0 per cent), and Karur (+20·4 per cent) showed considerable increases, while Bellary (—39·4 per cent), Tiruppattūr (—33·2 per cent), Chittoor (—31·0 per cent), Ongole (—28·9 per cent), Cochin (—25·0 per cent), Cuddalore (—24·0 per cent) and Hospet (—22·2 per cent) had marked decreases. No explanations are forthcoming for such large variations. Can it be due to the rigorous application of the compulsory provisions of the District Municipalities Act in the former case and the apathetic attitude adopted by the authorities in enforcing these in the latter?

(v) The cost of the various Vaccination establishments and the average cost of each successful case during the three previous years are shown below:—

Establishment.	Total expenditure.			Average cost of each successful case.		
	1916-17.	1917-18.	1918-19.	1916-17.	1917-18.	1918-19.
	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
Government establishment.	10,680 12 6	10,797 4 3	13,437 10 9	0 9 6	0 9 7	0 12 0
Local fund do.	2,86,188 5 0	2,88,677 10 4	3,37,666 13 3	0 3 10	0 4 2	0 6 1
Municipal do.	42,511 8 2	42,607 13 5	49,964 14 0	0 4 10	0 4 5	0 5 3
Cantonments do.	3,408 15 0	3,807 8 3	4,298 2 5	0 11 10	0 9 9	0 10 5
Total ...	3,42,799 8 8	3,45,890 4 3	*4,05,365 8 5	0 4 1	0 4 3	0 6 1

* Exclusive of the pay and allowances of the two Deputy Sanitary Commissioners.

The average cost of each successful case rose from As. 4-1 in 1916-17 and As. 4-3 in 1917-18 to As. 6-1 in the year under report. It varied from As. 4-7 in the Kistna district to As. 14-6 in the Nilgiri district. The rate was above As. 9 in the Municipalities of Vizagapatam, Walajapet, Udamalpet, Tirupati, Chittoor, Erode, Virudupatti, Tiruppur, Dharapuram, Madras, Tirupattūr and Cochin, the highest figure reached being in Kodaikanal where the cost was as high as Rs. 1-1-9. The lowest cost was As. 1-10 and the municipality which returned it was Mangalore.

(vi) The total number of vaccination operations performed in all municipalities fell from 195,110 in 1917-18 to 190,389 in the year under report. The towns which returned the largest decreases were, Madura (—5,698), Madras (—3,398), Cochin (—2,544), Guntūr (—1,963), Cannanore (—1,311), Ongole (—1,291) and Virudupatti (—1,056). In Madras Guntūr and Ongole, the decrease is attributed to influenza and in Madura, Cannanore, Cochin and Virudupatti to the absence of smallpox. Towns where increases occurred were Mangalore (+5,860), Cocanada (+3,528), Calicut (+2,252), Berhampur (+2,164), Negapatam (+1,169), Rajahmundry (+1,093) and Palamcottah (+1,042). Attention in this connexion is invited to paragraph 12 of the report of the Deputy Sanitary Commissioner for Northern and Central Ranges and latter part of paragraph 4 (v) of

the Southern Range Deputy Sanitary Commissioner's report. It is time that the municipalities improved the personnel and pay of their vaccinators.

(vii) The comparative success obtained by the use of different kinds of lymph in primary vaccination is shown in the subjoined table:—

Number of cases excluding unknown.	Area.	Kind of lymph.	Whence obtained.	Percentage of success.
1,048,634	Local fund	Lanoline lymph	The King Institute, Guindy	76·4
96,958*	Do.	Glycerine	Do.	90·4
17,814	Municipalities	Lanoline lymph	Do.	90·4
	Do.	Glycerine	Do.	97·5

* Excludes 172 cases vaccinated in Erode Municipality with Bangalore lymph.

During the year under report the percentage of success with lanoline lymph fell from 82·6 to 76·4 in local fund areas and rose from 89·3 to 90·4 in municipalities. While the complete change in the agency employed for verification of results in local fund areas accounts for the lowered success rate, the increase of 1·1 per cent in the rate in municipalities is not easily explained. The figures however returned from municipalities have to be taken with caution, seeing that well more than 50 per cent of the cases done in these towns are still verified by the vaccinators who do the vaccination. Glycerinated lymph whose supply was restricted to Madras City alone yielded a success rate of 97·5 against 93·3 in 1917-18. The fall is slight and calls for little comment.

(viii) Smallpox was prevalent to a greater extent in 1918 than in the previous year, the total number of deaths registered therefrom being 58,752 against 34,958 in 1917. The proportion of population protected in the districts and municipalities during the year is shown in the annexed two diagrams.

(ix) Verification of vaccinated cases by Deputy Inspectors of Vaccination was not, on the whole, satisfactory. In no case was the cent per cent verification required under the new scheme carried out. There were Deputy Inspectors who did not verify even the old minimum of 50 per cent of cases and suitable notice has been taken of such men. With the proper understanding of the new scheme and the strict enforcement of the rules sanctioned in G.O. No. 760 L., dated 18th June 1919, there is scope for improvement in this direction.

(x) During the year under report two Deputy Inspectors of Vaccination were punished with suspension and two with reduction for submitting false diaries and returns: three were fined and one was warned for irregularities in the conduct of their work.

(xi) The service registers of all the Deputy Inspectors of Vaccination have been duly verified.

(xii) The proposals of the Deputy Sanitary Commissioner, Northern Range, in paragraph 20 of his report for the revision of the office staffs of the Deputy Sanitary Commissioners should form the subject of a separate communication.

(xiii) The report of the Deputy Sanitary Commissioner, Northern and Central Ranges, was received in this office on the 11th June 1919, while that of the Deputy Sanitary Commissioner, Southern Range, in complete form did not reach this office until 31st July 1919. The cause of this extraordinary delay is explained by the Deputy Sanitary Commissioner, Southern Range, in paragraph 6 of his report.

I have the honour to be,

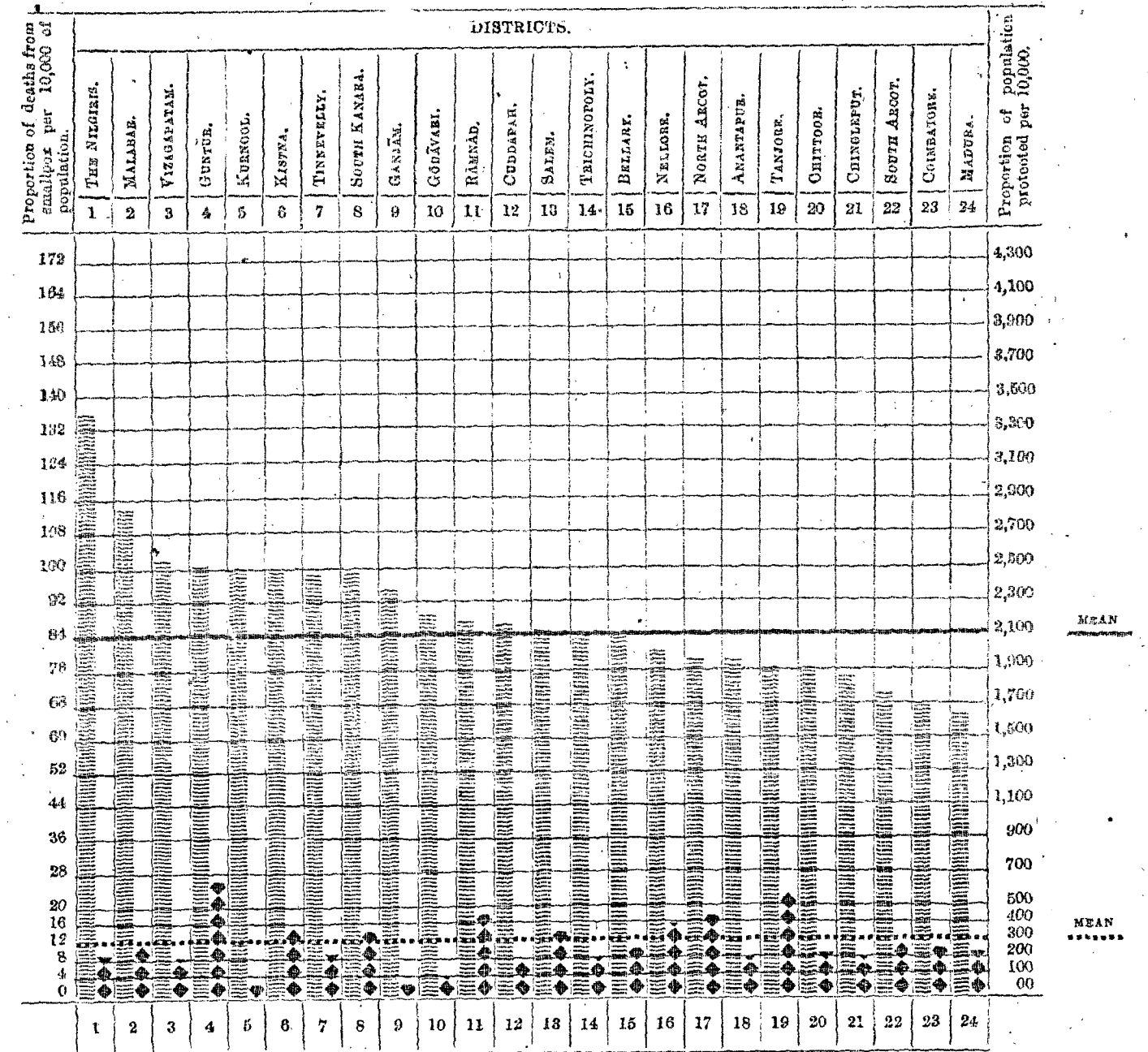
Sir,

Your most obedient servant,

K. T. MATTHEW, D.H.V., D.P.H. (CANTAB.),

Acting Sanitary Commissioner for the

Government of Madras.

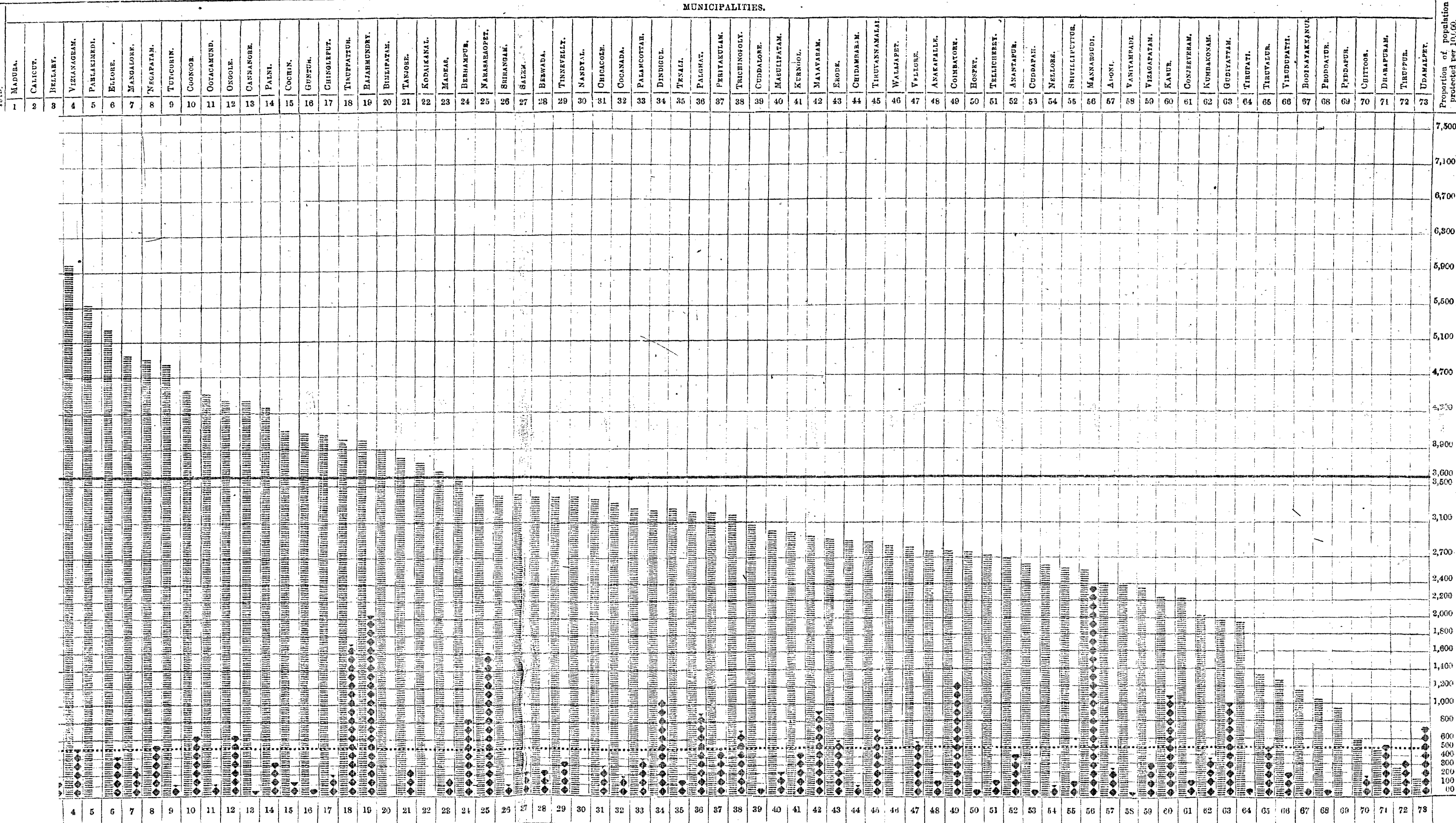


REFERENCE.

||||| REPRESENT THE POPULATION PER 10,000 PROTECTED FROM SMALLPOX.

◆◆◆◆ REPRESENT THE PROPORTION OF DEATHS FROM SMALLPOX PER 10,000 POPULATION.

Proportion of deaths from
smallpox per 10,000 of
population during 1918-
1919.



REFERENCE.

■■■■■ REPRESENT THE PROPORTION OF POPULATION PER 10,000 PROTECTED FROM SMALLPOX.
♦♦♦♦♦ REPRESENT THE PROPORTION OF DEATHS FROM SMALLPOX PER 10,000 OF POPULATION.

**ANNUAL REPORT ON THE WORK OF THE VACCINE SECTION OF
THE KING INSTITUTE OF PREVENTIVE MEDICINE, GUINDY,
FOR THE YEAR ENDING 31st MARCH 1919.**

The total quantity of vaccine supplied by the Institute during the year 1918-19 shows a marked increase. The actual number of cases issued is 2,128,590, an increase over the record figure of 1915-16 of 14,893 cases.

2. Table I shows the quantity of vaccine issued to various bodies for the quinquennium 1914-15 to 1918-19.

TABLE I.

Statement showing the quantity of vaccine supplied to various bodies from 1914-15 to 1918-19.

To whom supplied.	1914-15.	1915-16.	1916-17.	1917-18.	1918-19.
Government officers, including jails ...	20,951	21,451	{ 22,656 1,700 }	24,309	27,375
Agency Tracts	25,060	24,105	28,815	28,455	28,275
Military Department	25,671	14,410	19,677	44,655	90,875
District Boards	1,649,070	1,730,000	1,652,330	1,653,835	1,657,695
Municipalities	178,980	230,185	212,035	248,590	235,310
Superintendent of Vaccination, Secunderabad	19,530	8,970	7,930	9,500	10,160
Vaccinator, Bolarum	1,480	1,550	1,070	1,030	1,050
Civil Surgeon, Civil Hospital, Basra ...	...	2,400	200	...	...
Private bodies	82,695	65,626	77,807	80,765	78,350
Total ...	1,983,417	2,113,697	2,034,220	2,090,990	2,128,590

* Supplied to the Port Health Officer, Negapatam.

It will be seen that the increased issue is mainly due to supplies made to the Military Department. Slight rises are also found in the quantities issued to Government officers including Jails and District Boards. The requirements of municipalities and private bodies were somewhat less than last year. Those of the Agency Tracts, Superintendent of Vaccination, Secunderabad, and the Vaccinator, Bolarum, remained substantially the same. The issue to private bodies included about 17,000 cases sent to the Medical Officer, Berbera, in the Somaliland Protectorate.

3. No changes were made in the manufacture of the vaccine, the bulk of which was as usual made up with lanoline. Glycerinated lymph was, however, supplied to Madras City and to Colombo as in previous years.

4. The usual fortnightly despatch of vaccine was continued during the first quarter of the year. From the 1st of July, however, the date from which the new scheme brought in in compliance with G.O. No. 963 L., dated 4th July 1917, took effect, three issues per month were made to the whole Presidency. Exceptions to this rule were made in the case of the Agency vaccinators of Vizagapatam and Gōdāvari districts. These vaccinators are still supplied once a fortnight owing to the difficulty encountered in introducing the new system for want of proper transport facilities in the Agency Tracts. In Ganjām district the revised scheme was introduced in the Berhampur range alone.

5. The majority of vaccinators used up their supplies within the time specified, but the practice of putting off one or more days before commencing work with a fresh batch of paste still continues.

REPORT OF THE KING INSTITUTE, GUINDY

TABLE II.

Statement showing the expenditure incurred during the year 1918-19 under all heads of expenditure of the Vaccine Section of the King Institute of Preventive Medicine, Guindy.

Detailed heads of account.	Amount.		
	RS.	A.	P.
Establishment charges—			
Assistant Director	21,905	1	2
Deputy Inspectors of Vaccination			
Clerks and servants	1,013	0	8
House rent and other allowances	81	0	0
Travelling allowance			
Total establishment	33,599	2	4
Supplies and Services—Contingencies—			
Purchase of apparatus, stores	7,582	12	6
Cost of calves including transport	21,215	0	0
Feeding charges of calves	1,642	7	8
Water-works, stores	912	0	10
Gas works, stores	139	2	9
Purchase and repair of furniture	32	10	6
Tour charges	20	8	0
Cleaning charges	103	0	0
Service postage and telegram charges	2,261	7	8
Office expenses	883	14	3
Miscellaneous	110	0	0
Other contingencies	155	0	0
Pay of menials	3,883	4	3
Total contingencies	41,791	4	0
Proportionate cost of stationery supplied during 1918-19	155	0	8
Do. of clothing supplied during 1918-19	13	0	0
Cost of repairs to the Vaccine Section buildings for 1918-19 as per statements furnished by the Executive Engineer, South Presidency Division, with his letter No. 982 M., dated 5th May 1919, and Electric Engineer's letter No. 1514-E., dated 5th May 1919.	1,221	11	0
Total cost of stationery, clothing and repairs	1,424	11	8
Grand total, Vaccine Section	65,815	2	0

TABLE III.

Statement showing the net expenditure incurred during the year 1918-19 in the King Institute of Preventive Medicine, Guindy.

Particulars.	Amount.		
	RS.	A.	P.
Gross expenditure as per Table II	65,815	2	0
Deduct—			
(1) Credits under sale of calves and miscellaneous receipts remitted to treasury	6,023	4	0
(2) Cost of vaccine lymph supplied to private bodies during the year	4,896	14	0
	10,925	2	0
Net total expenditure	55,889	15	3

REPORT OF THE KING INSTITUTE, GUINDY

TABLE IV.

Statement showing the number of cases for which vaccine was despatched to different bodies and their cost—private bodies being excluded—during the year 1918-19.

To whom supplied.	Number of cases for which vaccine was supplied.	Rate per case.	Total amount debitible.
		Rs. A. P.	
1. Government officers including jails ..	27,375	758 8 5(c)	
2. Agency Tracts	28,276	770 15 7(b)	
3. Military Department	80,875	2,442 10 10	
4. District Boards	1,637,935	45,183 0 5(c)	
5. Municipalities	235,310	3,436 12 5(d)	
6. Superintendent of Vaccination, Secunderabad [Secunderabad Local (Abbasi, etc.) Fund]	10,160	274 9 8	
7. Vaccinator, Belaram (Belaram Cantonment Funds)	1,050	23 3 1	
Total	2,050,240	55,889 15 3	

N.B.—In calculating the cost per case of vaccine, Rs. 475-9-0 has been deducted from Rs. 55,839-15-3 as the former represents registration fees which are charged to the bodies concerned.

(a) Includes Rs. 18 10 0 for registering vaccine packets.

(b) " " 6 12 0

(c) " " 378 7 0

(d) " " 76 12 0

Total .. 475 9 0

6. Tables II, III and IV show the expenditure incurred by the section during the year. There has been an increase of Rs. 12,571 or 29 per cent in the net charges incurred. This has resulted in raising the price of vaccine from 4-041766 to 5-189423 pies per case. This rise is chiefly due to the payment during the year of over three years' arrears of salary to the acting Assistant Director. The prevailing high prices have also played their part and have caused increases under the headings of purchase of apparatus, cost of calves, house rent and pay of menials.

The amount realized under the sale of calves and cost of vaccine supplied to private bodies during the year shows a slight increase.

TABLE V.

Returns recorded in the King Institute of Preventive Medicine, Guindy, from the whole of the Madras Presidency according to the month of the year.

Serial number.	Months.	Number successful.	Number unsuccessful.	Percentage of success.
1	April 1918	67,897	22,841	75.05
2	May	79,827	30,874	72.18
3	June	84,547	41,829	69.24
4	July	95,909	49,749	68.53
5	August	89,519	25,290	77.88
6	September	77,325	28,087	73.35
7	October	52,402	26,897	68.50
8	November	61,754	19,460	85.52
9	December	73,523	12,600	85.86
10	January 1919	81,463	14,613	85.25
11	February	91,345	16,783	89.43
12	March	83,923	11,925	87.55
	Total	947,863	259,430	78.50

7. Table V shows the monthwar success rate reported for the whole of the Madras Presidency excluding Madras City. The percentage of successful vaccinations has fallen to 76.6 per cent, a proportion which is less by 6.43 than that obtained in the previous year. This constitutes the lowest rate recorded since the Institute has been connected with the preparation of vaccine lymph. A set back of this nature, after the introduction of a new scheme from which better results were anticipated, is regrettable and requires careful investigation to see if any cause can be found for the apparent want of success. Three important factors will be considered from this point of view—(1) adverse climatic conditions, (2) the

effect of the scheme of reorganization upon the district returns and (3) the possibility of changes in the potency of the lymph.

(1) The monthly returns can be divided into two distinct groups according to the measure of success which has been attained. Between April and October the success rate remained consistently below the average. After this period, however, recovery took place and the results compare more favourably with those obtained in former years. Attention has already been drawn in previous reports to the presence of a seasonal variation which shows that the most unfavourable months for vaccination are May, June and July. After this, conditions as a rule gradually improve. In the present case, however, this improvement, if the slight temporary rise in August be excluded, was delayed until November. The year under review was a very dry one owing to the failure of the south-west monsoon and the climatic conditions prevalent in the hot season of the year were unduly prolonged into the cold season. It is probable that these exceptional conditions had an adverse influence upon vaccination throughout the Presidency, and were responsible for the extension of the "negative phase" into the autumn months.

(2) The scheme of reorganization of vaccine operations inaugurated in compliance with G.O. No. 963 L., dated 4th July 1917, has brought about several important changes whose influence upon the vaccination returns is felt for the first time. Apart from the improved type of worker and the more frequent supply of vaccine (three times instead of twice a month as previously), the most important innovation is the introduction of the system by which results are verified by an independent authority. Formerly, both vaccination and verification were performed by the vaccinator, whose ability and skill were judged to a great extent by the results he obtained. The verification has now been placed under separate control and is now the province of the Deputy Inspector of Vaccination. Such a change in procedure would undoubtedly bring about a greater stringency in the examination and verification of cases, for it is only natural that the vaccinator in the past should have judged his own work from the most optimistic point of view. It would appear that this factor has had a profound modifying influence upon the returns submitted this year.

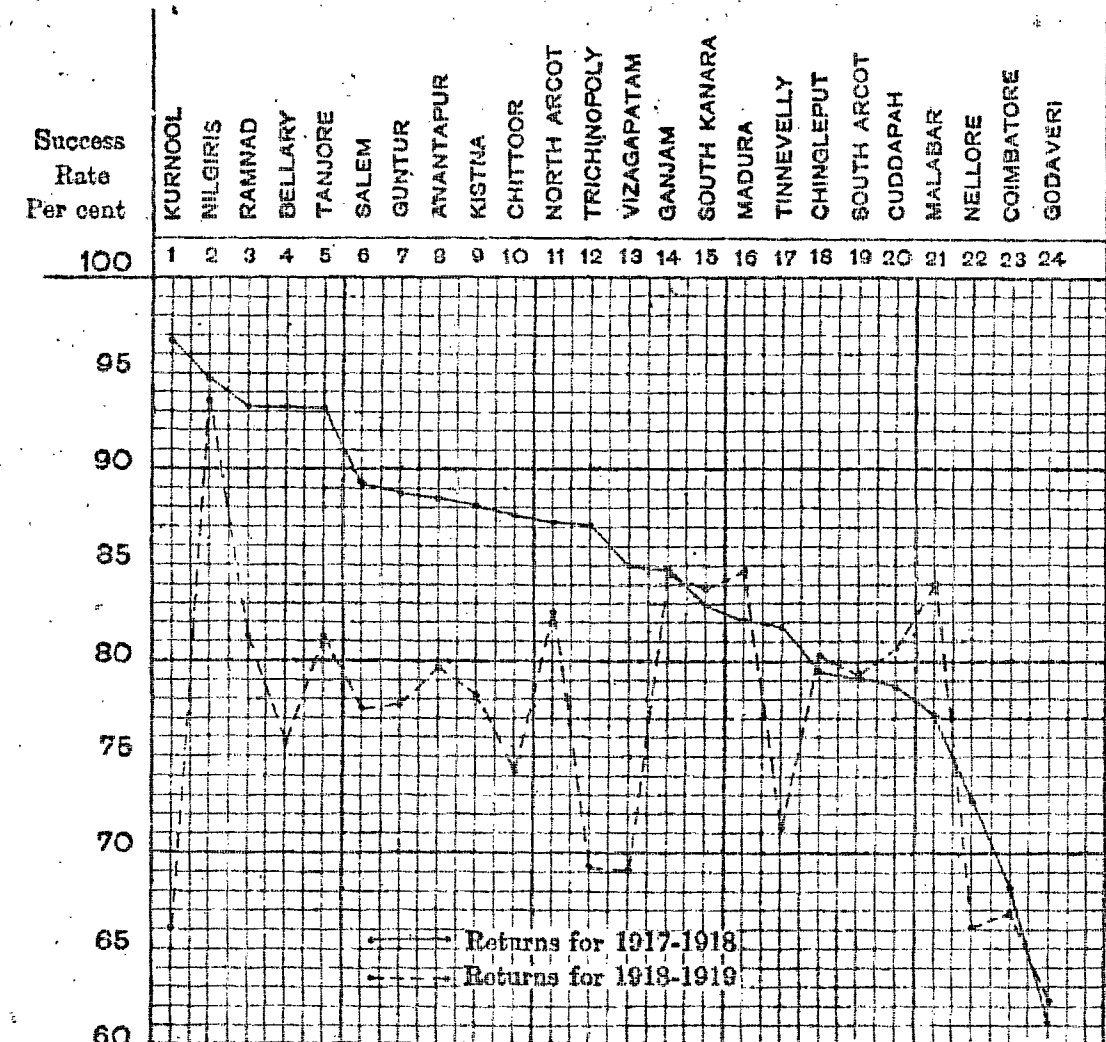
TABLE VI.

Returns recorded in the King Institute of Preventive Medicine, Guindy, for the whole of the Madras Presidency according to districts, 1918-19.

Serial number	Districts	Total successful	Total unsuccessful	Percentage of success
1	Anantapur	19,568	5,087	79.52
2	Bellary	19,148	6,101	75.81
3	Chingleput	42,278	10,436	80.20
4	Chittoor	27,054	9,291	74.42
5	Coimbatore	43,049	21,363	68.33
6	Cuddapah	19,518	4,671	80.68
7	Ganjam	51,071	9,281	84.61
8	Godavari	36,621	22,202	62.25
9	Guntur	35,977	10,252	77.52
10	Kistna	53,337	15,541	78.37
11	Kurnool	20,576	10,508	68.00
12	Madura	55,894	10,086	84.71
13	Malabar	93,682	17,723	84.00
14	Nellore	29,102	14,878	66.17
15	Nilgiris	4,288	807	93.28
16	North Arcot	53,434	11,379	82.44
17	Ramanad	27,305	6,390	81.15
18	Salem	39,541	11,581	77.42
19	South Arcot	43,721	11,482	79.20
20	South Kanara	41,479	8,512	83.81
21	Tanjore	42,278	8,830	81.12
22	Tinnevely	40,822	18,612	71.17
23	Trichinopoly	22,850	10,130	69.26
24	Vizagapatam	76,369	24,396	69.01
	Total	947,805	289,430	78.69

Table VI shows the districtwar success rate for the year and chart I gives a graphic representation of the year's results compared with those obtained in 1917-18. In the chart the districts have been arranged in order according to the

Chart I



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success rates given for 1917-18 and the results for 1918-19 have been plotted in against them.

A study of the curves produced by these two sets of figures reveals some interesting and important facts. It will be seen at once that the fall in the district success rate which has occurred this year is confined almost without exception to the 13 most successful districts of the previous year. The rates in the remaining 11 districts are substantially the same for both years. The drop in some districts is almost dramatic. Kurnool which has headed the list for so many years is now 23rd in the list and the districts of Trichinopoly and Vizagapatam fall to the 19th and 20th places. On the other hand, Madras, Ganjam, Malabar and South Kanara rise from comparatively low positions to 2nd, 3rd, 4th and 5th places, respectively. The Nilgiris alone of those districts which gave successful results last year has maintained its position. The district is a hilly one, however, and conditions are here favourable for successful vaccination throughout the year.

The interpretation of these results, if other conditions, such as the efficacy of the vaccine, can be shown to be the same, is of great interest and importance. It would appear that the new system of independent verification has been much more effective in demonstrating the true position of vaccination in the Presidency than the old one. In the ten districts which stood lowest last year independent verification has produced little or no effect upon the success rate and the results obtained can therefore be accepted as approximately correct. In 12 out of the 13 most successful districts, however, the change in organization has brought about a considerable diminution in the number of successful vaccinations, and the conclusion, that the results obtained in previous years have been unduly inflated, is unavoidable.

It is of interest to note that the new system has had little or no effect in altering the returns submitted by the three worst districts, Nellore, Godavari and Coimbatore. It is probable therefore that some special deterrent factor must be at work to account for the persistently low results which are a feature of these districts.

TABLE VII.

Statement showing the percentage of success obtained in certain districts selected for comparison in each of the last five years.

Serial number.	Districts.	1914-15.	1915-16.	1916-17.	1917-18.	1918-19.	Average.
1	Bellary	96.81	96.59	95.12	93.29	75.88	91.52
2	Anantapur	94.35	92.24	90.64	88.40	79.53	89.04
3	Kurnool	93.82	93.64	93.85	90.84	65.00	90.89
4	Godavari	81.45	70.93	68.34	61.11	62.25	68.81
5	Coimbatore	70.50	70.00	68.72	69.11	66.83	70.21

TABLE VIII.

Statement showing the percentage of success obtained in the different months of the year for five years and the average for each month during that time.

Serial number.	Months.	1914-15.	1915-16.	1916-17.	1917-18.	1918-19.	Average.
1	April	95.76	84.26	88.51	79.80	73.95	84.45
2	May	92.85	82.62	84.00	75.30	72.18	81.38
3	June	92.87	81.49	82.55	74.40	65.34	79.33
4	July	93.19	83.27	83.22	70.71	60.13	79.08
5	August	92.65	79.86	83.73	78.80	77.88	82.60
6	September	92.14	81.75	82.07	80.61	73.25	80.53
7	October	90.64	92.18	90.09	88.27	69.50	85.52
8	November	90.33	92.70	89.21	85.67	85.52	88.09
9	December	89.82	93.28	93.25	91.92	85.58	88.82
10	January	87.24	92.82	83.28	80.63	85.25	86.04
11	February	87.91	93.74	86.83	88.04	89.43	89.38
12	March	87.45	92.43	85.04	86.19	87.53	88.34

Tables VII and VIII which give the percentage rates of success for the past five years show the effect of the lower success rate obtained during the current year upon the quinquennial average.

(3) The potency of the vaccine lymph as issued from the Institute is a most vital factor upon which the whole success of the vaccination operations depends. It is therefore necessary to show that no deterioration has occurred in the quality of the lymph before any valid conclusion as to other causes of variation in the returns can be drawn.

There has been no departure from the practice of former years in the preparation of the vaccine. Lanolinized vaccine has been issued to all districts as heretofore. The manufacture of the vaccine has had to be continued throughout the whole year, with the exception of one month, owing to the increased output and traffic restrictions which caused difficulty in obtaining a sufficiency of calves for operation.

TABLE IX.

Statement showing the duration of storage of Lanoline paste during the official year 1918-19.

Serial number.	Months.	Duration of storage each month.	
		Minimum period.	Maximum period.
1	April 1918	10 days	28 days.
2	May	14 "	27 "
3	June	26 "	38 "
4	July	12 "	43 "
5	August	3 "	17 "
6	September	9 "	33 "
7	October	10 "	38 "
8	November	13 "	32 "
9	December	26 "	43 "
10	January 1919	42 "	54 "
11	February	36 "	65 "
12	March	3 "	45 "

TABLE X.

Statement showing the duration of storage of Glycerine paste during the official year 1918-19.

Serial number.	Months.	Duration of storage each month.	
		Minimum period.	Maximum period.
1	April 1918	6 days	17 days.
2	May	4 "	20 "
3	June	2 "	16 "
4	July	10 "	23 "
5	August	1 "	20 "
6	September	10 "	21 "
7	October	22 "	51 "
8	November	6 "	36 "
9	December	12 "	36 "
10	January 1919	8 "	54 "
11	February	4 "	19 "
12	March	1 "	25 "

The periods of storage however were on the whole less this year, the average minimum and maximum periods for the lanoline paste being 17 and 38.4 days as against 13.4 and 45 days in 1917-18. The periods of storage for glycerine paste were also less (6.75 and 29.1 days).

A consideration of the results obtained in the districts will go far to prove that there has not been any material change in the quality of the vaccine. Vaccine is issued to all districts indiscriminately as need arises. Each batch of lymph is distributed at random amongst a number of districts and is not confined to one district alone. Any deterioration in the quality of the lymph would therefore be followed by a general drop in the success rate in which all the districts would be represented. It has already been shown, however, that the fall which

has occurred this year has been confined to certain districts only and that a large proportion of the district returns shows no appreciable departure from those submitted for 1917-18. It is therefore extremely improbable that the quality of the vaccine has altered to any appreciable extent.

The good results obtained in the Nilgiri district are extremely interesting from this point of view. A success rate of 93.8 has been obtained with vaccine which was identical with that supplied to the other districts.

Further evidence of an experimental nature is also forthcoming. Two experiments were inaugurated with a view to proving or disproving the efficiency or otherwise of lymph issued from the Institute. The result of one of these has already been reported, for the information of Government, in letter R.C. No. 6796-5/V., dated 27th January 1919, to the Sanitary Commissioner, Madras.

A short account of both experiments may, however, be given as bearing upon the point at issue.

The first of these was designed to eliminate the vaccine as a cause of the irregularity observed in the returns submitted from different districts. Estimating the quantity of paste that would be required for a full ten days' dispatch, all batches of vaccine making up this quantity were mixed together using the most meticulous precautions to ensure homogeneity. Two experimental batches were made up, No. 177, consisting of the yield of 44 calves or 5 ordinary batches, and No. 178, consisting of 47 calves or 5 ordinary batches. Samples from each were issued in succession to every vaccinator outside Madras City, except in a few cases where batch 178 was not sufficient to meet the demand.

No. 177 was issued between August 14th and 23rd and No. 178 between August 24th and September 2nd.

TABLE XI.

Statement showing results obtained with two special batches of vaccine Nos. 177 and 178.

No.	District.	Batch No. 177.			Batch No. 178.		
		Success.	Failure.	Percent- age.	Success.	Failure.	Percent- age.
A.—Two days in transit.							
1	Anantapur	517	84	86	500	64	89
2	Bellary	354	66	84	350	143	70
3	Chingleput	47	4	92	244	44	85
4	Chittoor	819	157	84	559	76	86
5	Coimbatore	282	171	62	417	180	70
6	Cuddapah	...	...	...	43	49	47
7	Ganjām	...	...	...	...	...	...
8	Godāvāri	225	177	56	132	22	86
9	Guntur	562	142	80	415	171	72
10	Kistna	1,501	389	79	144	3	97
11	Kurnool	194	65	75	183	54	78
12	Madara	313	24	93	174	22	89
13	Madabari	320	24	94	125	5	96
14	Nellore	651	350	65	335	129	75
15	Nilgiris	64	17	79	26	3	90
16	North Arcot	1,206	147	89	1,065	168	90
17	Rāmaōad	337	134	72	232	94	78
18	Salem	848	240	78	893	146	86
19	South Arcot	832	244	77	85	2	98
20	South Kanara	51	1	98	43	...	100
21	Tanjore	700	183	79	693	57	92
22	Tinnevelly	576	256	69	478	140	77
23	Trichinopoly	486	160	75	201	4	98
24	Vizagapatam	932	334	74	609	68	90
Total ...		11,883	3,269	78	8,736	1,644	84

Statement showing results obtained with two special batches of vaccine Nos. 177 and 178—cont.

No.	District.	Batch No. 177.			Batch No. 178.		
		Success.	Failure.	Percent- age.	Success.	Failure.	Percent- age.
B.—Three days in transit.							
1	Anantapur	123	23	86	273	77	78
2	Bellary	137	44	76	10	29	26
3	Chingleput	73	25	54	303	96	76
4	Chittoor	119	23	84	106	30	85
5	Coimbatore	696	499	58	290	100	74
6	Guddipah	12	3	80	157	13	91
7	Gajjam	42	3	95	844	74	92
8	Goddavari	311	285	52	129	39	77
9	Guntur	238	241	50	230	143	65
10	Kistna	90	8	93	1,218	149	89
11	Kurnool	290	179	61	329	74	82
12	Kuduru	694	83	89	1,031	115	90
13	Malabar	549	39	93	443	34	93
14	Nellore	43	48	47	373	248	60
15	Nilgiris	94	1	97	93	5	95
16	North Arcot	...	...	...	...	...	...
17	Ramanad	354	100	78	198	51	79
18	Salem	...	...	...	...	...	...
19	South Arcot	107	13	93	...	...	...
20	South Kanara	313	65	83	399	100	80
21	Tanjore	287	74	79	11	...	100
22	Tinnevely	230	193	54	858	223	79
23	Trichinopoly	453	159	77	...	...	...
24	Vizagapatam	928	262	78	828	179	82
Total ...		6,211	2,393	72	8,322	1,784	82

To avoid error due to any variations in the potency of the lymph which might possibly occur during the time taken to reach the districts, only those issues which took two and three days to reach the vaccinator are shown and each of these groups is shown in a separate table.

It will be seen that the usual variations in the returns from the different districts are present. These amount to a difference of 51 per cent with No. 177 and 74 per cent in the case of No. 178. It is obvious, therefore, seeing that the same vaccine was used in every case, that some other factor must have been responsible for the want of similarity in the results.

TABLE XII.

Results of 'Test Paste' supplied to the Madras Corporation and to the vaccinators in the Madras Presidency from 22nd February to 31st March 1919.

Calf number.	Results reported by District Board Vaccinators.			Results reported by the Madras Corporation.		
	Successful.	Unsuccessful.	Percentage of success.	Successful.	Unsuccess- ful.	Percentage of success.
257	1,455	142	91.1	7	1	88
258	1,986	204	90.6	5	2	71
259	1,432	99	93.5	5	...	100
260	1,768	85	95.4	4	...	100
261	2,634	239	91.1	3	1	89
262	4,461	622	86.4	11	...	100
263	5,091	584	89.7	8	...	100
265	2,951	1,745	62.8	3	...	100
266	885	129	87.2	3	1	75
267	549	34	94.1	4	...	100
268	3,680	286	92.7	3	...	100
269	607	415	59.3	6	...	100
270	1,324	198	86.9	7	...	100
271	1,255	43	96.3	6	...	100
274	1,796	162	91.7	9	...	100
279	831	129	86.9	4	...	100
280	3,205	426	88.2	...	1	...
281	1,997	272	87.5	5	1	83
282	3,715	406	90.1	1	...	100
283	728	98	88.1	3	1	75
285	1,177	197	85.6	7	1	88
286	50	24	67.5	5	...	100
287	187	38	83.1	3	...	100
Total ...	43,704	6,782	86.5	117	9	92.8

The second experiment was more in the nature of a continuous control over the quality of the lymph issued from the Institute. A small quantity from each batch of lanolinized vaccine has been sent to the Vaccination department of the Madras Corporation whose vaccinators have tested its efficacy on a varying number of cases as opportunity offered. Twenty-three batches of vaccine have been tested in this way during the year under report. The results which have been obtained have been compared with the returns sent in by the District Board and Municipal vaccinators. While the number of cases operated on by the Madras Corporation vaccinators is too small to justify the striking of a percentage rate of success for each individual batch, the total number of operations performed is sufficient to permit of a comparison being made between the Corporation and District results. The former shows 117 successes and 9 failures or 92.8 per cent of success, the latter 43,704 successes and 6,782 failures or a success rate of 86.5 per cent. The comparison is therefore 6.3 per cent in favour of the Corporation. In order to demonstrate that the conditions of experiment were substantially the same in both cases, certain details with regard to storage of vaccine and the time of use after manufacture are given in Table XIII.

TABLE XIII.

Supplies made to Local Fund vaccinators.		Supplies made to the Madras Corporation.	
Average number of days after manu- facture the issue was made.	Average number of days after manu- facture the vaccine was used.	Average number of days after manu- facture the issue was made.	Average number of days after manu- facture the vaccine was used.
37 to 46	39 to 59	30	32

This table shows the time of storage in the two cases did not differ to any great extent. After issue, however, the difference in the time which elapsed before the lymph was used is greater. The lymph sent to the Corporation was used within two days of its dispatch; that to the districts remained unused at times for as much as twelve days.

Results obtained from outside sources are always of value as corroborative evidence in a question of this nature.

During the year under review the Medical Officer, Berbera, was supplied with about 17,000 cases of lymph taken indiscriminately from the different batches prepared at the Institute. He reports upon its efficacy as follows:—"We have had most excellent results with the vaccine from your Institute."

In view of the facts which have been brought forward it would appear that the vaccine at the time of issue from the Institute is of good quality and that variations in the amount of success following its use must be due to adverse factors operating after the lymph has been dispatched to its destination. Many of these are at present undetermined, but delays in transit, undue or prolonged exposure to heat, and delay in use after receipt must all bear a part in preventing the best results from being obtained.

TABLE XIV.

Statement showing the average yield of pulp per calf according to the months of the year 1918.

Serial number.	Months.	Grammes.			Average yield of lymph per calf during 1918.
		Average.	Maximum.	Minimum.	
1	January	6.4	16.7	2.5	5.31 grammes.
2	February	4.5	13.0	1.0	
3	March	4.9	16.8	1.1	
4	April	4.9	11.8	1.3	
5	May	5.2	12.5	1.0	
6	June	3.9	8.0	1.0	
7	July	5.2	11.0	1.1	
8	August	5.4	18.5	1.0	
9	September	5.4	17.3	1.5	
10	October	5.6	12.0	1.5	
11	November	5.9	14.3	1.0	
12	December	5.5	15.0	1.7	

8. Table XIV gives details of the yield of pulp per calf throughout the year. The average yield per animal has risen slightly, being 5.31 grammes as opposed to 5.24 in 1917-18.

TABLE XV.

Statement showing the average yield of lymph per calf according to years.

Year.	Grammes.	Year.	Grammes.
1904	4.9	1912	5.9
1905	3.5	1913	5.3
1906	No records.	1914	7.9
1907	3.2	1915	6.29
1908	2.6	1916	5.25
1909	3.7	1917	5.24
1910	5.1	1918	5.31
1911	5.3		

9. Table XV calls for no comment.

10. Civil Assistant Surgeon M. Gopala Ayyar acted as temporary assistant to the Director throughout the year.

11. The vaccination class was held as usual during February and March 1919. Thirty-nine students attended and obtained qualifying marks in the examination held at the end of the course.

12. The staff of the section worked well throughout the year and carried out their duties satisfactorily.

THE KING INSTITUTE, GUINDY,
17th June 1919.

J. CUNNINGHAM, Major, I.M.S.,
Director.

From Dr. K. T. MATTHEW, D.M.Y., D.P.H. (Cantab.), Deputy Sanitary Commissioner and Inspector of Vaccination, Northern and Central Ranges, Madras, to the Sanitary Commissioner for the Government of Madras, No. D. Dis. 196, dated 9th June 1919.

I have the honour to submit the Annual Report on Vaccination for the Northern and Central Ranges of the Presidency for the year 1918-19.

2. I was in charge of both the ranges throughout the year.

3. The following statements show the subordinate vaccination staffs employed in the two ranges during the past year as compared with the year previous:—

Years.	Deputy inspectors of vaccination.			Total.	Vaccinators.			Total.
	First grade.	Second grade.	Third grade.		First class.	Second class.	Third class.	
Northern Range.								
1917-18	5	4	18	27	84	139	77	300
1918-19	3	10	21	34	27	84	64	175
Central Range.								
1917-18	7	10	11	28	63	154	36	253
1918-19	7	14	16	37	34	86	62	187

4. *Inspections by the Deputy Sanitary Commissioner.*—During practically the whole of April, I was engaged in training the Plague Inspectors. During the rest of the year I visited the municipalities of Rajahmundry and Berhampur for concerting plague preventive measures, Guntūr and Ongole for inspection of the sanitary programmes of the Municipal Chairmen, and Adōni, Bimilipatam and Chingleput for detailed sanitary inspection. I also inspected during the year vaccination in the districts of Ganjām including the Agency, Vizagapatam, Nellore, Bellary, Salem, Chingleput, North Arcot, South Arcot and Anantapur. A total of two hundred and sixty-one villages and towns other than municipalities were inspected in these nine districts and 4,106 cases of vaccination were verified there. Separate inspection notes were submitted regarding the state of vaccination of each district inspected.

5. The outstanding feature of the year under report was the introduction of the new scheme of vaccination sanctioned in G.O. No. 963 L., dated 4th July 1917. To appreciate the many difficulties in the way of its successful working and to measure its value, it is necessary to go into some detail regarding principal features of the scheme. Broadly speaking, these may be brought under two main heads:—

(1) Changes as far as the staff is concerned.

(2) Changes in the system of vaccination work.

(1) *Changes among the staff.*—(a) Increase in the number of Deputy Inspectors of Vaccination and improvement of their pay and prospects. The number of Deputy Inspectors in the Northern Range was raised from 27 to 34 and in the Central Range from 28 to 37. The minimum pay of the Deputy Inspector was raised from Rs. 40 to Rs. 50 per mensem and the maximum from Rs. 70 to Rs. 100 with a fixed travelling allowance of Rs. 20 for each Deputy Inspector irrespective of his grade. The educational qualifications of the Deputy Inspector remain the same as before, namely, a completed Sanitary Inspector's certificate with vaccination training. Although the pay provided for the Deputy Inspector is considered fair, it is generally felt that in the matter of travelling allowance he has a grievance. Any increase in pay will not remove the heartburning caused by being out of pocket in travelling on public duty, and it must be admitted that in these days travelling, no matter by what conveyance, is expensive. The Deputy Inspector is not therefore altogether satisfied with his lot under the new scheme and his grievance should receive consideration sooner or later.

(b) Reduction in the number of vaccinators, increase of their scale of pay and prospects and the provision of a minimum educational qualification for them.

The number of vaccinators in the Northern Range was reduced from 300 to 175 and in the Central Range from 253 to 187. The pay of the lowest grade vaccinator was raised from about Rs. 7 to Rs. 15 per mensem and the maximum from Rs. 25 to Rs. 40, each vaccinator being given a fixed travelling allowance of Rs. 10 per mensem irrespective of the grade while he received little or none before. The minimum educational qualification prescribed for the vaccinator is a Secondary School Leaving Certificate with a special vaccination training under a competent authority approved by the Sanitary Commissioner, the maximum being a complete Sanitary Inspector's certificate with vaccination training which is the qualification required for a first class vaccinator. The great reduction in the number of vaccinators is due to the fact that the vaccinator is relieved entirely of the duty of verifying the results of cases vaccinated by him, a duty which is now solely delegated to the Deputy Inspector of Vaccination.

(2) *Changes in the system of vaccination work.*—(a) The entire verification of results of cases has to be done by the Deputy Inspector and each month's cases have to be verified by him by the close of the next month to enable him to submit his monthly returns in time.

(b) All the vaccinators of a range have to work together in group instead of at different centres as before and they are relieved entirely of the duty of verifying results.

Obviously therefore the new system, when properly introduced and worked, roots out the two evils which the old system perpetuated, namely, (1) working with an unreliable, ignorant, ill-paid and discontented staff of vaccinators, (2) proceeding upon figures which in the main were untrue and unreliable. In the past, the vaccination figures were mainly those furnished by vaccinators, who, to escape punishment, more often than not falsified them; but with the new system these figures are to be furnished by the Deputy Inspectors from their own inspections. The Deputy Inspector has everything to lose and little to gain by furnishing false figures to safeguard a renegade vaccinator.

But the changes in the system of working brought about by the new scheme tie down practically the whole vaccination staff of a range including the Deputy Inspector at stated periods at particular centres, from which they cannot move without serious dislocation of work. In other words it is difficult to send a vaccinator here to reduce a large accumulation of unprotected cases and there to attend to smallpox work. The successful working of the new system requires the vaccination of all the available cases in the villages visited and a separate staff for all special work such as smallpox. To secure the vaccination and verification of all the available cases, the responsible village officials have to gather them at appointed places at the appointed time of visit of the vaccinator or the Deputy Inspector as the case may be and whether this requires the introduction of compulsory vaccination or can be done solely by "revenue influence" is a matter entirely for the district authorities to decide. It is equally clear that every district should have a separate staff for smallpox work or a large increase in the reserve now provided.

6. The new scheme although ordered to be introduced in every district from the beginning of the official year under review, it was really not done in many of the districts till several months later and in the district of Ganjam it was not introduced at all except in one range. In the districts where the scheme was introduced the spirit of the scheme was apparently ignored with the obvious result that it has not produced the result which was anticipated. A set of rules drawn up by me for the working of the new system is still pending with the Government and when it is issued and the various instructions and directions given in it are strictly followed by those responsible, a change for the better may be expected. Secondly, most of the districts have failed to secure hands with the prescribed qualifications for the posts of vaccinators for some reason or other. There is no doubt that there was much difficulty in securing qualified Sanitary Inspectors for the first-class vaccinators' posts and School Final men as second-class and probationary vaccinators and with regard to the training of the last two. These difficulties were anticipated by me, for so early as 1st October 1917 I addressed the Sanitary Commissioner for Madras on the subject in my letter R.O.C. No. 2864 of 1917.

Doubts and difficulties with regard to the local training of second-class and probationary vaccinators cropped up in various districts and for the removal of these a circular with a syllabus was drawn up in this office and issued by the Sanitary Commissioner to all District Medical and Sanitary Officers with the concurrence of the Surgeon-General with the Government of Madras on 23rd November 1918. So between one thing and another, the new scheme cannot be said to be in working order as yet. But there is not the slightest doubt that the scheme has in it the nucleus of a great change for the better. It is yet in its infant stage and requires to be carefully nurtured. The following are some of the difficulties experienced in the working of it:—

(a) Vaccination not being compulsory in most areas and revenue influence at a very low level, the vaccinator has to wander from door to door for getting cases for vaccination often meeting with rebuffs and evasions. This the new vaccinator—raw School Final man—is loth to do. He would rather prefer a less toilsome job as a clerk in an office. As a matter of fact many new School Final men who joined the department left it within three months of joining service. As in most public offices the lowest clerk is now started on a salary of Rs. 20, he takes up a clerk's appointment in preference to a vaccinator's post. The vaccinator's post with its more toilsome work than quill-driving, in order to be attractive, the pay must be more than what a School Final man will ordinarily start on as a clerk. I would therefore suggest that the initial pay of second-class vaccinators may be fixed at Rs. 25 and that of the qualified first-class vaccinators at Rs. 35. The scale may be improved as follows:—

First-class vaccinators	Rs. 35—2—45
Second-class vaccinators	Rs. 25—2—35

with the usual fixed travelling allowance of Rs. 10 per mensem. In the districts where education is generally backward and where it is difficult to secure sufficient number of "School Final" men, I would suggest that with the previous permission of the President, District Board, and the Sanitary Commissioner, the District Medical and Sanitary Officer may be allowed to recruit the required number by a selective examination held by him from among those who have a sufficient knowledge to follow a course of lectures in Vaccination in English.

7. Even in unions where vaccination is compulsory it is generally backward. This is due to the lack of responsibility of the Union Chairmen in the matter. Rules have been drawn up and submitted to the Sanitary Commissioner for Madras for the improvement of vaccination and registration of vital statistics in unions.

8. The total vaccination work performed during the past two years by all the agencies in the Northern and Central Ranges is shown in the following table:—

Northern Range.			
		1917-18	1918-19
Primary vaccination	...	426,062	401,723
Re-vaccination	...	107,914	114,143
Central Range.			
		1917-18	1918-19
Primary vaccination	...	426,178	402,190
Re-vaccination	...	57,129	60,187

There is thus a decrease of 18,100 operations in the Northern Range and 20,930 in the Central Range. It is hardly possible to compare the work of the year under report with any of the previous years because of the several disturbing elements at work during the past year. To begin with, the introduction of the new scheme and the resulting changes in the staff seriously interfered with the work for the whole of first half of the year. Then there was the inexperience of the new men coming in, a good number of whom also went out without sufficient notice after a short period of work. Then there was the discontent following upon disappointment of the old vaccinators retained temporarily and last but not least the prevalence of the pandemic of influenza for full two months, during which time the work was practically at a standstill.

The prevalence of influenza was at its height from October to December 1918. During this period alone in the districts of Ganjam, Vizagapatam, Gōdāvari, Guntūr, Nellore, Anantapur, Bellary, Kurnool, Chittoor, North Arcot, Chingleput,

South Arcot and Salem the decrease in the number of operations as compared with the corresponding period of the previous year was 43,934. Orders were issued to make up this fall by extra work during the last quarter of the year and as a result the fall is not so great as it would otherwise have been during the year under report and this in spite of a number of vacancies in the vaccinating staff.

The reports of the Deputy Inspectors disclose that there were vacancies in the vaccinating staff without substitutes for shorter or longer periods in the majority of the ranges.

In the Northern Range, as compared with the previous year, the districts of Kistna (+ 10,622), Koraput (+ 1,787), and Nellore (+ 368) showed an increase in the number of operations and all the other districts showed a decrease, Guntūr district being the worst off in this respect with (-18,620) cases and Vizagapatam being a bad second with (-11,600). In the Central Range Kurnool (+ 4,388), Salem (+ 4,243), Chittoor (+ 2,668) and North Arcot (+ 1,788) showed an increase and the remaining districts a decrease. The greatest fall was in South Arcot with a decrease of (-20,545) and Cuddapah (-5,631). In other districts the fall was inappreciable, being below 2,500.

9. The following tables show the total successful vaccinations performed by all agencies and the percentage of successful cases including re-vaccination in the Northern and Central Ranges, respectively:—

Establishment.	Number of successful vaccinations.				Total of successful vaccinations.		Ratio per cent of successful cases.				Ratio per cent of total successful cases.	
	1917-18.		1918-19.		1917-18.	1918-19.	1917-18.		1918-19.		1917-18.	1918-19.
	Primary vaccination.	Re-vaccination.	Primary vaccination.	Re-vaccination.			Primary vaccination.	Re-vaccination.	Primary vaccination.	Re-vaccination.		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)

Northern Range.

Local Fund vaccinators ...	295,421	61,108	239,005	44,294	359,529	283,299	81.3	80.4	73.1	60.1	81.1	70.7
Government do. ...	15,057	3,024	14,158	3,773	18,931	17,931	81.8	73.4	82.7	78.7	80.3	81.3
Municipal do. ...	17,343	9,866	19,802	13,172	27,269	29,974	82.2	67.6	86.1	77.6	76.2	82.2
Cantonment do. ...	...	...	...	...	...	...	...	...	...	...	...	...
Dispensaries ...	...	4	5	6	...	11	100.0	53.3	85.7	100.0	84.6	...
Medical subordinates ...	14	2,858	...	3,963	2,872	3,933	93.3	73.8	...	77.7	...	77.7
Total ...	327,835	76,860	269,970	65,228	494,095	335,193	81.3	79.0	74.3	64.8	80.7	72.3

Central Range.

Local Fund vaccinators ...	298,809	20,080	241,216	13,972	316,899	255,188	85.6	72.2	77.6	54.7	85.0	75.9
Government do. ...	...	...	...	...	...	...	...	...	...	...	...	...
Municipal do. ...	42,737	7,896	37,002	7,618	50,033	44,620	96.1	81.8	95.3	58.3	88.4	85.0
Cantonment do. ...	3,497	2,763	2,667	3,892	6,280	6,569	86.7	61.8	80.0	46.0	58.1	55.3
Dispensaries ...	...	...	...	...	...	...	...	...	...	...	...	...
Medical subordinates ...	1	650	181	938	651	1,119	100.0	56.3	71.6	62.6	56.5	63.9
Total ...	343,644	31,899	281,066	25,420	374,443	307,486	86.7	61.8	79.6	54.3	84.3	78.5

The total fall in the percentage of success in the Northern Range is 8.5 and in the Central Range 5.8. This is rather large. As re-vaccination is no criterion for the quality of vaccination we shall take primary vaccination alone for purposes of comparison. Even here the total fall as compared with the previous year is as much as 7.0 and 7.1, respectively, in the Northern and Central Ranges. This fall is mainly contributed by the results of the work of the Local Fund vaccinators and is as much as 8.0 per cent and 9.1 per cent, respectively. This is apparently due to the more accurate classification by Deputy Inspectors under the new scheme since, under all other agencies in which there has been no change in the system of verification, there has been either a rise in the percentage of success under primary vaccination or only a slight fall. The inexperience of the newly entertained vaccinators also contributed to some extent towards the fall in the success rate. Vaccination, especially with lanoline lymph, is a delicate operation which requires considerable skill of hand to ensure good result, which can only be gained by experience.

Northern Range.

10. *Infantile vaccination.*—When compared with the previous year there was a fall of 26,269 in the number of children successfully vaccinated under one year of age in the Northern Range. The fall was general to all the districts and this was undoubtedly due to the prevalence of influenza. The fall was as great as 59.2 per cent in the Ganjam district. Next to Ganjam comes Guntūr with a fall of 13.4 per cent. The fall in the other districts is negligible being under 5 per cent.

The municipalities in the Northern Range did not fare so badly in this respect. On the other hand 10 out of the 18 municipalities showed an increase, the rise being as much as 77.0 per cent in Peddapur and 29.5 per cent in Narasaraopet. The only municipality which showed a large fall in this respect was Ongole (-28.9 per cent).

Central Range.

In the Central Range there was a decrease of 46,734 in the number of successful infantile vaccinations as compared with the previous year. With the exception of Chingleput district (+ 6.3) and North Arcot (+ 0.5) all the districts showed a decrease, which no doubt was due, as in the Northern Range, to the prevalence of influenza. The fall was above 15 per cent in the Ceded Districts, Kurnool (-27.5 per cent), Bellary (-26.3 per cent), Cuddapah (-15.8 per cent), and Anantapur (-15.1 per cent), and below 15 per cent in the remaining districts.

Among municipalities the number showing increase and decrease was even, viz., 11 on each side. The municipalities which returned a large increase are Nandyal (+ 60.8 per cent), Adoni (+ 52.7 per cent) and Kurnool (+ 38.0 per cent). The municipalities which show a marked decrease in this respect are Bellary (-39.4 per cent), Tirupattūr (-33.2 per cent), and Chittoor (-31.0 per cent).

11. The cost of the various vaccination staffs and the average cost of each successful case are exhibited in the subjoined statements:—

Establishment.	Total expenditure.		Average cost of each successful case.	
	1917-18.	1918-19.	1917-18.	1918-19.

Northern Range.

	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
Government establishment ...	10,797	4	3	13,437	10	9	0	9	6	0	12	0
Local Fund do. ...	91,995	4	5	95,329	3	11	0	4	2	0	5	5
Municipal do. ...	7,477	7	6	7,981	3	7	0	4	5	0	4	3
Cantonment do. ...	...	...	...	...	...	...	...	...	...	...	...	...
Total ...	1,10,270	0	0	1,16,748	2	3	0	4	5	0	5	8

Central Range.

	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
Government establishment ...	...	...	...	...	...	...	...	...	...	...	...	...
Local Fund do. ...	86,635	12	8	1,08,886	4	5	0	4	4	0	6	10
Municipal do. ...	18,624	6	10	23,576	14	1	0	5	11	0	8	5
Cantonment do. ...	3,807	8	3	4,288	2	5	0	9	9	0	10	5
Total ...	1,09,067	11	9	1,36,749	4	11	0	4	8	0	7	2

Exclusive of the pay and allowance of the Inspector of Vaccination and Deputy Sanitary Commissioner.

The average cost of each successful case was As. 5-8 in the Northern Range and As. 7-2 in the Central Range, i.e., there has been an increase in both the ranges over that of the previous year. This is, of course, a necessary corollary to the low

percentage of success obtained during the year. The increase in the cost of Local Fund and Government establishments is marked. This in part is due to the enhanced rate of pay sanctioned in G.O. No. 963 L., dated 4th July 1917, which was given effect to during the year under report. This has also to some extent contributed to the rise in the general average cost.

12. It is noticed that in many municipalities the salary paid to the vaccinators is extremely low in spite of the scale fixed in G.O. No. 1592 M., dated 22nd August 1914, viz., Rs. 15—1—35 (or Rs. 25—1—45 if a qualified Sanitary Inspector with vaccination training). For example, the total amount of salary and allowances paid during the whole official year 1918-19 in the following municipalities were—

	Rs.	A.	P.
Bimlipatam	170	0	0
Narasaraopet	171	6	7
Ongole	106	3	2
Peddapur	141	0	0
Anantapur	136	0	0
Chingleput	144	1	11
Cuddapah	174	0	0
Gudiyattam	133	2	4
Hospet	153	0	6
Walajapet	176	7	8

It is needless to say that with the pittance paid in these municipalities no good man can be secured. With the exception of Madras City I doubt if any municipality employs any qualified Sanitary Inspector as vaccinator. May we not infer from this that one of the factors that contribute to the general unsatisfactory condition of vaccination in the mufassal municipalities is the inferior quality of the staff employed? Municipalities should take early steps to improve the personnel and pay of the vaccination staff as is now being done in the adjoining Local Fund areas.

13. The average cost of each successful case in the Local Fund areas varied from As. 4-7 in the Kistna district to As. 11-2 in Bellary district. In municipalities the cost varied from As. 2 in Cocanada to As. 12-4 in Tirupattūr. The average cost was comparatively high in Tirupattūr (As. 12-4), Madras (As. 11-5) and Chittoor (As. 10-2) and comparatively low in Cocanada (As. 2), Berhampur (As. 2-2) and Vizianagram (As. 2-8).

14. Vaccination was compulsory in all the municipalities. The total number of operations performed in the municipalities of the Northern Range was 58,800 against 37,665 in the previous year and in the Central Range 57,638 and 61,920, respectively. Thus there was an increase of 1,135 cases in the Northern Range and a decrease of 4,882 cases in the Central Range during the year under report. All the municipalities with the exception of Berhampur, Bezwada, Bimlipatam, Cocanada, Peddapur and Rajahmundry in the Northern Range and Adōni, Kurnool, Nandyal, Proddatūr, Salem, Tirupati, Vaniyambādi and Vellore in the Central Range show a decrease when compared with the previous year. The decrease is ascribed to the pandemic of influenza. However, as it has been observed that vaccination has not made as much progress in municipalities as might be expected in view of the compulsory provisions of law and the great facilities available and that there is no uniformity in the system of working, a complete set of instructions for the conduct of vaccination in municipalities has been drawn up and submitted to the Sanitary Commissioner for his approval and transmission to Government.

The municipalities which show a large decrease in the number of operations are Madras (-3,398), Guntūr (-1,963), Ongole (-1,291), Nellore (-885) and Tenali (-511). The municipalities of Cocanada (+3,528), Berhampur (+2,164) and Rajahmundry (+1,093) show a large increase over the previous year.

15. The following tables exhibit the comparative success obtained by the use of different kinds of lymph in primary vaccination including secondary :—

Number of cases excluding unknown.	Area.	Kind of lymph.	Whence obtained.	Percentage of success.
<i>Northern Range.</i>				
343,884	Local Fund	Lanoline lymph	Supplied by the King Institute of Preventive Medicine, Guindy.	73.6
19,515	Do.	Glycerine	Do.	86.1
	Municipalities	Lanoline	Do.	
	Do.	Glycerine	Do.	
<i>Central Range.</i>				
310,652	Local Fund	Lanoline lymph	Supplied by the King Institute of Preventive Medicine, Guindy.	77.6
21,007	Do.	Glycerine	Do.	93.4
17,814	Municipalities	Lanoline	Do.	87.5
	Do.	Glycerine	Do.	

The tables show that there has been a fall in the success rate and this has already been commented on in paragraph 9 supra. Even with glycerine lymph which is supplied only to the Madras Corporation where medical men are employed as vaccinators, there has been a slight fall of 0.8 per cent in the success rate.

16. There was a total of 32,394 deaths from smallpox reported during the calendar year 1918 in the Northern and Central Ranges against 15,925 in 1917, i.e., the number of deaths from smallpox during 1918 is more than double that of the previous year, but the prevalence of smallpox was to some extent overshadowed by the epidemic of influenza. It is to be remembered that there was a considerable increase in the number of smallpox deaths in 1917 itself over that of 1916. It is unnecessary to hold forth at this time of the day that vaccination is the only sure prophylactic against smallpox, that every effort should be made to extend it, and that the money devoted to the purpose is well spent.

The districts which returned a very large number of deaths during the year are Guntūr (4,872), North Arcot (4,576), South Arcot (4,369), Kistna (3,590) and Vizagapatam (3,341).

17. The work of all the Deputy Inspectors of Vaccination with a few exceptions has been fair. It is due to their exertions that so much has been accomplished during the year in spite of the many difficulties encountered.

18. All the Deputy Inspectors of Vaccination have verified more than 50 per cent with the exception of the Deputy Inspector of Vaccination, Aska Range, who verified only 49.5 per cent. His explanation for the shortness of verification is satisfactory. Twelve of the Deputy Inspectors verified over 90 per cent of the cases vaccinated.

Under the new scheme, in all the local fund areas, the Deputy Inspectors have to verify all the cases vaccinated instead of 50 per cent as heretofore, i.e., the work of the Deputy Inspector has been doubled or has risen by 100 per cent, although the increase in their number is only under 30 per cent. There are even now many ranges with over 600 villages scattered over a large area and it would indeed be very difficult for the Deputy Inspector to visit all the villages and verify all the cases once a year unless the local officials responsible for the collection of cases do their duty promptly and well. There is also no doubt that some districts are in need of increase in the number of Deputy Inspectors.

Owing to the difficulty experienced in the complete verification of cases in almost all the ranges, the services of one or more vaccinators were requisitioned towards the close of the year for verification to enable the Deputy Inspectors to submit their annual returns in time.

19. There were three deaths among the Deputy Inspectors of Vaccination in the Central Range. One Deputy Inspector in the Northern Range was reduced from the second to the third grade for falsification of diaries.

20. I have to add the following remarks regarding my office establishments: The ministerial staff is quite inadequate. The jurisdiction of each Deputy Sanitary Commissioner extends over a third of the Presidency and in that vast area he has to correspond with various classes of officers. The duties pertaining to the office staff are varied and multifarious and have to be attended to by only two clerks, one of whom has to accompany the Deputy Sanitary Commissioner on his tours. A third clerk is absolutely and urgently necessary if the office work is to be carried out well in all its details. Further the staff is distinctly underpaid. The pay of the Head Clerks has been fixed at Rs. 45. The Head Clerk of Central Range is a certificated Sanitary Inspector specially selected from among the Sanitary Commissioner's office staff by Major Quirke, I.M.S., and the Head Clerk of Northern Range is a fully qualified Sanitary Inspector with vaccination training besides being an F.A. of the Madras University. The latter is my own selection from the Health Department of the Corporation of Madras and he is still continuing on the salary of Rs. 45 with which he was started, although he has put in a satisfactory service of over five years. There appears to be no use in his looking up to the Sanitary Commissioner's office in accordance with G.O. No. 1653 L., dated 5th November 1912, for any increase of salary. Both are steady men of character and ability and over 35 years of age. It is needless to say that their technical knowledge is very useful in such an office as this. The post of the Head Clerk is very onerous and responsible besides being one of trust. The pay was fixed at Rs. 45 when the pay of the Deputy Inspectors of Vaccination ranged from Rs. 40 to Rs. 70. Now that the pay of the Deputy Inspectors of Vaccination has been increased to Rs. 50—100 it is essential that the pay of the chief ministerial officer of the controlling office should be correspondingly increased in order to keep up the prestige of the appointment. The minimum salary compatible with the onerousness, responsibility, and trust of the appointment that can be suggested is Rs. 70—4—90 as recently fixed for the post of the second clerk in the Sanitary Commissioner's office.

The typists in both the offices are intermediate grade men who with the service they have put in would have elsewhere received Rs. 30 per mensem instead of Rs. 25 as they do here. Further the Northern Range typist is a qualified shorthand writer and is a very efficient one at that. The usefulness of a shorthand typist to a touring officer who has to turn out a large amount of inspection notes cannot be overstated. Even with the aid of a shorthand typist that now works in the office without remuneration for his shorthand work, I have to devote all my morning hours to purely scriptory office work while at headquarters in spite of the service rendered by the two head ministerial officers who are competent Sanitary Inspectors. I would therefore request that the pay of the typists may be fixed at Rs. 20—1—50 in accordance with G.O. No. 369, Financial, dated 4th May 1918, with a shorthand allowance of Rs. 10 in the case of qualified shorthand writers.

In the circumstances detailed above the scale of the ministerial establishments of the Deputy Sanitary Commissioners' offices may be revised as follows:—

- One Head Clerk on Rs. 70—4—90.
- One second clerk on Rs. 30—2—40.
- One clerk on Rs. 25—1—30.
- One typist on Rs. 20—1—50 according to grade with a shorthand allowance of Rs. 10 in the case of qualified shorthand writers.

21. It is with pleasure that I once again record the good services rendered by all the members of the ministerial staffs.

22. This report could not be submitted earlier as the statements regarding the cost of vaccine supplied were received from the King Institute only on the 4th of June 1919.

From Dr. S. JESUDOSS, B.A., M.B., C.M., D.P.H. (Cantab.), F.R.C.S.E., Deputy Sanitary Commissioner, Southern Range, Coimbatore, to the Sanitary Commissioner for the Government of Madras, No. D. 521, dated 9th July 1919.

I have the honour to submit the Annual Report on Vaccination in my range with the appendix statements for the year 1918-19.

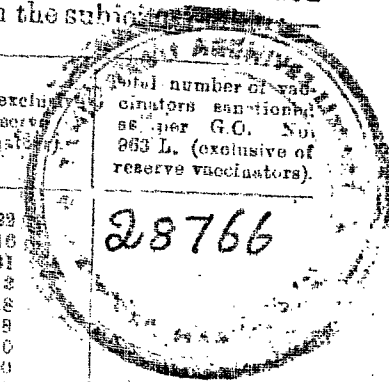
2. *Staff*.—I was in charge of the range throughout the year. My office which continued to be in Madras during March and April 1918 as per G.O. Mis. No. 303 L., dated 1st March 1918, was transferred to Coimbatore, the permanent headquarters of the range, on 29th April 1918. The following table shows the subordinate vaccination staff employed in the range during the past two years:—

Year.	Deputy Inspectors.			First-class vaccinators.	Second-class vaccinators.	Probationers.	Total number of vaccinators.
	First grade.	Second grade.	Third grade.				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1917-18	7 (Rs. 70)	10 (Rs. 60)	11 (Rs. 40)	92 (Rs. 20—15)	189 (Rs. 12—10)	40 (Rs. 7—5)	321
1918-19	10 (Rs. 80—4—100)	13 (Rs. 65—3—80)	12 (Rs. 50—3—65)	68 (Rs. 30—1—40)	115 (Rs. 20—1—30)	54 (Rs. 15)	287

3. *Inspections by the Deputy Sanitary Commissioner*.—During the year under report I inspected vaccination in 18 municipal towns and in 407 villages in the districts of Coimbatore, Trichinopoly, Madura, Tinnevely, Ramanad, Tanjore, and Malabar (the last three were visited more than once) and the total number of cases inspected were 10,376, in 6,040 of which I checked the results of the Deputy Inspectors' verifications. In these tours of inspection, interior tracts and villages (e.g., in North Malabar, Wynad, Kollegal) and districts (e.g., Trichinopoly and major portions of Madura and Tanjore) which were long left unvisited were primarily taken up for inspection in accordance with the Sanitary Commissioner's suggestion in his last Annual Report. And under orders from the Sanitary Commissioner, Madras, (1) I inspected the municipalities of Tiruppur, Udumalpet, Erode, Dharmapuram, Srivilliputhur, Mayavaram and Kumbakonam, (2) I visited in September the Anamalais plantations to report upon the high mortality and panic caused there among the estate coolies by the virulent outbreak of influenza epidemic, (3) I visited in November Mount Stuart and Attakatti in the Anamalais in order to make a malarial investigation in those places, and (4) in February 1919 I visited Muthupet Union in Tanjore district in connexion with the water-supply scheme of the town.

4. (i) *Vaccination*.—The new scheme as recommended in G.O. No. 963 L., dated 4th July 1917, was introduced in all the districts in the course of the year, and how far the reorganization of the vaccinating staff as recommended therein was given effect to by the Local Boards is shown in the subjoined table:

	First-class vaccinators.	Second-class vaccinators.	Old men retained.	Total (exclusive of reserve vaccinators).	Total number of vaccinators sanctioned as per G.O. No. 963 L. (exclusive of reserve vaccinators).
Coimbatore	2	3	17	22	
Madura	7	6	3	16	
Malabar	4	1	26	31	
The Nilgiris	—	—	3	3	
Ramanad	4	10	4	18	
South Kanara	1	—	16	17	
Tanjore	8	1	8	17	
Tinnevely	6	4	10	20	
Trichinopoly	2	5	5	12	
Total	34	31	92	157	169



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(ii) *The compartmental system.*—All the districts, with the exception of Madura, Nilgiris and Rāmnād, adopted the compartmental system in working the new scheme. The monthly returns from almost all the ranges were seldom submitted throughout the year on the due dates chiefly owing to the Deputy Inspectors not having as yet adapted themselves to the changed order of things—the verification work now being thrown entirely on them—and partly also to the natural difficulties of the ranges, the delay being proportionate more or less to the difficulties met with.

The compartmental system in economizing a Deputy Inspector's time spent on his journeys goes far to facilitate his expeditious inspection, and the adoption of the same which was urged from this office in districts like Rāmnād and Trichinopoly where such difficulties were most complained of is highly essential to the success of the new scheme, seeing that the annual returns from the last district, for instance, were received in this office only after a delay of over a month and a half, notwithstanding the assistance from all the vaccinators in verification work which had to be allowed to the Deputy Inspectors for about two months to clear up their large arrears.

(iii) The total vaccination work done during the past two years by all the agencies in my range is shown in the following statement:—

	1917-18.	1918-19.
Primary vaccination ...	580,148	529,239*
Re-vaccination ...	109,854	126,084†
Total ...	690,000	655,323

* Excludes dispensary vaccination operations (151).

† Excludes dispensary vaccination operations (106).

As compared with the previous year, the total number of cases vaccinated shows a decrease of 34,677. There is a fall under primary vaccination but an increase in the number of re-vaccination. The decrease is due mainly to influenza and to some extent also to the transfer of Namakkal taluk of Trichinopoly district to the Central Range.

Large increases are noticeable in the districts of South Kanara (+ 14,242) and Tinnevely (+ 3,958). The districts which show a great decrease are Tanjore, Coimbatore and Rāmnād and this is attributed (a) in Tanjore to influenza, vacancies in the staff of vaccinators and cessation of all vaccination work during the month of January 1919, when all the vaccinators were undergoing local training as recommended in my inspection notes, (b) in Coimbatore to influenza and (c) in Rāmnād owing to its lack of easy communication between villages, to the inability as expressed by the vaccinators of securing every month the high minimum now prescribed (350 per month) with a reduction in the staff of vaccinators. How the reduction in the staff of the vaccinators and the raising of their minimum has affected the total outturn of work possible in each district this year as compared with that of the previous year is shown in the subjoined statement as well as the actual work done by each district in the past two years:—

Districts.	1917-18.			1918-19.		
	Number of vaccinators.	Minimum number for all the vaccinators for the year.	Total number of vaccinations done.	Number of vaccinators.	Minimum number for all the vaccinators for the year.	Total number of vaccinations done.
Coimbatore ...	25	68,000	85,140	25	59,000	69,406
Madura ...	12	57,000	58,104	17	61,000	58,924
Malabar ...	43	141,000	135,995	34	122,400	136,000
Nilgiris ...	8	4,900	4,972	8	4,320	4,217
Rāmnād ...	31	54,000	52,941	18	75,000	48,444
South Kanara ...	28	46,800	46,772	18	64,800	61,014
Tanjore ...	41	72,800	70,969	19	70,680	53,853
Tinnevely ...	25	60,000	73,693	20	93,000	77,661
Trichinopoly ...	29	52,200	59,166	14	50,400	43,913
Total ...	242	553,800	588,662	168	651,800	554,322

The decrease in all these cases is attributed to the prevalence of influenza during the year under report. Malabar is the only district which shows increase in every direction and this was due to a very large number of re-vaccinations and adult vaccinations performed during the last quarter consequent on the outbreak of smallpox epidemic in Ponnani taluk.

(iv) The subjoined table shows the total successful vaccinations by all agencies and the percentage of successful cases including re-vaccinations:—

Establishment.	Number of successful vaccinations.				Total of successful vaccinations.		Ratio per cent of successful cases.				Ratio per cent of total successful cases.	
	1917-18.		1918-19.		1917-18.	1918-19.	1917-18.		1918-19.		1917-18.	1918-19.
	Primary.	Re-vaccination.	Primary.	Re-vaccination.			Primary.	Re-vaccination.	Primary.	Re-vaccination.		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Local Fund ...	398,927	49,505	307,601	37,087	437,492	344,008	91.7	65.2	79.8	56.5	79.7	74.8
Municipal ...	53,572	25,317	51,352	26,380	78,880	77,732	80.2	68.7	90.7	74.1	82.4	84.3
Dispensaries ...	189	88	150	64	277	214	98.9	87.1	99.3	94.1	94.8	97.7
Medical subordinates ...	88	2,724	121	4,164	3,832	4,836	40.1	71.1	85.3	69.8	70.4	70.4
Total ...	450,776	67,714	358,697	67,675	518,400	426,572	82.6	66.7	79.5	63.1	80.2	76.3

The percentage of success both under primary vaccination and re-vaccination shows a marked fall. The total fall is 3.8 per cent when compared with 1917-18 and the fall in the percentage of success under primary vaccination including secondary operations is 3.1.

Though the tri-monthly supply of lymph as provided for this year was expected largely to contribute to a better quality of work as compared with the previous year, the fall in the percentage of success noted has been brought about by—

(1) the transfer of verification duties from the vaccinators to the Deputy Inspectors and thereby reducing the chances of over-valuing the results of one's own work,

(2) the generally poor work done by the new vaccinators including the first class who were found to be deficient in practice during my district inspections and whose further training had been recommended in my inspection notes.

(v) *Infantile vaccination.*—When compared with the previous year there was a fall of 49,978 in the number of children successfully vaccinated under one year of age. The following districts show improvement in infantile vaccination as compared with the previous year:—Nilgiris (+ 5.6 per cent) and Madura (+ 3.6 per cent). The districts which show marked decrease are Tanjore (— 31.2 per cent), Rāmnād (— 26.8 per cent), and Tinnevely (— 10.9 per cent) and the decrease in all these cases is attributed to influenza. But the causes that operated towards the general fall in the percentage of success in the total operations, as explained in paragraph supra, also explain the reduction under this head. Among municipalities there has been a general increase chiefly in Mangalore (+ 26.9 per cent), Cannanore (+ 25.2 per cent), Bodināyakkunūr (+ 23.0 per cent), Karur (+ 20.4 per cent), Tiruvālūr (+ 17.8 per cent), Palghat (+ 15.6 per cent), Madura (+ 13.4 per cent), Palamcottah (+ 13.2 per cent) and Erode (+ 12.7 per cent), while Cochin (— 25.0 per cent), Calicut (— 16.2 per cent), Palni (— 19.6 per cent) and Srirangam (— 18.4 per cent) show marked decrease.

But as a result of my inspection which I did in 18 municipalities in my range I am obliged to state that the municipal figures as a whole are not very reliable as the vaccinators for want of proper and effective supervision had more often than not vitiated their returns by incorrect and false entries as pointed out in my inspection notes.

(vi) The following table shows the cost of the various vaccination establishments in Southern Range and the average cost of each successful case:—

Establishments.	Total expenditure.		Average cost of each successful case.	
	1917-18.	1918-19.	1917-18.	1918-19.
Local Fund establishment ...	Rs. A. P. 1,10,010 9 8	Rs. A. P. 1,33,451 4 11	Rs. A. P. 0 4 0	Rs. A. P. 0 6 1
Municipal ...	10,595 15 1	13,406 12 4	0 3 5	0 3 9
Total ...	1,20,605 24 9	1,46,857 16 5	0 3 11	0 5 8

When compared with the previous year there is rise in the cost of establishments both in the municipalities and local funds. The average cost of each successful case rose from As. 3-11 in 1917-18 to As. 5-8 in 1918-19.

The above rise which is mainly observed in the local fund areas (from As. 4 in 1917-18 to As. 6-1 in 1918-19) is due to the increased rate of pay and allowances given to the Deputy Inspectors of Vaccination as well as to the vaccinators as per G.O. No. 963 L, dated 4th July 1917.

It varied from As. 4-7 in South Kanara district to As. 14-6 in the Nilgiris.

Among municipalities Cochin shows the highest figure in regard to the cost of each successful case (As. 14-1), next in order coming Dhārāpuram (As. 11-1), Tiruppūr (As. 11-0), Virudupatti (As. 10-11), Erode (As. 10-8) and Udumalpet (As. 9-5), whereas Mangalore returns the lowest figure (As. 1-10) followed by Calicut (As. 2-0) and Tuticorin (As. 2-6).

(vii) Vaccination was compulsory in all the municipalities and the total number of operations performed during the year under review were 94,384 against 95,525 in 1917-18. The towns that showed marked decrease were Madura (—5,698), Cochin (—2,544), Cannanore (—1,311), Virudupatti (—1,056), Coonoor (—69), Bōdināyakkannūr (—482), Palni (—479) and Tanjore (—391).

Madura, Bōdināyakkannūr, Cannanore, Cochin and Virudupatti attribute the decrease this year to the absence of smallpox, the prevalence of which in the previous year having contributed then to a large number of re-vaccinations.

Palni and Tanjore attribute influenza as the cause of short work, whereas Coonoor offers no explanation.

(viii) The following table exhibits the success obtained by the use of different kinds of lymph in primary vaccination (including secondary) in Southern Range:—

Number of cases excluding unknown.	Area.	Kind of lymph.	Whence obtained.	Percentage of success.
334,098	Local Fund ...	Lanoline ...	Supplied by the King Institute, Guindy.	77.8
66,438	Municipalities	Do. ...	Do.	90.7
172	Do. (Erode).	Do. ...	Supplied by Bangalore Institute	95.3
Nil.	Local Fund and Municipalities.	Glycerine ...	Do.	Nil.

The percentage of success from lanoline lymph (supplied by King Institute, Guindy) was 77.8 in 1918-19 against 81.6 in 1917-18 in local fund areas and 90.7 and 89.1 respectively in municipalities. No supply of glycerine lymph was made to the Southern Range. Erode municipality which used lanoline lymph supplied from the King Institute, Madras, and Bangalore Institute show a success rate of 63.4 and 95.35 respectively.

(ix) *Smallpox*.—24,907 deaths from smallpox were reported from my range during 1918 against 11,756 in 1917.

The districts which were badly affected by smallpox were Tanjore, Malabar, Rāmnād and Coimbatore and all these districts were visited by me during the year

and the state of vaccination in them brought to the notice of the district authorities. It is very important that the village officers should always readily communicate the smallpox reports to the proper authorities, who should also promptly deal with them. Instances of remissness in this direction observed during my tours of inspection were taken then and there to the notice of the Local Boards.

Malabar, where the epidemic assumed a virulent form about the beginning of 1919 in Ponnāni, was specially visited by me in March 1919 and special recommendations with a view to tackle the situation effectively were made to the district authorities in my report D. No. 245-S.R., dated 3rd April 1919. The total number of re-vaccinations done in this range alone were 10,849, of which 6,567 were returned as successful.

(x) *Deputy Inspectors' inspection*.—The proportion of cases inspected within the year to the total number vaccinated is very poor in the case of Rāmnād (47.9 per cent), Ariyalur (48.6 per cent), Kovilpatti (53.5 per cent), Srivaikuntam (57.8 per cent), Manamadura (58.6 per cent) and Pattukkōttai (61 per cent), and separate action is being taken on the conduct of the Deputy Inspectors concerned. The following Deputy Inspectors returned a large number of absentees under Primary in their Annual Returns:—Pattukkōttai (38.5 per cent), Manamadura (28.9 per cent), Negapatam (27.2 per cent), South Coimbatore (22.7 per cent) and Srivaikuntam (22.9 per cent).

Deputy Inspector of Vaccination, Pattukkōttai, who left *en bloc* very many villages unvisited, has no explanation to offer; while the other Deputy Inspectors attribute the large number of absentees to the non-co-operation of the village officials at their inspection. In none of the above ranges—it has to be noted—was vaccination compulsory throughout.

5. Although it may be too soon to pass any remarks on the working of the new scheme, as it has been in force only for just a year and that too quite an abnormal one owing to the wide prevalence of influenza which markedly affected vaccination throughout the range, it must be observed that the monthly returns of the Deputy Inspectors were, except in rare instances, all received long after the due dates. Out of 35 Deputy Inspectors in my range, 18 had to be given the help of vaccinators in verification work for not less than a month to clear up their arrears so as to enable them to submit their annual returns in time, while the Deputy Inspectors of Trichinopoly district had to be given the help of all the vaccinators for over two months as observed in paragraph 4 supra.

This more or less general delay that obtained more in certain districts and less in others raises up, for future consideration, the question of (1) re-allotment of Deputy Inspectors' ranges wherever they are disproportionately distributed at present and (2) perhaps also of an increase in the staff of Deputy Inspectors.

6. The delay in the submission of this report is solely due to the Deputy Inspectors of Trichinopoly district and particularly the Deputy Inspector of Ariyalur whose annual returns were received in this office only on 8th July 1919 in spite of repeated telegraphic warnings and reminders.

Their conduct is being separately reported upon. Material staff of

7. I record with pleasure the good services done by the minor staff of my office.

VACCINATION

A—VACCINE

Statement No. 1 showing the particulars of Vaccination in the

Number.	Districts.	Circles.	Population of districts or circles according to the census of 1911.	Average population per square mile.	Average number of vaccinators employed throughout the year.	Total number of persons vaccinated.			Average number of persons vaccinated by each vaccinator.	Primary		
						Males.	Females.	Total.		Total number of operations.	Under 1 year.	
1	2	3	4	5	6	7			8	9	10	
NORTHERN RANGE.												
1	Ganjam.	Berhampur circle	2,155,614	557	5	6,721	5,451	12,202	2,140	9,835	3,711	
2		Chikscole do.			14	11,760	10,225	22,085		1,629	14,589	7,338
3		Aika do.			9	9,545	6,322	16,477		1,831	13,580	5,585
4		Purnashowapur do.			8	6,941	5,761	12,745		1,593	11,333	4,807
5		Ganjam Hill Tracts, North.			8	5,458	4,023	9,516		1,189	8,311	1,524
6		Ganjam Hill Tracts, South.			7	3,780	3,470	7,250		1,036	6,316	1,543
		Total of district	2,155,614	557	51	44,310	35,964	80,275	1,574	72,240	24,003	
7	Gadchhari.	Cocanada circle	1,534,893	249	5	5,318	5,240	10,558	2,686	11,411	2,580	
8		Rajahmundry do.			5	10,885	8,931	19,847		3,968	18,600	2,507
9		Palavaram do.			8	2,857	2,634	5,471		1,834	5,004	665
10		Poddapur do.			4	8,768	8,230	16,938		4,247	16,754	3,006
11		Bhadrachalam do.			6	1,789	1,731	3,520		587	3,978	742
		Total of district	1,534,893	249	21	29,613	26,793	56,409	2,686	55,316	9,510	
12	Guntur.	Guntur circle	1,614,702	283	7	8,941	7,660	16,601	2,240	14,162	5,302	
13		Narasaraopet circle			5	8,577	6,509	15,175		3,035	11,411	3,150
14		Vinukonda do.			4	3,772	2,004	5,781		1,445	5,379	1,346
15		Bapatla do.			9	9,237	8,205	17,442		1,938	14,035	3,496
		Total of district	1,614,702	283	25	30,532	25,467	55,999	2,240	44,987	13,196	
16	Kistna.	Ellore circle	1,884,728	319	4	7,729	6,502	14,231	3,546	12,001	3,076	
17		Masulipatam circle			4	7,298	5,006	12,304		3,301	11,726	3,008
18		Bozwada do.			0	10,824	9,188	19,902		3,327	15,381	4,001
19		Narsapur do.			4	8,523	7,774	16,297		4,074	16,008	1,594
20		Tanuku do.			3	5,570	5,203	10,773		3,591	12,209	3,753
		Total of District	1,884,728	319	21	39,944	34,523	74,467	3,546	68,365	15,429	
21	Nellore.	Nellore circle	1,294,906	162	3	3,583	3,221	6,754	2,693	6,253	779	
22		Atmakur do.			4	4,445	4,107	8,553		2,138	8,051	1,549
23		Kavali do.			4	6,465	5,888	12,153		3,038	10,417	1,939
24		Gudur do.			4	4,906	4,667	9,573		2,393	9,268	1,698
25		Guigiri do.			4	7,252	5,281	12,933		3,233	9,937	849
		Total of district	1,294,906	162	19	21,602	23,384	49,066	2,693	43,566	6,838	
26	Vizagapatnam.	Vizagapatnam circle	2,454,020	...	4	9,074	10,463	20,137	3,729	16,710	3,307	
27		Narasaraopet do.			4	9,054	9,431	18,485		4,621	16,500	3,307
...		Government Vaccinators (Gudum Hill Tracts).			2	728	602	1,330		665	1,313	131
28		Vizianagram circle			4	10,308	9,418	19,726		4,931	13,231	1,596
29		Chipurupalli do.			3	6,154	6,153	12,307		4,102	12,292	2,780
...		Government Vaccinators, Palkonda Agency.			1	189	159	348		348	297	39
30		Paryatipuram circle	...	...	4	7,367	7,170	14,537	3,634	12,805	3,069	
31		Gannpur do.	...	...	4	5,408	4,660	10,074	2,519	6,316	1,249	
		Total of district	2,454,020	...	26	48,882	48,062	96,944	3,729	79,464	15,928	
32	Koraput.	Jeypore Circle	624,890	74	5	4,554	4,575	9,139	2,313	10,081	1,195	
33		Koraput do.			5	5,472	5,753	11,225		2,245	8,641	1,419
34		Nowrangapur do.			3	5,045	4,658	9,703		3,234	8,981	962
		Total of district	624,890	74	13	15,071	14,986	30,067	2,313	27,703	3,576	
		Total of circles in the Northern range	11,581,763	...	176	24,954	20,173	44,427	2,523	381,921	89,089	
		Total of Medical Sub-ordinates.	...	...	...	5,226	231	5,457	...	...	...	

* Includes Hill Tracts.

STATEMENTS.

DEPARTMENT.

Madras Presidency for the official year 1918-19.

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 5 years.		Average annual number of deaths from smallpox during previous 5 years.			
Successful.		Total of all ages.	Unknown.	Total number of operations.	Successful.	Unknown.	Primary vaccination.		Re-vaccination.	Primary vaccination.	Re-vaccination.	Number.	Ratio per 1,000.	Number.	Ratio per 1,000.	
1 and under 6 years.																
11	12	13	14	15	16	17	18	19	20	21	22	23	24	25		
3,486	7,491	676	2,570	1,851	265	81.8	80.3	}	6.9	10.3	...	...	...	...		
4,102	11,637	872	7,694	5,897	707	83.0	84.4		6.0	9.2	...	...	...	...		
5,441	11,549	655	3,774	3,206	263	80.7	93.0		4.8	7.0	...	...	...	...		
3,590	8,974	376	2,084	1,487	265	84.5	81.7		5.1	12.7	...	...	...	...		
2,872	5,518	439	3,990	3,637	484	89.4	81.9		8.6	7.1	...	...	...	...		
2,752	5,070	440	1,030	568	139	85.8	63.7	}	6.9	18.5	...	...	...	...		
22,553	50,258	3,658	21,142	16,103	1,923	85.8	83.8		39.8	5.9	9.1	78,683	84.2	462	0.3	
3,462	8,627	1,608	11,233	652	268	67.6	63.6		}	14.1	20.6	...	...	...	...	
6,076	2,221	3,029	3,376	501	760	61.2	19.2			16.7	23.7	...	...	...	...	
2,022	3,054	642	900	485	148	62.8	65.8			12.6	14.4	...	...	...	...	
4,924	7,770	2,459	2,934	1,079	899	54.3	51.5	14.6		50.0	...	...	...	...		
1,310	2,197	427	276	104	22	62.0	40.9	16.7		8.0	...	...	...	...		
17,203	28,878	8,146	8,839	2,831	2,103	61.2	42.0	20.7	14.7	23.3	51,107	33.3	559	0.6		
4,926	10,503	1,654	2,852	2,051	237	81.5	73.4	}	11.7	8.3	}	...	...	...		
4,476	7,993	1,125	4,129	2,639	430	77.7	69.8		9.9	9.0		...	...	...		
1,721	2,084	422	1,504	571	172	60.2	42.0		7.8	11.4		...	...	...		
6,107	10,452	720	3,613	2,417	292	78.6	70.2		5.1	5.5		...	...	...		
17,224	31,934	3,921	12,108	7,690	1,041	77.8	68.7		24.5	8.7		8.3	64,166	89.7	1,350	0.8
5,283	9,167	1,046	3,301	2,113	457	77.3	74.8	}	8.1	13.8	}	...	...	...		
4,223	7,828	1,783	3,812	1,951	793	78.7	64.7		15.2	20.8		...	...	...		
5,161	10,486	1,185	5,137	2,502	495	73.6	53.6		7.7	9.1		...	...	...		
7,516	10,218	2,204	771	405	7	77.4	54.3		17.5	6.0		...	...	...		
5,652	9,857	604	723	399	95	85.0	62.1		5.4	13.1		...	...	...		
27,535	47,689	7,459	13,744	7,364	1,817	78.1	61.7	29.2	11.0	18.2	69,061	36.6	1,433	0.8		
2,568	3,452	1,114	802	329	229	67.2	57.4	}	17.8	28.6	}	...	...	...		
4,090	5,062	674	529	273	148	50.8	66.4		8.4	26.5		...	...	...		
4,243	6,081	1,125	2,192	800	499	71.0	47.0		10.6	22.4		...	...	...		
3,421	5,816	829	1,714	1,212	144	67.4	77.2		9.0	8.4		...	...	...		
3,426	4,681	1,269	3,503	1,544	791	62.8	56.3		12.8	21.7		...	...	...		
17,736	26,322	5,011	8,772	4,158	1,772	67.7	59.4	23.5	11.4	20.2	33,137	29.5	1,293	1.0		
9,376	10,135	2,375	3,441	1,540	581	70.2	53.8	}	13.6	10.6	}	...	...	...		
6,351	10,856	1,457	2,138	1,256	109	72.8	61.8		9.0	5.1		...	...	...		
163	1,100	105	20	16	3	91.1	94.1		9.0	15.0		...	...	...		
4,107	4,278	1,413	7,072	776	365	53.1	11.6		10.7	5.2		...	...	...		
4,968	8,133	1,394	1,993	283	176	74.6	34.2		11.3	17.5		...	...	...		
114	273	...	51	48	...	91.9	94.1	...	...	...	...	...	...			
4,448	7,918	1,154	2,991	555	191	63.1	29.7	}	3.2	9.3	}	...	...	...		
2,618	4,782	375	3,904	2,714	437	80.5	80.5		5.0	11.4		...	...	...		
29,749	49,470	8,223	19,611	7,184	1,857	69.6	40.5		23.1	10.4		9.5	93,497	40.5	1,148	0.4
4,804	7,186	441	1,414	1,941	107	74.5	75.8		...	4.4		7.6	...	...	...	
2,687	5,973	618	2,810	1,421	330	73.2	57.8		...	7.2		11.7	...	...	...	
2,380	5,673	520	1,155	329	139	97.0	82.4	...	5.8	11.7	...	...	...			
11,591	18,735	1,579	5,439	2,751	578	71.7	56.9	34.4	5.7	10.0	26,215	40.4	...	...		
142,939	255,183	38,027	89,225	48,067	11,052	73.6	61.1	28.1	10.0	12.3	40,886	30.4	6,770	0.6		
...	...	...	5,457	3,983	352	...	77.7	...	...	...	6.1	...	...	...		

A—VACCINE

Statement No. I showing the particulars of Vaccination in the

Number.	Districts.	Circles.	Population of districts or circles according to the census of 1911.	Average population per square mile.	Average number of vaccinators employed throughout the year.	Total number of persons vaccinated.			Average number of persons vaccinated by each vaccinator.	Primary	
						Males.	Females.	Total.		Total number of operations.	Under 1 year.
1	2	3	4	5	6	7			8	9	10
NORTHERN RANGE— cont.											
1	Municipalities.	Anakapalle ...	20,625	2,392	1	577	401	978	978	629	379
2		Berhampur ...	31,456	5,212	1	2,939	610	3,549	3,549	893	737
3		Bezawada ...	32,967	5,976	2	909	687	1,596	812	1,290	923
4		Bimlipatam ...	9,314	17,911	1	375	321	696	696	354	228
5		Chicacole ...	17,852	5,951	1	513	414	927	927	434	363
6		Cocanada ...	54,110	9,018	2	2,955	2,629	5,584	2,792	2,352	1,231
7		Ellora ...	37,519	12,096	2	1,853	1,158	3,011	1,578	2,501	1,535
8		Guntur ...	42,625	9,134	1	1,253	726	2,049	1,025	1,129	970
9		Masulipatam ...	42,123	2,106	3	1,060	904	1,964	655	1,308	862
10		Narasaraopet ...	8,743	4,371	1	762	443	1,205	1,205	642	300
11		Nellore ...	33,246	8,312	1	829	462	1,291	1,291	656	363
12		Ongole ...	13,256	3,321	1	396	207	513	513	302	239
13		Parlakimedi ...	18,370	12,812	1	655	222	907	907	454	344
14		Poddappur ...	15,436	2,572	1	360	276	636	636	312	338
15		Rajahmundry ...	48,417	14,325	2	2,650	1,243	4,093	2,046	1,824	1,055
16		Tonali ...	18,195	5,851	1	382	424	806	806	429	429
17		Vizagapatam ...	43,413	8,349	2	1,489	1,073	2,562	1,281	1,154	612
18		Vizianagaram ...	37,550	7,570	2	2,723	1,924	4,647	2,323	1,983	1,066
		Total of Municipalities in the Northern Range.	525,447	...	27	22,919	14,194	37,113	1,375	19,806	11,908
		Grand Total of Northern Range.	12,087,210	...	203	263,039	223,598	486,637	2,371	401,727	261,048
CENTRAL RANGE.											
1	Anantapur.	Anantapur circle ...	...	...	3	2,851	2,741	5,592	1,865	5,533	2,079
2		Penakonda do. ...	954,766	112	4	4,184	3,064	7,248	2,022	7,879	2,494
3		Gooty ...	...	...	3	2,981	2,675	5,656	1,887	5,331	1,434
4		Dharmavaram ...	...	...	4	3,887	3,949	7,836	1,969	6,920	1,866
		Total of district ...	954,766	142	14	13,805	12,008	25,813	1,895	25,673	7,973
5	Bellary.	Bellary circle ...	...	...	4	3,351	2,822	6,173	1,543	5,946	1,839
6		Adoni ...	885,164	152	7	4,981	4,274	9,255	1,336	8,914	2,947
7		Harpanahalli ...	...	...	4	3,577	3,406	6,983	1,745	7,195	2,392
		Total of district ...	885,164	152	15	11,909	10,502	22,411	1,453	22,125	7,178
8	Chingleput.	Chingleput circle ...	...	...	3	6,305	6,277	12,582	4,194	13,275	6,340
9		Siddipet do. ...	...	...	3	5,734	5,811	11,545	3,848	11,609	4,559
10		Ponneri do. ...	1,340,518	436	4	8,032	7,737	15,769	3,942	14,826	6,437
11		Madurantakam ...	...	...	3	6,103	5,503	11,606	3,869	11,776	5,544
		Total of district ...	1,340,518	436	13	29,175	25,331	54,506	3,962	50,856	22,870
12	Chittoor.	Chittoor circle ...	...	...	4	4,021	4,823	8,844	2,236	9,133	2,300
13		Karvetnagar do. ...	1,208,892	215	6	8,125	8,019	16,144	2,691	17,039	5,569
14		Madanapalle ...	...	...	5	6,476	5,539	12,015	2,403	11,627	3,343
		Total of district ...	1,208,892	215	15	19,222	17,881	37,103	2,474	37,349	11,112
15	Cuddalore.	Cuddalore ...	...	...	3	2,321	2,027	4,348	1,473	5,571	387
16		Rajampet ...	860,435	148	5	4,417	3,446	7,863	1,573	7,484	1,938
17		Rayachoti ...	...	...	4	1,721	1,544	3,265	816	2,914	732
18		Jammalamadugu ...	...	...	4	2,665	2,603	5,268	1,312	5,772	1,847
		Total ...	860,435	148	16	11,334	9,620	20,954	1,310	21,741	5,532
19	Kannur.	Kannur ...	...	...	3	2,941	2,309	5,250	1,750	5,216	1,339
20		Marthapur ...	...	...	4	3,716	2,945	6,661	1,666	7,443	1,451
21		Nandiyal ...	592,929	118	3	2,810	2,545	5,355	1,785	6,326	1,028
22		Dharmapuri ...	...	...	4	3,724	3,197	6,921	1,726	8,377	1,610
23		Koilkandla ...	...	...	3	2,404	1,553	3,957	1,329	3,470	260
		Total of district ...	592,929	118	16	15,594	12,562	28,156	1,761	30,822	2,698

* Excludes Sandur (13,526).

† Excludes Banganapalle (39,344).

DEPARTMENT—cont.

Madras Presidency for the official year 1918-19—cont.

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 5 years.		Average annual number of deaths from smallpox during previous 5 years.	
Successful.									Primary vacci- nation.	Re-vaccination.	Number.	Ratio per 1,000.	Number.	Ratio per 1,000.
1 and under 6 years.	Total of all ages.	Unknown.	Total number of operations.	Successful.	Unknown.	Primary vaccination.	Re vaccination.							
11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
86	553	4	372	319	..	88.5	85.8	42.3	0.6	..	739	38.7	44	2.1
65	402	...	2,742	2,180	43	89.8	80.8	94.8	...	1.6	1,384	44.0	28	0.9
201	1,149	34	498	414	13	91.5	85.4	47.6	2.6	2.6	1,615	42.1	39	1.2
33	319	...	426	239	...	80.1	70.0	66.2	...	...	530	58.9	3	0.3
49	415	...	466	466	4	95.0	94.7	49.4	...	0.9	778	43.3	7	0.4
884	2,395	81	3,210	2,586	139	83.4	94.3	97.8	2.3	4.3	1,555	31.3	62	1.2
793	2,393	2	542	350	81	94.9	72.2	71.4	0.1	14.9	2,954	78.1	58	1.5
76	1,043	...	671	603	155	92.8	72.9	88.7	...	16.0	2,808	67.3	83	2.1
282	1,214	...	650	555	...	88.7	85.4	42.9	...	...	1,842	43.7	69	1.6
172	474	23	637	554	63	76.1	84.8	111.9	4.0	0.6	639	73.1	15	1.7
136	511	51	672	199	222	81.8	45.2	21.4	4.7	24.5	1,350	49.3	27	0.8
61	309	8	170	142	1	87.0	84.0	38.9	2.2	0.6	944	71.1	15	1.1
59	379	...	495	378	43	82.5	84.1	40.8	...	8.9	1,656	91.8	36	2.0
81	357	1	151	166	21	74.9	76.9	30.1	0.2	13.9	220	20.7	7	0.5
535	1,690	...	2,705	1,425	139	87.0	69.2	62.4	...	8.8	2,514	51.9	104	3.1
161	673	...	188	151	2	90.1	51.2	40.8	...	1.1	575	48.1	15	0.6
291	850	47	1,354	289	558	70.9	42.6	26.5	3.1	54.5	1,525	32.1	23	0.6
184	1,375	57	2,047	1,017	176	71.4	69.2	87.7	2.9	0.0	2,226	55.9	12	0.3
4,013	16,892	291	18,994	13,172	2,024	86.1	77.6	57.0	1.5	10.7	27,705	52.7	652	1.2
147,042	269,995	33,323	114,136	65,222	13,415	74.3	64.8	27.7	9.5	11.8	448,591	37.1	7,428	0.6
2,011	4,144	522	231	76	29	82.7	37.6	...	9.4	12.6	...	...	...	...
2,508	5,084	552	550	153	121	73.4	35.7	...	12.1	22.0	...	...	...	...
1,072	3,477	587	453	133	113	78.2	42.6	...	16.6	31.4	...	...	...	...
2,936	4,914	1,121	1,472	508	373	81.6	56.5	...	16.2	29.3	...	...	...	...
9,327	17,619	3,492	2,308	870	666	79.4	47.2	19.4	13.6	26.6	26,969	28.2	678	0.7
1,462	3,423	1,065	572	189	151	62.5	44.6	...	17.8	26.4	...	...	...	...
2,786	5,915	1,129	154	38	65	74.2	52.8	...	12.6	54.4	...	...	...	...
2,123	4,682	897	972	120	59	74.6	55.6	...	11.1	20.6	...	...	...	...
6,321	13,027	3,091	1,002	343	293	73.2	48.8	16.1	14.0	29.2	28,261	31.9	1,112	1.3
8,617	10,023	1,595	487	290	100	85.8	74.9	...	12.1	20.5	...	...	...	...
1,485	7,148	2,153	554	207	156	80.7	54.5	...	19.6	29.1	...	...	...	...
3,012	9,510	2,218	1,523	643	269	75.4	49.5	...	14.9	17.2	...	...	...	...
2,595	8,574	1,193	1,485	711	319	81.0	60.0	...	10.1	21.5	...	...	...	...
10,939	35,255	7,159	4,073	1,850	844	80.6	57.3	37.7	14.1	20.7	34,922	26.1	1,015	0.7
3,452	5,849	843	631	143	75	70.5	29.3	...	9.2	11.9	...	...	...	...
6,279	12,037	2,770	260	102	100	84.1	63.7	...	13.2	38.5	...	...	...	...
8,559	7,331	1,394	1,756	738	573	72.1	62.4	...	12.0	32.6	...	...	...	...
13,590	25,266	5,007	2,647	966	748	76.9	51.9	21.8	13.2	23.0	33,757	23.0	1,050	0.3
2,865	3,725	443	594	203	59	72.6	60.6	...	8.0	15.0	...	...	...	...
3,130	5,593	720	1,305	1,019	104	82.9	81.1	...	9.6	7.9	...	...	...	...
1,156	2,051	337	573	294	121	79.6	65.0	...	11.6	21.1	...	...	...	...
2,223	4,458	413	313	173	13	83.7	86.9	...	7.2	6.1	...	...	...	...
8,904	15,872	1,913	2,484	1,680	297	80.0	76.8	20.4	8.8	12.0	27,124	31.4	683	0.8
2,079	3,551	407	719	464	98	73.8	74.7	...	7.6	13.6	...	...	...	...
2,457	4,135	1,097	1,057	222	222	64.6	40.3	...	13.5	30.5	...	...	...	...
2,433	3,703	465	470	84	60	63.2	20.5	...	7.4	12.8	...	...	...	...
3,285	5,123	903	380	174	126	68.6	37.5	...	10.8	21.4	...	...	...	...
1,287	1,637	410	618	180	141	53.5	37.7	...	11.6	22.8	...	...	...	...
11,571	18,175	3,122	2,454	1,193	747	65.6	44.3	21.6	10.4	21.6	32,392	36.2	611	0.9

A—VACCINE

Statement No. 1 showing the particulars of Vaccination in the

Number.	Districts.	Circles.	Population of districts or circles according to the census of 1911.	Average population per square mile.	Average number of vaccinators employed throughout the year.	Total number of persons vaccinated.			Average number of persons vaccinated by each vaccinator.	Primary	
						Males.	Females.	Total.		Total number of operations.	Under 1 year.
1	2	3	4	5	6	7			8	9	10
CENTRAL RANGE— cont.											
24	North Arcot.	Vellore	1,825,742	371	3	5,291	5,115	10,406	3,469	9,892	3,712
25		Ramanipettai			4	6,521	5,537	11,858	2,983	12,598	4,709
26		Palani			5	8,147	8,019	16,066	3,213	17,156	5,689
27		Jalarpet			4	7,759	7,234	15,003	3,751	14,803	5,359
28		Cheyyar			3	5,602	5,008	10,100	3,327	10,826	4,669
		Total of district ...	1,825,742	371	10	32,529	30,913	63,443	8,339	65,125	23,528
29	Salem.	Salem	1,707,527	236	4	5,973	5,764	11,737	2,934	12,303	4,213
30		Sankari			5	7,035	7,092	14,727	2,946	14,207	3,175
31		Dharmapuri			4	6,751	6,256	13,007	3,252	11,372	3,705
32		Hosur			2	3,605	3,387	6,942	3,471	6,716	2,746
33		Namakkal			3	2,273	2,176	4,449	1,453	4,469	1,287
		Total of district ...	1,707,527	236	18	26,237	24,625	50,862	2,826	49,166	15,123
34	South Arcot.	Cuddalore	2,284,665	543	4	7,422	7,753	15,180	3,795	18,197	8,267
35		Chidambaram			5	7,921	8,158	16,059	3,212	16,615	6,498
36		Tirachy			5	7,210	5,442	12,652	2,550	12,201	3,133
37		Tindivanam			5	7,807	6,733	14,545	2,909	12,418	3,441
		Total of district ...	2,284,665	543	19	30,380	28,076	58,136	2,070	55,401	21,339
		Total of circles in the Central Range.	11,532,638	...	145	180,587	172,108	358,785	2,474	358,798	120,208
		Total of Medical Subordinates.	...	...	...	1,862	28	1,835	...	266	9
1	Municipalities.	A. S. S. S.	31,645	2,291	1	578	484	1,012	1,012	537	691
2		Anantapur	34,557	940	1	290	145	444	444	285	142
3		Bellary	34,556	6,901	3	2,009	1,107	3,116	1,059	2,033	1,554
4		Chidambaram	21,327	10,663	1	680	352	932	932	640	468
5		Chingleput	11,826	2,201	1	432	222	654	654	433	310
6		Chittoor	15,149	2,019	1	830	212	572	572	413	243
7		Conjeevaram	53,804	13,496	2	1,008	781	1,739	869	1,582	1,150
8		Cuddalore	55,574	4,254	2	1,457	1,038	2,505	1,233	2,249	1,376
9		Cuddapah	17,507	930	1	519	242	761	761	506	393
10		Godiyattam	22,390	19,655	1	480	324	754	754	659	566
11		Hospet	17,671	5,644	1	389	317	697	697	481	481
12		Kannur	28,040	5,238	1	717	496	1,203	1,203	937	743
13		Kannur	17,671	5,644	1	389	317	697	697	481	481
14		Kannur	28,040	5,238	1	717	496	1,203	1,203	937	743
15		Kannur	17,671	5,644	1	389	317	697	697	481	481
16		Kannur	28,040	5,238	1	717	496	1,203	1,203	937	743
17		Kannur	17,671	5,644	1	389	317	697	697	481	481
18		Kannur	28,040	5,238	1	717	496	1,203	1,203	937	743
19		Kannur	17,671	5,644	1	389	317	697	697	481	481
20		Kannur	28,040	5,238	1	717	496	1,203	1,203	937	743
21		Kannur	17,671	5,644	1	389	317	697	697	481	481
22		Kannur	28,040	5,238	1	717	496	1,203	1,203	937	743
		Total of Municipalities in Central Range.	1,056,824	...	37	33,851	22,595	56,446	1,526	39,632	30,334
1	Military Cantonment.	Bangalore	100,834	7,447	2	2,277	513	2,590	1,295	455	292
2		Secunderabad	103,879	5,467	5	4,515	5,179	9,714	1,943	3,089	1,239
		Total of Cantonments ...	204,713	6,291	7	6,612	5,692	12,304	1,758	8,494	1,531
		Grand Total of Central Range.	18,615,472	...	189	228,912	206,508	429,420	2,262	402,199	152,100

* Medical Vaccinators.

DEPARTMENT—cont.

Madras Presidency for the official year 1918-19—cont.

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 number of persons successfully vaccinated during previous 5 years.		Average number of deaths from smallpox during previous 5 years.	
Successful.						Primary vaccination.	Re-vaccination.		Primary vaccination.	Re-vaccination.	Number.	Ratio per 1,000.	Number.	Ratio per 1,000.
1 and under 6 years.	Total of all ages.	Unknown.	Total number of operations.	Successful.	Unknown.	Primary vaccination.	Re-vaccination.	Persons successfully vaccinated per 1,000 of population.	Primary vaccination.	Re-vaccination.	Number.	Ratio per 1,000.	Number.	Ratio per 1,000.
11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
3,342	7,385	1,249	1,526	675	328	86.3	56.3	...	13.7	21.4	...	...	...	...
3,418	8,182	2,101	871	267	220	78.6	41.0	...	16.3	25.3	...	...	...	...
6,600	12,767	2,969	415	178	195	86.9	80.0	...	17.3	47.0	...	...	...	...
3,715	9,781	2,134	644	253	163	77.2	52.6	...	14.4	25.3	...	...	...	...
3,589	7,658	1,035	471	157	124	77.9	45.2	...	9.5	26.3	...	...	...	...
20,664	45,773	9,488	3,927	1,528	1,028	82.3	52.7	26.0	14.6	26.2	51,467	23.2	1,767	1.0
4,180	8,502	1,325	159	84	17	76.8	59.2	...	10.7	10.7	...	...	...	...
5,625	9,012	1,259	598	186	58	63.6	34.6	...	8.9	9.7	...	...	...	...
4,246	8,245	917	2,045	1,515	55	73.9	76.1	...	8.1	2.7	...	...	...	...
2,235	5,100	609	434	211	82	83.5	59.9	...	9.1	13.9	...	...	...	...
1,808	3,172	438	113	45	15	77.9	45.9	...	9.9	13.2	...	...	...	...
18,094	34,031	4,548	3,349	2,041	227	76.3	65.4	21.1	9.3	6.8	53,426	31.3	1,114	0.7
1,267	9,593	2,278	2,575	1,796	313	87.3	79.8	...	17.3	12.2	...	...	...	...
4,787	11,005	2,716	1,406	461	243	83.9	39.6	...	16.8	17.2	...	...	...	...
2,407	6,523	2,420	2,278	669	690	86.7	39.6	...	19.8	25.0	...	...	...	...
3,960	7,572	2,782	2,311	547	458	71.2	29.5	...	20.7	19.8	...	...	...	...
12,931	35,298	10,266	8,570	3,473	1,604	78.2	49.9	17.0	18.5	18.7	60,407	26.4	2,229	1.0
112,401	241,216	48,146	32,014	13,972	6,454	77.6	54.7	21.3	13.4	20.2	348,616	29.2	10,148	0.9
27	181	14	1,643	938	150	71.8	62.6	...	5.3	9.1	...	...	...	...
78	789	45	175	168	7	99.6	98.8	30.2	5.4	4.0	1,182	37.4	91	2.9
91	241	...	159	143	4	84.6	32.3	45.4	2.5	30.9	36.5	16	1.9	...
693	2,364	1	513	358	3	89.8	70.2	77.0	0.03	0.6	2,019	68.5	76	2.2
86	579	12	366	268	53	92.2	85.4	39.7	1.9	14.2	928	43.4	34	1.6
95	417	2	248	190	24	98.1	88.8	52.2	0.5	14.1	684	58.8	2	0.1
93	345	10	188	7	120	84.4	12.1	23.2	2.4	69.2	627	41.4	4	0.3
125	1,282	157	235	163	39	90.0	77.7	26.8	9.9	16.1	1,835	31.1	30	0.6
682	2,138	20	256	187	14	95.9	80.6	41.1	0.9	5.5	2,481	43.9	21	0.4
86	423	8	282	157	28	84.9	61.8	32.6	1.6	9.9	656	36.8	18	1.0
67	638	7	112	62	44	99.2	91.0	29.9	1.1	39.3	724	31.0	31	1.2
142	623	...	26	15	...	91.2	57.7	39.1	...	...	837	47.4	5	0.3
175	951	1	241	109	57	95.5	59.2	40.7	0.1	23.7	1,105	42.4	22	0.8
2,008	17,371	516	18,653	5,314	3,627	97.5	53.0	43.7	28.2	26.6	28,616	55.2	183	0.7
276	720	...	85	75	...	93.5	88.2	49.0	...	...	749	46.1	25	2.2
146	515	...	15	13	...	78.6	36.7	33.5	...	...	408	25.9	0	0
369	2,612	...	189	113	...	98.3	69.8	46.1	...	...	2,736	46.3	112	1.8
82	274	...	86	66	...	97.4	100.0	42.0	...	...	637	60.9	32	3.1
67	404	...	40	15	...	95.5	74.5	25.1	...	45.0	485	29.0	5	0.3
111	814	...	83	73	2	90.4	90.1	41.8	...	2.4	882	41.5	64	3.0
173	894	...	5	2	...	98.2	40.0	43.9	0.2	0.2	717	35.1	14	0.4
465	2,184	26	408	106	266	35.1	74.6	46.0	1.1	65.2	1,969	39.6	38	0.7
36	324	4	61	28	7	88.8	48.1	35.1	1.1	11.5	409	41.1	1	0.1
6,111	37,002	811	17,406	7,618	4,331	95.3	55.3	42.2	2.0	24.9	51,230	48.5	835	0.8
30	327	8	2,135	1,222	172	73.2	95.8	...	1.8	8.1	606	6.0	502	0.5
767	2,340	154	6,984	2,600	412	81.1	39.7	...	5.1	5.9	6,705	64.5	23	0.2
797	2,667	162	9,119	3,892	594	80.9	45.6	32.0	4.6	6.4	7,311	35.7	525	2.6
119,336	281,080	49,133	60,187	26,420	11,519	79.6	54.3	23.6	12.2	19.1	407,260	30.8	11,808	0.9

A—VACCINE

Statement No. I showing the particulars of Vaccination in the

Number.	Districts.	Circles.	Population of districts or circles according to the census of 1911.	Average population per square mile.	Average number of vaccinators employed throughout the year.	Total number of persons vaccinated.			Average number of persons vaccinated by each vaccinator.	Primary.	
						Males.	Females.	Total.		Total number of operations.	Under 1 year.
1	2	3	4	5	6	7			8	9	10
SOUTHERN RANGE —cont.											
1	Municipalities.	Bodinayakanur ...	20,205	20,205	1	384	403	787	787	810	645
2		Calicut ...	78,117	7,292	4	6,355	3,796	10,151	2,537	4,463	2,824
3		Cannanore ...	28,957	5,791	1	813	733	1,546	1,546	1,725	1,016
4		Cochin ...	20,023	20,023	1	845	461	1,306	1,806	714	369
5		Coimbatore ...	47,697	11,660	3	1,603	1,196	2,799	943	2,474	1,490
6		Connoor ...	9,333	1,710	1	391	260	651	681	354	192
7		Dhārāpuram ...	20,000	8,000	1	228	228	461	461	583	294
8		Dindigul ...	25,052	9,635	1	1,021	543	1,564	1,564	813	779
9		Erode ...	16,701	16,701	1	282	298	580	680	631	313
10		Kōrar ...	17,674	8,837	1	547	274	821	821	574	476
11		Kodaikanāl* ...	...	...	...	...	...	...	...	...	...
12		Kumbakonam ...	44,647	14,623	3	1,208	958	2,226	742	2,080	1,466
13		Madura ...	134,130	5,036	16	16,066	7,162	23,228	1,431	12,244	7,100
14		Mangalore ...	48,412	9,680	3	5,239	3,735	8,974	2,991	4,185	2,048
15		Mannārgudi ...	21,398	3,566	1	480	303	783	783	597	468
16		Māyavaram ...	27,121	9,040	1	754	493	1,237	1,237	1,002	747
17		Negapatam ...	60,168	11,688	3	4,245	1,544	5,789	1,923	3,214	1,909
18		Ootacamund ...	18,329	1,448	2	684	499	1,183	566	661	531
19		Palamcottah ...	44,900	11,227	3	2,104	1,363	3,467	1,146	1,417	934
20		Palghat ...	44,319	4,185	2	1,397	953	2,355	1,183	2,197	1,338
21		Palni ...	13,211	7,349	1	491	231	722	752	509	416
22		Periyakulam ...	18,715	18,715	1	433	422	855	905	829	698
23		Srirangam ...	24,799	3,543	1	558	491	1,049	1,049	1,007	497
24		Srivilliputtūr ...	29,066	20,761	1	531	636	1,167	1,167	1,077	824
25		Tanjore ...	60,341	895	4	1,547	1,144	3,091	773	2,253	1,238
26		Tollasherry ...	29,358	11,703	2	717	638	1,405	703	912	777
27		Tinnevely ...	44,805	7,469	2	1,235	682	2,277	1,133	2,000	1,491
28		Tirupur ...	10,897	2,905	1	253	197	449	449	441	137
29		Tiruvālar ...	21,000	2,100	1	541	275	816	816	542	402
30		Trichinopoly ...	123,512	14,899	4	3,153	2,280	5,435	1,359	4,672	2,544
31		Tuticorin ...	49,133	11,481	2	1,913	1,094	2,912	1,456	1,361	1,179
32		Udamalpet ...	15,000	5,000	1	202	205	407	407	398	90
33		Vizudapatti ...	21,355	7,118	1	332	276	608	606	576	369
Total of Municipalities.			1,200,046	...	71	56,986	34,158	91,144	1,283	57,310	35,596
Grand Total of Southern Range.			16,080,615	...	239	327,476	280,493	617,969	2,585	529,239	174,293
Grand Total ...			41,183,297	311	631	829,487	704,599	1,534,086	(a) 7,218	1,333,156	427,440

* Vide under Dispensary Vaccination Statement No. III.

† Excludes the population of Bangalore and Secunderabad Cantonments.

(a) In finding out the average number of persons vaccinated, the total work of medical subordinates is excluded.

Note.—(1) Difference between number of operations and number of persons vaccinated equals 99,477 which represents secondary operations.

(2) This statement does not include the statistics of dispensary vaccination which are exhibited separately in statement No. III.

N.B.—In calculating the percentage of success shown in this statement and statement No. III unknown cases have not been taken into account.

DEPARTMENT—cont.

Madras Presidency for the official year 1918-19—cont.

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 number of persons successfully vaccinated during previous 5 years.		Average number of deaths from smallpox during previous 5 years.	
Successful.			Total number of operations.			Primary vaccination.			Primary vaccination.		Number.		Ratio per 1,000.	
1 and under 6 years.	Total of all ages.	Unknown.	Total number of operations.	Successful.	Unknown.	Primary vaccination.	Re-vaccination.	19	20	21	22	23	24	25
11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
112	767	...	2	2	...	94.7	100.0	38.0	...	...	336	16.6	2	0.1
949	4,214	2	5,843	5,020	17	94.4	87.0	117.7	0.01	0.3	6,460	82.4	108	1.3
598	1,620	7	255	161	17	94.3	67.6	61.5	0.4	6.7	1,903	65.7	106	3.6
73	504	18	646	121	83	72.4	21.5	31.2	2.5	12.9	1,299	64.9	57	2.8
461	1,952	72	403	193	68	81.3	57.6	35.7	2.9	16.9	1,797	38.2	153	3.3
114	312	2	327	256	14	88.6	81.8	57.2	0.6	4.28	673	67.8	8	0.8
35	329	3	21	4	...	58.7	19.0	16.7	0.5	...	149	7.5	8	0.4
53	837	31	656	504	39	94.4	81.7	53.5	3.4	5.9	1,103	44.1	24	0.9
84	401	85	49	3	43	73.4	50.0	24.2	13.5	87.7	723	43.3	33	2.0
40	535	...	277	212	4	93.2	77.7	42.3	...	1.4	576	32.6	11	0.6
284	1,756	10	227	157	27	86.9	78.5	29.6	0.5	11.9	1,986	30.9	55	0.8
3,760	10,942	66	11,904	7,167	502	89.8	62.5	13.6	0.5	4.2	13,989	108.9	288	2.1
1,346	4,065	...	4,789	4,142	185	97.1	89.9	169.5	...	8.8	2,661	54.9	1	0.02
71	556	3	189	149	12	93.8	84.2	32.0	0.5	6.3	503	37.5	30	1.4
143	895	7	283	135	46	89.9	56.9	35.9	0.7	16.2	1,170	43.1	26	0.9
699	3,035	6	2,555	2,104	53	94.8	84.1	85.4	0.2	2.1	4,043	67.2	77	1.3
81	605	1	459	352	14	91.6	74.1	60.8	0.1	2.9	1,225	50.8	2	0.1
209	1,203	1	2,210	1,373	76	84.9	64.3	57.3	0.1	3.4	2,019	44.9	12	0.3
420	1,814	11	511	275	2	85.3	53.9	47.2	0.5	0.4	1,950	43.9	30	0.6
35	451	...	307	254	19	88.6	88.2	53.3	...	6.2	880	63.6	16	1.2
79	789	8	70	73	...	95.0	96.1	45.5	0.9	...	826	44.1	11	0.6
368	909	73	51	46	5	97.3	100.0	38.5	7.2	9.8	1,212	48.9	12	0.5
77	918	1	214	127	15	85.3	63.8	35.9	...	7.0	1,091	37.5	2	0.1
541	2,039	29	670	670	24	91.6	72.2	44.8	1.3	2.5	3,374	55.8	80	1.3
40	824	...	540	169	12	90.4	32.0	33.9	...	2.2	1,145	39.1	51	1.7
229	1,769	23	435	335	43	89.5	85.5	46.9	1.1	9.8	2,150	47.9	21	0.5
171	323	63	25	8	1	85.4	33.3	30.3	14.3	4.0	...	...	1	0.1
90	497	1	296	210	26	91.8	77.7	35.7	0.2	8.9	465	22.1	5	0.2
1,742	4,517	69	763	679	51	98.1	98.1	42.7	1.5	6.7	5,427	44.0	132	1.1
87	1,236	2	1,668	1,445	80	93.2	91.0	67.5	0.2	4.3	3,010	74.9	7	0.2
152	393	26	16	9	1	81.4	60.0	20.8	0.5	6.2	...	...	2	0.1
4	414	82	33	25	3	83.8	75.8	20.4	14.2	8.3	420	22.9	32	1.4
13,451	51,352	702	37,074	26,380	1,482	99.7	74.1	64.7	1.2	3.9	61,231	51.02	1,419	1.1
160,475	338,547	73,300	126,084	67,811	18,978	73.5	63.1	...	14.8	15.0	540,722	...	8,672	0.5
426,853	909,578	163,767	300,407	159,253	43,912	77.9	62.0	26.0	12.4	14.3	1,396,573	33.9	27,908	0.7

SUMMARY OF STATEMENT NO. I.

	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 vaccination 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 one year.	One and under six years.			
By Special staff (statement No. I).	1,233,778	300,308	1,333,156	800,407	77.9	62.0	631	7,218	427,440	427,453	26.0	Rs. A. P. 4,05,355 8 3	Rs. A. P. 0 6 1
By Dispensary staff (statement No. III).	157	113	157	113	98.7	93.3	...	...	116	21	...	...	...
By other agencies, if any.	...	...	...	...	...	...	...	...	...	...	...	...	...
Total	1,233,935	300,421	1,333,313	800,520	77.9	62.0	631	7,218	427,556	427,474	26.0	4,05,355 8 3	0 6 1

* Exclusive of the pay and allowances of the Inspectors of Vaccination and Deputy Sanitary Commissioners.

A—VACCINE DEPARTMENT—cont.

Statement No. II showing the Cost of the Department in the Madras Presidency for the official year 1918-19—cont.

Number.	District.	Circles.	Expenditure—cont.				Paid from				Total.	Number of all successful primary vaccination and re-vaccination.	Average cost of each successful case.
			Travelling allowance.	Contingencies.	Total cost.	Rs. A. P.	Imperial funds.	Provincial funds.	Local funds.	Rs. A. P.			
17				18	19	20	21	22	23	24	25	26	
NORTHERN RANGE—cont.													
1	Chingleput.	Berhampur circle	132 0 5	572 8 3	2,879 10 7	Rs. A. P.	...	1,043 2 11	1,836 7 8	Rs. A. P.	2,879 10 7	2,812	Rs. A. P.
2		Chingleput do.	130 1 8	1,083 13 4	3,842 9 5	...	...	1,326 0 8	3,016 2 8	...	4,342 9 5	17,584	0 4 11
3		Akk.	308 9 0	700 11 11	2,845 13 4	...	...	1,084 6 0	1,861 5 4	...	2,845 13 4	14,614	0 4 2
4		Tirumalpet do.	182 12 3	766 11 6	3,040 4 3	...	...	1,344 10 6	1,686 9 10	...	2,845 13 4	10,461	0 4 8
5		Ganjam Hill tracts, North	1,585 9 4	510 3 2	4,725 13 7	...	...	4,725 13 7	...	...	4,725 13 7	8,561	0 8 10
6		Ganjam Hill tracts, South	1,195 9 5	408 7 1	4,613 6 5	...	...	4,613 6 5	...	...	4,613 6 5	5,438	0 11 5
		Total of district	3,025 10 3	3,997 7 2	22,547 9 7	...	...	13,638 0 0	9,049 9 7	...	22,547 9 7	63,944	0 5 5
7	Guntur.	Cockanada circle	420 11 10	523 0 2	2,980 6 1	...	...	1,338 7 6	1,564 14 5	...	2,903 6 1	7,275	0 6 5
8		Bejjamundry do.	849 9 7	997 9 2	4,118 0 5	...	...	1,373 6 7	2,738 9 10	...	4,118 0 5	9,722	0 6 9
9		Polvaram do.	958 14 6	431 9 1	3,225 8 11	...	...	1,716 3 1	1,509 8 10	...	3,225 8 11	3,549	0 14 6
10		Peddapuri do.	835 14 7	976 8 7	3,666 3 5	...	...	1,707 3 10	2,437 13 7	...	3,666 3 5	4,868	0 6 6
11		Blackchalam do.	1,224 2 0	531 9 8	3,937 7 10	...	...	3,937 7 10	...	...	3,937 7 10	2,301	1 11 5
		Total of district	4,368 4 6	3,221 15 8	17,780 8 8	...	...	9,527 15 0	8,251 9 8	...	17,780 8 8	31,769	0 9 0
12	Guntur.	Guntur circle	863 1 0	629 4 3	3,995 10 4	...	...	1,377 0 2	2,621 10 2	...	3,995 10 4	12,554	0 5
13		Narasimhapet circle	609 8 6	613 13 1	2,636 6 2	...	...	1,212 3 2	1,714 3 0	...	2,636 6 2	16,618	0 4
14		Vankonda do.	426 8 11	302 14 0	1,612 13 0	...	...	1,762 18 7	849 15 5	...	1,612 13 0	3,555	0 7
15		Barachala circle	604 5 5	683 11 9	3,450 1 9	...	...	1,366 8 4	2,133 3 5	...	3,450 1 9	12,576	0 4
		Total of district	2,728 7 10	2,307 11 0	12,083 15 3	...	...	4,717 9 3	7,345 8 0	...	12,083 15 3	30,309	0 4 1

16	Kistna.	Ellore circle	755 5 10	578 13 4	3,084 7 0	...	...	1,850 16 9	1,803 7 3	...	3,084 7 0	11,280	0 4 5
17		Marripatam circle	713 2 7	531 5 1	3,204 2 3	...	...	592 1 6	2,312 0 9	...	3,204 2 3	8,162	0 5 2
18		Revvada circle	579 8 8	739 10 5	3,690 12 11	...	...	1,170 2 0	2,520 10 11	...	3,690 12 11	12,888	0 4 6
19		Narasimhapet circle	875 13 10	604 8 8	3,653 13 9	...	...	1,247 2 7	2,339 11 2	...	3,653 13 9	10,577	0 3 7
20		Tandak circle	553 11 2	456 3 3	2,279 1 9	...	...	485 6 0	1,323 9 9	...	2,279 1 9	6,125	0 9 6
		Total of district	3,510 9 1	2,915 8 9	15,915 5 8	...	...	5,695 13 10	10,119 7 10	...	15,915 5 8	54,930	0 4 7
21	Nellore.	Nellore circle	600 9 8	317 8 5	2,011 7 1	...	...	1,001 14 1	1,009 9 0	...	2,011 7 1	6,281	0 8 6
22		Atmakur circle	523 3 8	376 11 8	2,597 13 10	...	...	835 7 10	1,562 5 1	...	2,407 13 10	6,281	0 8 6
23		Kavali circle	444 0 2	483 11 7	2,572 0 3	...	...	1,065 11 2	1,606 5 1	...	2,572 0 3	7,431	0 5 8
24		Gudur do.	717 7 2	391 1 5	2,828 6 7	...	...	1,008 14 2	1,719 8 5	...	2,828 6 7	6,858	0 6 7
25		Kanigiri do.	577 7 2	531 12 8	3,138 7 11	...	...	1,315 8 7	2,832 15 4	...	3,138 7 11	6,125	0 9 6
		Total of district	3,161 12 5	2,136 14 9	13,540 3 8	...	...	5,238 7 10	8,100 11 0	...	13,540 3 8	50,480	0 7 1
26	Vizagapatnam.	Vizagapatnam circle	521 9 8	753 5 8	3,149 3 5	...	...	1,143 11 7	2,005 7 10	...	3,149 3 5	11,675	0 4 4
27		Government vaccinators (Gudem Hills).	527 2 10	691 0 4	2,893 7 7	...	...	1,338 12 3	1,992 11 4	...	2,893 7 7	32,112	0 3 10
28		Vizagapatnam circle	119 0 5	127 4 1	611 0 6	...	...	611 10 6	2,123 4 8	...	611 10 6	7,110	0 7 4
29		Chilaparelli do.	593 14 9	753 2 5	3,654 5 0	...	...	1,441 0 4	2,123 4 8	...	3,654 5 0	7,054	0 8 1
30		Government vaccinators, Palkonda	77 5 0	44 7 5	249 4 5	...	...	326 6 7	1,527 2 2	...	2,453 8 9	2,415	0 4 3
31		Agency.	503 15 10	633 13 0	3,230 6 1	...	...	1,283 5 5	1,576 0 7	...	3,230 6 1	321	0 12 5
		Total of district	1,600 10 10	622 1 0	3,673 2 11	...	...	1,120 14 9	1,732 4 2	...	3,673 2 11	7,486	0 6 7
32	Nellore.	Jeyore circle	598 8 6	451 7 8	2,912 6 3	...	...	1,047 7 7	1,805 14 8	...	2,912 6 3	8,177	0 5 8
33		Koruput do.	832 5 5	467 0 1	3,121 9 11	...	...	1,367 6 8	1,724 2 3	...	3,121 9 11	7,297	0 6 10
34		Norwanganur circle	552 7 7	875 2 0	1,830 4 0	...	...	587 12 10	1,52 7 2	...	1,830 4 0	6,102	0 4 10
		Total of district	2,084 5 7	1,323 9 9	7,874 8 2	...	...	3,231 11 1	4,592 8 1	...	7,874 8 2	21,486	0 5 10
		Total of circles in the Northern Range	24,633 4 7	30,091 2 11	1,08,766 14 8	...	...	50,689 10 11	58,727 3 9	...	1,08,766 14 8	331,230	0 5 9
1	Municipalities.	Anakapalle	...	81 0 8	277 0 8	...	...	...	...	...	277 0 8	572	0 5 1
2		Bejjamundry	...	186 1 1	411 1 1	...	...	...	...	...	411 1 1	2,952	0 2 2
3		Bejjamundry	...	56 4 10	535 9 10	...	...	...	...	...	535 9 10	1,493	0 5 5
4		Bejjamundry	...	59 7 8	296 13 6	...	...	...	...	...	296 13 6	617	0 5 5
5		Bejjamundry	...	178 3 4	571 3 4	...	...	...	...	...	571 3 4	882	0 5 5
6		Bejjamundry	...	190 2 10	530 2 10	...	...	...	...	...	530 2 10	2,939	0 3 9
7	Municipalities.	Bejjamundry	...	172 4 4	535 4 4	...	...	...	...	...	535 4 4	1,651	0 8 0
8		Bejjamundry	...	163 3 6	538 5 1	...	...	...	...	...	538 5 1	1,739	0 7 7
9		Bejjamundry	...	163 3 6	538 5 1	...	...	...	...	...	538 5 1	1,739	0 7 7
10		Bejjamundry	...	163 3 6	538 5 1	...	...	...	...	...	538 5 1	1,739	0 7 7
11		Bejjamundry	...	163 3 6	538 5 1	...	...	...	...	...	538 5 1	1,739	0 7 7
12		Bejjamundry	...	163 3 6	538 5 1	...	...	...	...	...	538 5 1	1,739	0 7 7
13		Bejjamundry	...	163 3 6	538 5 1	...	...	...	...	...	538 5 1	1,739	0 7 7

A—VACCINE DEPARTMENT—cont.

Statement No. II showing the Cost of the Department in the Madras Presidency for the official year 1918-19—cont.

Expenditure.																
Number.	District.	Circles.	Inspector of Vaccination and Deputy Commissioner.				Deputy Inspectors.			Vaccinators.				Peons, etc.		Total pay of establishment.
			Inspector and Deputy Commissioner.	Pay.	First grade.	Second grade.	Third grade.	Pay.	First class.	Second class.	Probationers.	Pay.	Number.	Pay.		
1	3		4	5	6	7	8	9	10	11	12	13	14	15	16	
NORTHERN RANGE—cont.																
14		Pondicherry	...	...	...	...	...	...	1	...	...	141 0 0	...	...	111 0 0	
15		Madhavaram	...	...	...	...	...	...	1	...	...	438 0 0	...	...	438 0 0	
16		Chennai	...	...	...	...	...	...	...	1	...	180 0 0	...	...	180 0 0	
17		Villupuram	...	...	...	...	...	...	...	1	...	496 0 0	...	...	496 0 0	
18		Villupuram	...	...	...	...	...	...	1	...	...	593 0 0	...	...	593 0 0	
Total of Municipalities in the Northern Range			...	...	...	...	...	...	13	10	4	5304 5 1	4	823 0 7	5,87 5 8	
Total of circles and Municipalities			...	...	3	10	21	24,142 10 10	40	94	63	41,531 10 7	38	4,055 7 5	70,029 19 10	
Northern Range			1	9,800 0 0	...	...	...	...	...	...	...	...	...	...	9,800 0 0	
Grand Total of Northern Range			1	9,900 0 0	3	10	21	24,142 10 10	40	94	63	41,631 10 7	38	4,055 7 5	70,029 12 10	
CENTRAL RANGE.																
1		Amudapur circle	...	...	...	1	...	537 8 0	...	2	1	777 11 7	1	118 0 0	1,653 3 7	
2		Pondicherry do.	...	...	...	1	...	747 8 0	...	3	1	914 6 4	1	131 11 5	1,733 9 9	
3		Chennai	...	...	...	...	1	538 13 4	...	...	1	785 8 0	1	102 14 4	1,457 3 8	
4		Madhavaram	...	...	...	...	1	573 8 0	...	3	1	890 6 11	1	105 11 3	1,559 10 2	
Total of district			...	...	2	2	2,632 5 4	...	...	10	4	3,303 0 0	4	448 5 0	6,473 11 2	
5		Madhavaram	...	...	...	1	...	688 12 0	...	3	1	835 11 8	1	122 8 0	1,646 15 8	
6		Chennai	...	...	...	...	1	1,361 15 6	...	4	1	1,649 0 10	1	166 1 10	2,207 2 2	
7		Despanabali	...	...	...	...	1	952 1 10	...	3	1	614 11 9	1	122 1 5	1,589 15 0	
Total of district			...	...	3	3	2,633 13 4	...	...	10	3	2,769 8 3	3	350 11 3	5,744 0 10	

A—VACCINE DEPARTMENT—cont.

Statement No. II showing the Cost of the Department in the Madras Presidency for the official year 1918-19—cont.

Number.	Districts.	Expenditure—cont.			Paid from					Number of all successful primary vaccination and re-vaccination.	Average cost of each successful case.
		17	18	19	20	21	22	23	24		
	Circles.	Travelling allowance.	Contingencies.	Total cost.	Imperial funds.	Provincial funds.	Local funds.	Municipal funds.	Total.		
14	NORTHERN RANGE—cont.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.		
15	Peddapuram	...	48 15 3	187 15 3	...	...	...	187 15 3	187 15 3	657	0 5 5
16	Belahmudry	...	148 10 7	681 30 7	...	...	...	681 30 7	681 30 7	3,016	0 3 1
17	Tenali	...	31 8 2	271 8 2	...	...	...	271 8 2	271 8 2	743	0 5 10
18	Vizianagaram	...	169 9 1	656 8 1	...	...	...	656 8 1	656 8 1	1,349	0 9 3
	Total of Municipalities	...	1,982 12 11	7,981 3 7	...	...	...	7,981 3 7	7,981 3 7	8,292	0 2 8
	Total of Circles and Municipalities	24,638 4 7	2,085 0 10	1,16,748 2 3	...	60,680 10 11	58,727 3 9	7,981 3 7	1,16,748 2 3	331,204	0 5 8
	Northern Range	1,324 8 0	...	10,924 8 0	...	10,924 8 0	...	...	10,924 8 0	...	...
	Grand Total of Northern Range	26,657 12 7	2,085 0 10	1,27,672 10 3	...	60,680 10 11	58,727 3 9	7,981 3 7	1,27,672 10 3	331,204	0 5 2
1	CENTRAL RANGE.										
2	Amalapur circle	678 6 1	658 0 2	2,884 10 4	...	1,397 8 6	1,617 1 10	...	2,884 10 4	4,280	0 10 11
3	Pendabanda do.	824 5 9	765 18 8	2,882 13 2	...	1,380 9 11	2,053 3 3	...	2,882 13 2	6,237	0 10 4
4	Goody	684 5 5	731 5 1	2,552 14 2	...	1,389 14 10	1,558 15 4	...	2,552 14 2	3,410	0 12 7
	Dharwaduram	740 1 7	652 5 1	3,202 0 10	...	1,395 8 2	1,383 8 8	...	3,202 0 10	5,452	0 9 9
	Total of district	2,912 2 10	2,907 8 6	12,283 6 6	...	5,392 9 5	6,880 15 1	...	12,283 6 6	18,189	0 10 1
5	Bellary circle	721 9 10	692 19 9	3,631 8 3	...	1,247 9 9	1,774 2 6	...	3,631 8 3	3,611	0 13 5
6	Adoni do.	753 5 11	666 0 1	3,286 9 2	...	1,363 11 4	2,108 6 6	...	3,286 9 2	6,438	0 2 11
7	Harpuraballi	721 6 8	590 12 9	3,222 2 5	...	1,365 11 4	1,716 7 1	...	3,222 2 5	4,800	0 10 9
	Total of district	2,256 5 5	1,860 7 7	9,939 13 10	...	4,295 13 10	5,644 0 0	...	9,939 13 10	14,978	0 11 2

8	Chingleput circle	654 5 11	600 4 0	3,673 8 0	...	1,608 11 0	2,063 8 9	...	3,673 8 0	10,812	0 5 8
9	Sailapet do.	627 1 3	671 14 8	3,229 1 0	...	1,438 1 11	1,780 16 1	...	3,229 1 0	7,356	0 7 0
10	Pondur do.	825 5 3	910 14 8	3,767 9 11	...	1,633 5 6	2,084 4 6	...	3,767 9 11	10,152	0 6 11
11	Madanuram	500 11 6	611 0 5	2,981 2 0	...	1,179 5 5	1,771 12 7	...	2,981 2 0	9,236	0 5 1
	Total of district	2,607 7 11	2,803 1 9	13,630 15 11	...	5,910 7 10	7,710 8 1	...	13,630 15 11	37,306	0 5 10
12	Chittoor circle	736 0 3	501 8 9	3,112 1 4	...	1,259 8 3	1,862 2 1	...	3,112 1 4	6,894	0 8 4
13	Karvetnagar circle	1,021 8 11	758 10 1	3,673 13 1	...	1,283 8 6	2,734 8 11	...	3,673 13 1	4,180	0 5 6
14	Madanapalle	786 4 4	838 3 9	3,673 13 1	...	1,283 8 6	2,734 8 11	...	3,673 13 1	8,119	0 7 3
	Total of district	2,643 13 6	2,145 6 7	10,575 13 10	...	3,863 2 2	7,072 11 8	...	10,575 13 10	26,232	0 6 8
15	Cuddapah circle	644 13 1	383 4 0	2,365 2 6	...	1,146 14 0	1,638 4 6	...	2,365 2 6	3,998	0 9 7
16	Belur do.	626 7 8	312 5 1	2,860 10 7	...	1,166 9 6	1,704 1 1	...	2,860 10 7	6,618	0 6 11
17	Kayoth do.	241 5 0	212 13 8	1,205 1 5	...	302 10 6	502 6 11	...	1,205 1 5	2,315	0 8 3
18	Junnamana	87 4 6	397 8 10	2,624 14 8	...	1,407 10 5	1,917 4 3	...	2,624 14 8	4,661	0 9 0
	Total of district	1,539 14 3	1,515 15 7	9,045 13 2	...	3,613 12 5	5,432 0 9	...	9,045 13 2	17,633	0 8 3
19	Kurnool circle	231 14 2	428 10 1	2,386 0 6	...	1,109 6 6	816 10 3	...	2,386 0 6	4,015	0 9 4
20	Narkapur do.	230 2 0	623 9 6	2,062 5 1	...	1,067 18 10	674 7 3	...	2,062 5 1	4,451	0 9 4
21	Nandyl do.	228 9 3	623 9 0	1,863 0 11	...	1,067 18 10	674 7 3	...	1,863 0 11	3,787	0 7 10
22	Dhone do.	276 11 10	479 12 1	2,042 7 8	...	1,027 8 5	1,614 15 3	...	2,042 7 8	5,963	0 6 2
23	Koilkunta do.	237 3 0	440 3 11	1,633 2 8	...	703 4 7	869 14 1	...	1,633 2 8	1,817	0 14 5
	Total of district	1,424 8 9	2,467 12 7	10,407 1 0	...	5,523 13 10	4,573 3 2	...	10,407 1 0	18,678	0 8 2
24	Valure circle	779 9 9	509 1 8	3,299 0 0	...	1,566 5 11	1,634 10 1	...	3,299 0 0	6,660	0 6 5
25	Kannipet do.	719 4 4	489 4 5	3,384 12 4	...	1,303 3 4	1,779 9 0	...	3,384 12 4	8,449	0 6 2
26	Polur do.	675 9 8	638 12 2	2,668 11 1	...	1,067 7 10	2,021 3 2	...	2,668 11 1	12,742	0 4 6
27	Marripet do.	300 10 3	588 13 7	3,657 7 0	...	1,326 13 1	2,431 9 13	...	3,657 7 0	10,634	0 7 3
28	Ongayur do.	534 13 2	452 4 10	2,358 9 7	...	1,042 8 11	1,246 0 8	...	2,358 9 7	7,915	0 4 8
	Total of district	3,468 14 8	2,663 6 9	10,000 8 0	...	6,267 7 1	9,642 0 11	...	10,000 8 0	47,501	0 5 5
29	Salem circle	638 7 7	673 6 8	2,829 12 0	...	1,195 9 4	1,634 2 8	...	2,829 12 0	5,398	0 5 3
30	do.	704 12 5	632 12 3	3,324 4 0	...	1,415 15 8	1,898 4 4	...	3,324 4 0	6,168	0 5 9
31	Dharmapuri do.	586 7 5	493 11 5	2,449 11 6	...	1,063 2 8	1,494 8 10	...	2,449 11 6	5,147	0 4 0
32	Hostur do.	227 14 10	653 11 5	2,153 7 9	...	1,153 2 5	1,690 5 4	...	2,153 7 9	4,819	0 6 6
33	Kennakal do.	231 1 3	359 9 9	1,914 7 3	...	467 3 4	607 3 11	...	1,914 7 3	3,927	0 6 6
	Total of district	2,390 11 6	2,453 3 10	12,671 10 6	...	6,197 1 5	6,874 9 1	...	12,671 10 6	30,773	0 5 4
34	Cuddalore circle	756 15 1	631 3 9	3,400 5 6	...	1,839 2 5	2,076 3 1	...	3,400 5 6	11,591	0 4 9
35	Chidambaram do.	807 8 0	839 3 7	3,734 10 6	...	1,266 5 0	2,160 5 6	...	3,734 10 6	12,568	0 4 6
36	Tutukottur do.	797 6 7	867 1 8	3,672 13 6	...	1,239 15 1	2,442 14 5	...	3,672 13 6	7,192	0 8 2
37	Vindavaram do.	718 3 0	985 5 0	3,545 4 2	...	1,601 8 4	1,923 11 10	...	3,545 4 2	8,119	0 6 11
	Total of district	3,080 0 8	2,932 14 0	14,342 1 8	...	6,423 14 10	8,912 2 10	...	14,342 1 8	28,471	0 5 11
	Total of circles in the Central Range	22,638 15 1	21,933 13 1	1,08,886 4 6	...	46,031 2 10	62,865 1 7	...	1,08,886 4 6	262,188	0 6 0

A--VACCINE DEPARTMENT--cont.

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A--VACCINE DEPARTMENT--cont.

Statement No. II showing the Cost of the Department in the Madras Presidency for the official year 1918-19--cont.

Number.	District.	Expenditure--cont.					Paid from					Number of all successful primary vaccination and re-vaccination.	Average cost of each successful case.
		Travelling allowance.	Congressmen.	Total cost.	Imperial funds.	Provincial funds.	Local funds.	Municipal funds.	Total.				
		17	18	19	20	21	22	23	24	25	26	27	
CENTRAL RANGE--cont.													
1	Arbani	...	84 9 9	165 0 9	...	...	...	365 0 9	365 9 9	...	965	0 6 1	
2	Anantapur	...	116 4 0	352 4 0	...	...	...	152 4 0	152 4 0	...	384	0 6 4	
3	Bethy	...	134 6 2	738 5 1	...	...	...	738 5 1	738 5 1	...	2792	0 4 8	
4	Channarayana	...	54 15 0	298 15 0	...	...	...	298 15 0	298 15 0	...	597	0 6 8	
5	Chingleput	...	62 13 0	200 12 11	...	...	...	296 14 11	296 14 11	...	607	0 10 2	
6	Chittoor	...	43 10 10	223 10 19	...	...	...	288 16 10	292 10 10	...	352	0 10 2	
7	Chittoor	...	136 3 4	609 3 4	...	...	...	609 3 4	609 3 4	...	1435	0 6 10	
8	Coimbatore	...	183 9 7	536 9 7	...	...	...	536 9 7	536 9 7	...	2385	0 6 10	
9	Cuddalore	...	36 7 7	210 7 7	...	...	...	210 7 7	210 7 7	...	380	0 6 10	
10	Cuddalore	...	48 3 0	181 5 4	...	...	...	181 5 4	181 5 4	...	709	0 6 10	
11	Cuddalore	...	82 15 3	235 15 9	...	...	...	235 15 9	235 15 9	...	638	0 5 11	
12	Cuddalore	...	34 15 5	321 15 5	...	...	...	321 15 5	321 15 5	...	1000	0 4 10	
13	Cuddalore	...	54 05 14 9	16,167 11 6	...	...	...	16,167 11 6	10,167 11 6	...	22,635	0 11 5	
14	Cuddalore	...	59 5 0	371 7 4	...	...	...	371 7 4	371 7 4	...	785	0 5 8	
15	Cuddalore	...	19 3 1	199 5 1	...	...	...	199 5 1	199 5 1	...	538	0 6 0	
16	Cuddalore	...	566 3 9	399 2 10	...	...	...	399 2 10	399 2 10	...	2,735	0 6 2	
17	Cuddalore	...	39 0 4	399 14 6	...	...	...	399 14 6	399 14 6	...	440	0 6 2	
18	Cuddalore	...	27 15 1	251 15 1	...	...	...	251 15 1	251 15 1	...	419	0 6 7	
19	Cuddalore	...	47 13 7	292 6 1	...	...	...	292 6 1	292 6 1	...	587	0 6 5	
20	Cuddalore	...	49 3 7	259 12 7	...	...	...	259 12 7	259 12 7	...	820	0 4 8	
21	Cuddalore	...	289 3 0	639 13 19	...	...	...	639 13 19	639 13 19	...	2,250	0 4 5	
22	Cuddalore	...	29 11 8	299 3 4	...	...	...	299 3 4	299 3 4	...	360	0 9 5	
Total of Municipalities		23 8 0	7,081 11 7	23,576 14 1	...	...	...	23,576 14 1	23,576 14 1	...	54,320	0 8 5	

1	Madras	84 9 9	16 4 0	365 0 9	...	...	...	365 0 9	365 0 9	...	...
2	Chingleput	134 6 2	54 15 0	298 15 0	...	...	...	298 15 0	298 15 0	...	...
3	Chittoor	136 3 4	43 10 10	298 14 11	...	...	...	298 14 11	298 14 11	...	...
4	Chittoor	136 3 4	43 10 10	298 14 11	...	...	...	298 14 11	298 14 11	...	...
5	Chittoor	136 3 4	43 10 10	298 14 11	...	...	...	298 14 11	298 14 11	...	...
6	Chittoor	136 3 4	43 10 10	298 14 11	...	...	...	298 14 11	298 14 11	...	...
7	Chittoor	136 3 4	43 10 10	298 14 11	...	...	...	298 14 11	298 14 11	...	...
8	Chittoor	136 3 4	43 10 10	298 14 11	...	...	...	298 14 11	298 14 11	...	...
9	Chittoor	136 3 4	43 10 10	298 14 11	...	...	...	298 14 11	298 14 11	...	...
10	Chittoor	136 3 4	43 10 10	298 14 11	...	...	...	298 14 11	298 14 11	...	...
11	Chittoor	136 3 4	43 10 10	298 14 11	...	...	...	298 14 11	298 14 11	...	...
12	Chittoor	136 3 4	43 10 10	298 14 11	...	...	...	298 14 11	298 14 11	...	...
13	Chittoor	136 3 4	43 10 10	298 14 11	...	...	...	298 14 11	298 14 11	...	...
14	Chittoor	136 3 4	43 10 10	298 14 11	...	...	...	298 14 11	298 14 11	...	...
15	Chittoor	136 3 4	43 10 10	298 14 11	...	...	...	298 14 11	298 14 11	...	...
16	Chittoor	136 3 4	43 10 10	298 14 11	...	...	...	298 14 11	298 14 11	...	...
17	Chittoor	136 3 4	43 10 10	298 14 11	...	...	...	298 14 11	298 14 11	...	...
18	Chittoor	136 3 4	43 10 10	298 14 11	...	...	...	298 14 11	298 14 11	...	...
19	Chittoor	136 3 4	43 10 10	298 14 11	...	...	...	298 14 11	298 14 11	...	...
20	Chittoor	136 3 4	43 10 10	298 14 11	...	...	...	298 14 11	298 14 11	...	...
Total of Municipalities		28 8 0	7,081 11 7	23,576 14 1	...	...	...	23,576 14 1	23,576 14 1	...	...

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A.—VACCINE DEPARTMENT—*cont.*

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A.—VACCINE DEPARTMENT—cont.

Statement No. II showing the Cost of the Department in the Madras Presidency for the official year 1918-19—cont.

Number.	District.	Circles.	Expenditure—cont.				Paid from				Total.	Number of all successful primary vaccination and re-vaccination.	Average cost of each successful case.
			Travelling allowance.	Contingencies.	Total cost.	Imperial Funds.	Provincial Funds.	Local Funds.	Municipal Funds.				
			17	18	19	20	21	22	23	24	25	26	
SOUTHERN RANGE—cont.													
21	South Kanara	North South Kanara circle	904 13 7	429 14 1	3,105 6 2	...	1,371 5 6	1,734 0 8	...	3,105 6 2	9,830	0 5 2	
22	do.	do.	1,331 14 10	634 12 8	3,571 0 2	...	1,533 3 3	2,033 12 9	...	3,571 0 2	10,570	0 5 4	
23	do.	do.	1,012 15 1	670 15 5	3,891 5 9	...	1,435 5 3	2,455 16 6	...	3,891 5 9	11,977	0 5 2	
24	do.	do.	916 14 5	499 9 0	2,865 5 4	...	1,165 4 1	1,700 1 3	...	2,865 5 4	8,892	0 5 2	
		Total of district	4,117 0 11	2,245 2 11	13,433 1 5	...	5,507 3 3	7,925 14 2	...	13,433 1 5	41,019	0 5 3	
25	Tanjore	Tanjore circle	316 11 2	743 13 7	4,193 12 5	...	1,478 0 5	2,715 12 0	...	4,193 12 5	10,433	0 5 5	
26	do.	do.	866 4 5	755 5 8	3,783 12 2	...	1,337 15 9	2,445 12 5	...	3,783 12 2	9,057	0 10 0	
27	do.	do.	837 8 6	704 10 0	4,390 7 5	...	1,463 15 3	2,928 8 2	...	4,390 7 5	7,050	0 9 11	
28	do.	do.	4,028 1 5	739 0 6	4,215 15 9	...	1,401 1 11	2,815 13 10	...	4,215 15 9	7,457	0 9 0	
		Total of district	3,042 4 6	2,994 13 9	16,584 15 9	...	5,711 1 4	10,873 14 5	...	16,584 15 9	31,027	0 8 6	
29	Tinnevely.	Tinnevely circle	622 2 9	534 2 3	3,121 12 0	...	1,274 6 10	1,847 5 11	...	3,121 12 0	8,881	0 5 7	
30	do.	do.	636 1 3	718 15 3	3,817 9 3	...	1,200 9 5	2,615 15 10	...	3,817 9 3	9,625	0 6 4	
31	do.	do.	1,091 11 7	557 6 8	5,027 10 7	...	1,603 13 8	3,423 12 11	...	5,027 10 7	13,267	0 5 1	
32	do.	do.	708 3 0	754 0 1	3,642 7 10	...	1,345 13 8	2,296 10 2	...	3,642 7 10	10,066	0 5 9	
		Total of district	3,418 4 7	2,914 7 10	16,609 8 5	...	5,424 11 7	10,184 12 10	...	15,609 8 5	41,839	0 5 11	
33	Trichinopoly.	Trichinopoly circle	995 3 10	693 8 0	4,687 0 3	...	2,012 10 9	2,674 5 6	...	4,687 0 3	8,675	0 8 7	
34	do.	do.	713 3 10	594 11 9	3,004 9 1	...	1,107 7 7	1,897 1 6	...	3,004 9 1	7,264	0 6 7	
35	do.	do.	844 0 3	858 1 4	4,259 8 11	...	1,463 6 4	2,796 2 7	...	4,259 8 11	10,063	0 6 9	
		Total of district	2,552 7 11	2,246 5 1	10,951 2 3	...	4,533 8 8	7,367 9 7	...	11,951 2 3	25,992	0 7 4	
		Total of circles in the Southern Range	29,817 15 6	28,586 16 10	1,33,451 4 11	...	49,878 9 2	89,572 11 9	...	1,33,451 4 11	344,068	0 6 3	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	Municipalities.	Total of circles and Municipalities.				Grand Total																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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* Includes cost of lymph supplied from the King Institute of Preventive Medicine, Coimbatore, during 1918-19.

† Includes the pay and allowances drawn by the Deputy Sanitary Commissioner, Southern Range, during 1918-19.

N.B.—The average cost of each successful case was calculated on the total number of successful vaccinations performed by the special staff only, viz., Local Fund and Municipal staff (vide G.O. No. 1158 L, dated 4th September 1911).

G.O. No. 1158 L, dated 4th September 1911.

B—DISPENSARY VACCINATION.

Statement No. III showing Dispensary Vaccination in Madras Presidency for the official year 1918-19.

Districts.	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.	Average number of persons vaccinated by each vaccinator.	Total number of operations.	Primary vaccination.				Re-vaccination.			Percentage of successful cases in which the results were known.		Percentage of unknown cases of total operations.	
						Successful.			Unknown.	Total number of operations.	Successful.	Unknown.	Primary vaccination.	Re-vaccination.	Primary vaccination.	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
NORTHERN RANGE.																
Ganjām ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Colāvari (L.F. hospital, Amalapur).	...	...	13	...	6	4	1	5	...	7	6	...	83.3	85.7	...	...
Chutūr ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Kietna ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Nellore ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Vizagapatam ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Koraput ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total ...	...	...	13	...	6	4	1	5	...	7	6	...	83.3	85.7	...	...
CENTRAL RANGE.																
Anantapur ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bellary ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chingleput ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chittoor ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cuddapah ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Kurnool ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Madras ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
North Arcot ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Salom ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
South Arcot ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
SOUTHERN RANGE.																
Coimbatore ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Madura (Municipal hospital, Kodakkanal).	...	...	167	...	126	108	13	125	...	41	39	...	92.2	95.1	...	...
Malabar (Kollengode Dispensary).	...	...	90	...	25	4	7	25	...	65	25	38	100.0	92.5	...	58
Nilgiris ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Rāmnād ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
South Kanara ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tanjore ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tinnevely ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Trichinopoly ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total ...	...	...	257	...	151	112	20	150	...	108	64	38	93.3	94.1	...	31
Grand Total ...	...	...	270	...	157	116	21	155	...	113	70	38	98.7	93.3	...	34

Statement No. IV showing the number of persons primarily vaccinated and the number of those persons who were successfully vaccinated in the Madras Presidency in each of the undermentioned years.

Persons primarily vaccinated.																				
In the Madras Presidency.																				
1909-1910.		1910-1911.		1911-1912.		1912-1913.		1913-1914.		1914-1915.		1915-1916.		1916-1917.		1917-1918.		1918-1919.		
Total number.	Number success-fully vaccinated.	Total number.	Number success-fully vaccinated.	Total number.	Number success-fully vaccinated.	Total number.	Number success-fully vaccinated.	Total number.	Number success-fully vaccinated.	Total number.	Number success-fully vaccinated.	Total number.	Number success-fully vaccinated.	Total number.	Number success-fully vaccinated.	Total number.	Number success-fully vaccinated.	Total number.	Number success-fully vaccinated.	
Government vaccinators ...	12,448	11,758	11,214	10,270	11,897	10,545	15,646	13,254	17,492	17,015	19,843	17,892	16,062	14,283	17,276	13,400	17,768	15,057	18,440	14,158
Local Fund do. ...	1,319,314	1,163,628	1,240,602	1,027,398	1,323,860	1,153,157	1,277,887	1,118,548	1,385,023	1,233,086	1,833,727	1,896,676	1,882,471	1,118,891	1,275,205	1,080,020	1,194,658	869,157	1,161,772	787,252
Cantonment do. ...	4,134	4,023	4,187	3,968	3,606	3,421	4,821	4,681	5,021	4,916	4,282	3,949	4,854	4,152	3,218	2,950	3,710	3,497	3,186	2,667
Zamindari do. ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Municipal do. ...	111,045	105,198	111,754	102,748	111,070	103,028	103,170	99,018	110,076	106,611	113,408	108,742	112,146	106,830	114,172	107,386	121,439	113,652	116,193	105,156
Dispensaries ...	18	18	5	5	65	60	17	11	6	6	1	..	89	86	148	145	191	189	167	155
Medical Subordinates ...	360	214	411	229	497	322	206	118	130	114	131	117	1,681	1,464	260	213	187	103	650	312
Total ...	1,447,328	1,234,894	1,388,178	1,144,613	1,457,453	1,260,527	1,491,547	1,235,655	1,467,767	1,361,746	1,471,802	1,314,271	1,466,803	1,282,076	1,410,269	1,214,563	1,337,860	1,121,622	1,300,337	909,670

Statement No. V showing particulars of Vaccination verified by Inspecting Officers during 1918-19.

Districts.	Total number inspected.			Percentage of inspection to total number vaccinated.						Percentage of cases found successful to total number inspected.						Percentage of success as reported by Vaccinators.			
	By District Medical and Sanitary Officers and Civil Surgeons.			By Deputy Inspectors of Vaccination.			By Sanitary Assistants to District Medical and Sanitary Officers.			By District Medical and Sanitary Officers and Civil Surgeons.			By Deputy Inspectors of Vaccination.				By Sanitary Assistants to District Medical and Sanitary Officers.		
	Primary vaccination.	Re-vaccination.	Lo-vaccination.	Primary vaccination.	Re-vaccination.	Lo-vaccination.	Primary vaccination.	Re-vaccination.	Lo-vaccination.	Primary vaccination.	Re-vaccination.	Lo-vaccination.	Primary vaccination.	Re-vaccination.	Lo-vaccination.		Primary vaccination.	Re-vaccination.	Lo-vaccination.
NORTHERN RANGE.																			
Ganjam	60,798	25,411		1,604	673	38,834	11,243		26	839	412		898	927	789	668		859	823
Cuttack	52,263	18,501		1,252	4,427	41,883	5,125		24	239	377		860	794	576	420		636	683
Guntur	46,419	14,163		598		36,350	7,692	91		753	02		885	729	760	1000		734	702
Kistna	65,750	15,434		406	107	63,213	8,073		07	982	523		885	729	760	034		793	641
Nellore	41,813	9,444		292	24	37,047	5,140		03	886	543		885	729	760	034		690	686
Vizianagaram	80,017	25,780		507	32	54,865	15,386		06	802	597		892	813	660	377		699	473
Koraput	24,658	5,409		780	171	23,071	4,043		32	896	747		753	830	712	569		717	569
Total	372,568	114,142		5,529	5,134	305,293	56,705	91	15	48	497	002	880	808	705	532	1000	743	648
CENTRAL RANGE.																			
Anantapur	24,801	2,667		305	96	22,237	1,578		16	35	554		818	875	786	473		796	607
Bellary	24,114	3,154		86	1,250	19,864	4,600		29	396	792		755	582	672	384		704	604
Chingleput	49,373	4,556		342	86	41,803	2,988		07	19	836		474	895	801	551		811	602
Cuddalore	35,263	2,875		392	110	30,113	1,880		11		884		1000	758	529			773	609
Gundlupet	19,604	2,781		367	110	21,921	1,589		19	40	1118		847	423	665	216		801	763
Kurnool	26,434	3,776		802	98	25,377	2,615		30	26	953		943	704	643	400		675	464
Madras	18,082	13,680		1,122	26	5,422	2,733			06	865		860	500	620	518		975	630
North Arcot	65,008	1,662		251	34	61,812	2,680		34	838	716		917	797	752	629		834	582
Salem	50,192	3,741		1,792	233	35,837	3,151		52	26	680		915	792	756	603		775	662
South Arcot	62,718	9,155		2,744	233	35,837	3,151						940	652	754	514		792	429
Total	336,089	51,027		8,469	2,155	295,325	22,616		23	42	807	443						796	561
SOUTHERN RANGE.																			
Coimbatore	66,877	8,470		1	1,011	45,103	3,435			119	674	405		1090	618	406		773	541
Madurai	65,423	20,715		292	18	42,747	4,698		03	61	652	217		887	1000	826		807	644
Malabar	106,200	41,178		1,726	1,181	81,296	22,340		16	29	765	542		896	626	831		905	750
Nilgiris	4,653	1,372		183	170	3,471	639		40	124	745	496		832	839	510		906	771
Ramanathapuram	43,509	5,023		851	2,571	38,486	2,939			685	410			839	792	539		848	656
South Kanara	43,382	10,073		1,564	33,153	1,954	1,954		76	124	743	630		884	692	810		971	899
Tanjore	58,749	8,613		2,429	1,564	55,136	6,598		41	180	564	225		887	818	701		915	794
Tinnevely	55,005	15,368		3,057	2,064	44,275	6,598		55	134	504	430		884	761	682		892	766
Tiruchinopoly	45,261	4,112		2,849	589	22,012	1,542		63	143	480	374		917	843	674		975	609
Total	492,219	128,174		13,980	9,178	384,039	54,552	414	23	72	683	429	008	946	852	705	542	907	741
Grand Total	1,280,876	291,843		27,978	16,767	989,033	133,873	505	23	58	701	458	004	925	812	742	533	779	594

Statement No. VI showing the Number of Vaccinations performed in Municipal Towns on children under one year of age (G.O. No. 1534 L., dated 6th December 1909).

Municipalities.	Number of births available for vaccination during the year 1918-19.	Number of deaths amongst children under one year during the year.	Number of successful vaccinations on children under one year during the year ending March 1919.	Date of extension of compulsory vaccination to municipalities.
NORTHERN RANGE.				
Anakapalle	850	171	294	1st Nov. 1891.
Berhampur	1,016	229	487	15th April 1891.
Berwala	1,244	333	677	1st May 1892.
Himlipatam	305	37	208	1st Jan. 1894.
Chitacole	516	108	306	1st Dec. 1890.
Cocanada	1,777	356	858	1st June 1890.
Ellore	1,882	615	1,010	1st June 1888.
Guntur	1,817	524	695	1st Jan. 1914.
Masulipatam	1,337	357	697	1st May 1888.
Narasaraopet	277	72	81	1st April 1916.
Nellore	896	207	328	1st Aug. 1895.
Ongole	485	112	190	1st Dec. 1895.
Parthimudi	632	113	344	1st Dec. 1890.
Peddapuram	687	93	341	1st April 1916.
Rajahmundry	1,472	407	717	1st Jan. 1888.
Tenali	477	138	239	1st April 1910.
Vizianagaram	1,465	293	485	1st Aug. 1890.
Total	15,264	4,614	8,510	1st Jan. 1891.
CENTRAL RANGE.				
Adoni	593	161	266	1st Dec. 1886.
Anantapur	129	45	36	1st Jan. 1886.
Bellary	1,708	176	409	1st Jan. 1891.
Chidambaram	731	203	367	1st July 1887.
Chingleput	553	159	153	1st April 1897.
Chittoor	592	104	211	9th Jan. 1917.
Compseveram	2,244	634	674	1st Jan. 1891.
Cuddalore	1,991	604	1,074	1st Aug. 1890.
Cuddapah	534	103	274	15th July 1888.
Gudiyattam	607	141	344	1st June 1889.
Hospet	421	74	202	1st April 1892.
Kurnool	719	173	363	1st Jan. 1900.
Nandyal	227	89	274	1st July 1891.
Proddutur	367	125	180	1st Jan. 1900.
Salem	2,242	310	1,791	1st Sep. 1915.
Tirupattur	421	96	284	1st May 1891.
Tirupati	437	116	212	1st July 1891.
Tiruchannarayana	948	220	423	1st Mar. 1890.
Vaniyambudi	777	153	576	15th Dec. 1897.
Vellore	2,075	437	1,024	1st May 1888.
Walajpet	463	107	279	1st Jan. 1897.
Total	19,170	4,295	9,306	20th May. 1892.
SOUTHERN RANGE.				
Bodinayakanur	718	135	455	19th Feb. 1916.
Calicut	3,128	531	1,358	1st Oct. 1891.
Channarayana	1,187	102	646	1st June 1891.
Cochin	708	242	360	1st Jan. 1894.
Coimbatore	1,778	482	615	1st Jan. 1889.
Coochur	361	56	143	1st April 1887.
Dharapattam	468	126	294	1st Feb. 1916.
Dindigul	1,347	407	667	16th July 1886.
Erode	535	117	170	1st April 1891.
Karur	509	132	230	1st Sep. 1900.
Kodakkanal	169	34	108	1st April 1889.
Kumbakonam	1,803	508	811	1st Aug. 1880.
Madurai	5,078	1,076	3,448	1st Jan. 1890.
Mangalore	672	271	1,264	1st Sep. 1891.
Mannargudi	672	143	274	1st Dec. 1890.
Mayacaram	954	288	468	1st Oct. 1886.
Negapatam	1,629	454	1,009	1st July 1886.
Ootacamund	794	194	455	1st July 1887.
Palacottah	1,552	402	712	1st May 1886.
Palghat	1,818	463	983	1st Jan. 1883.
Palni	676	170	341	1st Dec. 1891.
Periyakulam	1,015	246	623	1st Feb. 1891.
Srirangam	684	181	229	1st July 1888.
Srivilliputtur	1,232	287	745	1st Jan. 1893.
Tanjore	2,183	555	1,012	1st July 1893.
Tellicherry	1,120	235	607	15th June 1892.
Tinnevely	1,852	559	920	1st July 1896.
Tiruppur	205	35	49	1st Apr. 1918.
Tiruvallur	635	170	237	1st Oct. 1913.
Tiruchinopoly	3,693	854	1,625	1st Aug. 1890.
Tuticorin	1,462	380	929	1st May 1892.
Udamalpet	176	65	84	1st Apr. 1918.
Virudupatti	831	212	364	1st Sep. 1915.
Total	42,789	10,234	25,543	
Grand total	50,209	19,143	41,659	

Statement No. VII showing Inspection Work done by the Deputy Inspectors of Vaccination during the year 1918-19.

District.	Circle.	Number of inspect- ing officers.			Number of villages in- spected.			Total number of cases vaccinated.	Number of days spent on inspection duty.	Number of cases verified.				Total number of cases in- spected by Deputy Inspect- ors of all sorts.	Total number of successful cases as reported by Deputy Inspectors.	Percentage of successful cases to the total number inspected as reported by Deputy Inspectors.	Proportion per cent of in- spection to total number vaccinated.		
		First-grade Inspectors.	Second-grade Deputy Inspectors.	Third-grade Deputy Inspectors.	First-grade Inspectors.	Second-grade Deputy Inspectors.	Third-grade Deputy Inspectors.			First-grade Deputy Inspectors.	Second-grade Deputy Inspectors.	Third-grade Deputy Inspectors.							
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
NORTHERN RANGE.																			
Gaujam	Berlampur	1	1	1	...	367	...	12,406	151	12,493	7,843	...	7,843	6,185	767	...	...	...	
	Chiccacole	...	...	...	...	...	...	42,313	198	12,493	12,493	...	12,493	9,235	739	...	...	...	
	Aska	...	...	1	...	...	668	17,504	218	10,495	8,583	...	8,583	6,498	783	...	...	...	
	Purushottapur	...	...	1	...	...	...	13,412	268	10,495	...	...	10,495	7,799	743	...	...	...	
	Genjam Hill Tracts	...	...	1	...	...	672	10,602	219	...	6,133	...	6,133	5,117	894	...	...	...	
Godavari	Do.	...	...	...	...	485	...	7,376	200	...	...	...	...	3,318	729	...	...	...	
	Ceenada	1	1	...	...	326	...	12,708	247	...	9,631	...	9,631	6,102	634	...	...	...	
	Rajamundry	...	...	1	...	...	254	12,406	191	...	13,139	...	13,139	9,621	512	...	...	...	
	Polavaram	...	...	1	...	...	280	5,084	225	...	4,730	...	4,730	2,897	634	...	...	...	
	Peddaparam	...	...	1	...	...	232	19,748	225	...	10,410	...	10,410	8,858	540	...	...	...	
Guntur	Bhadrahalam	...	...	1	...	295	...	4,289	171	...	3,101	...	3,101	1,809	519	...	...	...	
	Guntur	1	1	...	...	...	...	17,014	243	...	12,176	...	12,176	8,634	792	...	...	...	
	Narsaopet	...	...	1	...	...	262	15,530	193	...	12,703	...	12,703	8,874	708	...	...	...	
	Vinkonda	...	...	1	...	...	130	6,883	161	...	6,688	...	6,688	3,834	573	...	...	...	
	Bapatla	1	1	...	...	282	...	17,678	237	...	12,475	...	12,475	8,935	716	...	...	...	
Kistna	Ellora	...	...	1	...	234	...	16,202	263	...	14,823	...	14,823	11,370	762	...	...	...	
	Masulipatani	...	...	1	...	...	339	15,538	251	...	12,957	...	12,957	9,782	735	...	...	...	
	Bezwada	...	...	1	...	...	480	20,556	201	...	16,552	...	16,552	10,744	651	...	...	...	
	Narasapur	...	...	1	...	201	...	16,773	212	...	14,641	...	14,641	11,192	764	...	...	...	
	Taduku	...	...	1	...	...	176	13,022	212	...	12,263	...	12,263	10,277	838	...	...	...	
Nellore	Nellore	...	...	1	...	331	...	7,085	194	...	4,984	...	4,984	3,126	634	...	...	...	
	Atmakur	...	...	1	...	...	404	8,610	175	...	9,297	...	9,297	7,695	817	...	...	...	
	Kavali	...	...	1	...	...	438	12,609	196	...	8,412	...	8,412	5,698	666	...	...	...	
	Gudur	...	...	1	...	...	582	10,922	248	...	8,820	...	8,820	5,681	633	...	...	...	
	Kanigiri	...	...	1	...	...	344	13,442	181	...	10,724	...	10,724	5,734	535	...	...	...	
Vizagapatam	Vizagapatam	...	...	1	...	742	...	20,161	197	...	15,883	...	15,883	10,357	652	...	...	...	
	Narsapatam	...	...	1	...	421	...	19,391	189	...	17,678	...	17,678	12,577	711	...	...	...	
	Vizimnigram	...	...	1	...	...	...	20,301	187	...	10,169	...	10,169	7,353	385	...	...	...	
	Chennampalle	...	...	1	...	406	...	13,643	186	...	2,345	...	2,345	7,570	714	...	...	...	
	Parratipatani	...	...	1	...	403	...	14,866	245	...	7,044	...	7,044	5,481	776	...	...	...	
Guntur		...	...	...	...	373	...	10,120	169	...	...	...	...	...	...	...	...	...	

NORTHERN RANGE:

CENTRAL RANGE.

SOUTHERN RANGE.

* Includes cases of 1917-18 inserted in 1918-19.

Statement No. VII showing Inspection Work done by the Deputy Inspectors of Vaccination during the year 1918-19 - cont.

District.	Circle.	Number of inspecting officers.			Number of villages inspected.			Total number of cases vaccinated.	Number of days spent on inspection duty.	Number of cases verified.			Total number of cases inspected by Deputy Inspectors of all sorts.	Total number of successful cases as reported by Deputy Inspectors.	Percentage of successful cases to the total number inspected as reported by Deputy Inspectors.	Proportion per cent of inspection to total number vaccinated.		
		First-grade Inspectors.	Second-grade Deputy Inspectors.	Third-grade Deputy Inspectors.	First-grade Deputy Inspectors.	Second-grade Deputy Inspectors.	Third-grade Deputy Inspectors.			First-grade Inspectors.	Second-grade Deputy Inspectors.	Third-grade Deputy Inspectors.				First-grade Deputy Inspectors.	Second-grade Deputy Inspectors.	Third-grade Deputy Inspectors.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Madura	Madura	...	...	...	...	...	...	12,444	232	...	11,808	10,884	10,884	9,163	845	...	...	871
	Dindigul	...	...	...	...	...	...	14,771	200	...	5,813	...	11,883	9,578	805	...	...	...
	Chettinad	...	...	...	...	...	...	7,988	160	...	...	...	...	4,281	738	...	...	...
	Periyakulam	...	...	...	...	...	...	14,125	172	...	...	...	...	7,480	759	...	...	...
Malabar	Thiruvangalam	...	...	...	...	...	...	9,596	181	...	...	...	...	6,979	785	...	...	...
	Malappuram	...	...	...	...	...	...	30,108	214	...	...	...	...	17,322	801	...	...	...
	Calicut	...	...	...	...	...	...	30,023	203	...	...	...	...	16,700	745	...	...	...
	Tallicherry	...	...	...	...	...	...	19,374	221	...	...	...	...	13,883	760	...	...	...
Nilgiris	Pelihat	...	...	...	...	...	...	25,595	208	...	17,599	...	18,000	13,883	795	...	...	...
	Ponnani	...	...	...	...	...	...	31,900	229	...	...	...	23,996	19,161	799	...	...	...
	The Nilgiris	...	...	...	...	...	...	4,217	324	...	...	4,110	4,110	3,782	908	...	...	...
	Ramanad	...	...	...	...	...	...	15,633	174	...	7,408	...	7,408	5,513	735	...	...	...
Tanjore	Manamadurai	...	...	...	...	...	...	12,028	153	...	7,050	...	7,050	5,540	786	...	...	...
	Tirupattur	...	...	...	...	...	...	7,775	225	...	...	...	...	4,927	787	...	...	...
	Sivakasi	...	...	...	...	...	...	13,508	310	...	11,320	...	11,320	8,091	803	...	...	...
	North S. Kanara	...	...	...	...	...	...	13,680	255	...	10,186	...	10,186	7,780	765	...	...	...
Tanjore	South do.	...	...	...	...	...	...	16,981	232	...	13,915	...	13,915	9,389	719	...	...	...
	Central do.	...	...	...	...	...	...	17,217	271	...	...	...	...	10,480	754	...	...	...
	Karai	...	...	...	...	...	...	13,236	225	...	...	8,232	8,232	6,952	814	...	...	...
	Tanjore	...	...	...	...	...	...	15,975	228	...	...	...	...	8,712	811	...	...	...
Tanjore	Pattnakkottai	...	...	...	...	...	...	12,076	208	...	6,820	...	...	5,612	823	...	...	...
	Meyyaram	...	...	...	...	...	...	11,800	183	...	...	...	...	6,086	691	...	...	...
	Negapatnam	...	...	...	...	...	...	13,912	210	...	6,814	...	...	6,554	745	...	...	...
	Tinnevely	...	...	...	...	...	...	15,283	252	...	...	...	...	8,312	686	...	...	...
Tinnevely	Shermadevi	...	...	...	...	...	...	18,601	260	...	...	...	...	8,438	596	...	...	...
	Kovilpatti	...	...	...	...	...	...	24,535	254	...	...	...	...	8,200	625	...	...	...
	Sivakuntam	...	...	...	...	...	...	19,242	209	...	11,120	...	...	7,114	689	...	...	...
	Tanjore	...	...	...	...	...	...	15,949	205	...	...	...	...	5,137	596	...	...	...
Tinnevely	Trichinopoly	...	...	...	...	...	...	11,420	209	...	...	...	...	6,887	748	...	...	...
	Musiri	...	...	...	...	...	...	16,544	208	...	8,040	...	...	5,213	648	...	...	...
	Arivalar	...	...	...	...	...	...	554,832	7,377	...	139,646	150,018	390,590	236,858	735	...	...	...
	Total	10	13	12	25,452	4,840	3,391	1,410,750	22,103	...	858,818	497,165	1,070,563	703,819	716	...	...	...
Grand total		20	37	49	29,890	16,260	19,329	1,410,750	22,103	...	858,818	497,165	1,070,563	703,819	716	...	...	...

SOUTHERN RANGE—cont.