Triennial report on vaccination in Burma.

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TRIENNIAL REPORT

ON

VACCINATION IN BURMA

FOR THE YEARS 1917-18 TO 1919-20

RANGOON

OFFICE OF THE SUPERINTENDENT, GOVERNMENT PRINTING, BURMA

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RESOLUTION

ON THE

TRIENNIAL REPORT ON VACCINATION IN BURMA

For the Years 1917-18 to 1919-20.

Extract from the Proceedings of the Government of Burma in the General Depa rtment, No. 1Z.-4, dated the 5th March 1921.

READ—

Triennial Report on Vaccination in Burma for the years 1917-18 to 1919-20.

Resolution.—In the last Resolution on the Triennial Report on Vaccination for the period 1914—1917, it was stated that the work of vaccination was stimulated by three main factors, outbreaks of epidemic small-pox, improved organization of the district staffs, and increased interest shown by district and other officers. In the present report Lieutenant-Colonel Entrican points out that the first and third factors were present in the period 1917—1920, and that there was in consequence a large increase in the number of vaccinations. His opinion is that the interest shown in vaccination by the local officers depends largely on the prevalence of small-pox, and in this point the Lieutenant-Governor is inclined to agree with him. District officers have a large number of duties of which the encouragement of vaccination is not one of the most conspicuous or attractive, and it is not possible for them to devote a large amount of time to it. It is, however, an important work, and if it is only attended to in the face of an epidemic it is almost inevitable that a certain number of people will be vaccinated after they have already contracted infection, and every case in which this happens will lead a number of ignorant people to disbelieve in the efficacy of vaccination. His Honour trusts therefore that all local officers will realize the great importance of vaccination as a preventive at all times, however long their district may have been free from small-pox, and will do all in their power to assist the Vaccination Department in its work. So far as the re-vaccination of children is concerned increasing success will follow continuous effort; but re-vaccination of adults in all countries and communities will only increase largely when the danger of small-pox is imminent.

2. The outbreaks of small-pox which occurred during the period under review had the effect of increasing the number of primary vaccinations and re-vaccinations by 120,717 and 285,196 respectively as compared with the previous triennium. Most of this increase occurred in the year 1919-20, when no less than 838,827 vaccinations were performed, compared with an average of 507,841 for the preceding five years, increasing the ratio of successful vaccinations per 1000 of the population from 35·13 to 51·85. This was very largely due to one district, Yamèthin, where the energetic measures taken by the

Deputy Commissioner, Lieutenant-Colonel Biggwither, resulted in 179,162 persons being vaccinated out of a total population of 306,379. These results are almost phenomenal, the average number of operations per vaccinator being 25,595 against an average for the whole province of 2,627. They show what can be achieved by good organization and personal influence, and afford an example to other districts.

3. The increase in the number of vaccinations performed, without any corresponding increase of the staff, naturally resulted in a decrease in the average cost, which was 7 annas 4 pies for the three years as compared with 8 annas 7 pies in the previous triennium, and in 1919-20 fell to 6 annas 4 pies.

The Lieutenant-Governor is pleased to note the improved results obtained in the Thatôn District, which was unfavourably commented on in the last Resolution, but regrets to see the serious decline in Prome District, on which the report of the enquiry being made by the Superintendent-General of Vaccination is awaited.

The supply of lymph from the Vaccine Depôt at Meiktila was sufficient and of good quality, but the wastage in some districts was unduly high, and more care should be exercised in this respect.

4. In the last Resolution mention was made of representations against the alleged hardships caused by the working of the Vaccination Law Amendment Act, 1909, in Rangoon.

The representations were considered by a Committee in 1917-18. The conclusions arrived at by the Local Government after a careful examination of the Committee's reports and of the relevant circumstances were—

" (i) the province of Burma is specially liable to small-pox infection through the medium of passengers arriving by sea;

(ii) and (iii) the application of section 9 of the Burma Vaccination Law Amendment Act, 1909, is a necessary precaution to safeguard the province from such infection;

(iv) the measures now being taken need to be modified in order to bring them into stricter conformity with the law and with the highest possible requirements of sanitary science in their application especially in three particulars:—

(*a*) the prohibition of the vaccination of immigrant children under fourteen years of age,

(*b*) the exemption of persons who are not of the labouring classes from the operation of section 9 of the Act,

(*c*) the improvement of the accommodation provided for carrying out the purposes of the Act, in order to mitigate the discomforts of detention and to permit the best possible aseptic precautions to be taken."

Small-pox is endemic in Burma, but it is well known that it is constantly reinforced by the floating population of immigrant labourers, Rangoon constituting the focus and distributing centre of the disease. The Superintendent-General is correct in the statement that the epidemics of small-pox in the province begin in Rangoon and Lower Burma and then spread to Upper Burma and are coincident

with epidemics in Indian provinces. It is true that small-pox is always present in Rangoon, but it is significant that the majority of the small-pox patients in the Contagious Diseases Hospital are Indian labourers, and that the area where these chiefly live is the endemic centre of small-pox in Rangoon. In 1919 as many as 85 cases of small-pox in the eruptive stage were detected among the immigrant coolies and a considerable number obviously entered the country in the incubation stage without being detected and the number of contacts must have been large.

These facts lead to the conclusion that the precautionary measures taken in Rangoon are necessary not only in the interests of Rangoon but of the whole province. To reduce the annoyance and inconvenience to the passengers to the minimum, directions were issued to secure discrimination as regards persons who do not belong to the labouring classes. Something has also been done in the direction of improving accommodation, but this question is to a great extent dependent upon the major problem of securing better landing facilities for deck passengers than existing conditions permit.

5. His Honour's thanks are due to Lieutenant-Colonel C. E. Williams, I.M.S., Sanitary Commissioner, who was Superintendent-General of Vaccination during the whole period, and to the officers who were in charge of the Vaccine Depôt, and to the other officers who have assisted in the work of vaccination. The Department was seriously handicapped by the shortage of supervising officers owing to the war.

By order of the Lieutenant-Governor of Burma,

W. B. BRANDER,
Secretary to the Government of Burma.

Printed by order of the Government of Burma.
G.B.C.P.O.—No. 678, Secy. 30-8-1921—

TRIENNIAL REPORT

ON

VACCINATION IN BURMA

FOR THE YEARS 1917-18 TO 1919-20.

1. *General Review of Vaccination Work.*—In reviewing the triennium 1914-15 to 1916-17, Lieutenant-Colonel Williams remarked that the three main factors which stimulate Vaccination work in Burma are :—

(1) Outbreaks of epidemic Small-pox.
(2) Improved organization, etc , of District Staffs.
(3) Increased interest shown by District, Municipal and village officers.

During the triennium just closed, factor No. (2) has been absent—almost the whole of the ordinary Sanitary Staff of the Province has been lacking and supervision was not normal. On the other hand, factors (1) and (3) were present: in my experience the two are generally found together, rarely apart ; consequently as two out of the three factors were present, we should expect to find an increase in the numbers vaccinated and such is the case. Primary vaccinations increased by 120,717, re-vaccinations by 285,196.

The districts showing the greatest increase in primary vaccination in 1919-20 are—Thatôn 19,500, Northern Shan States 17,443, Bassein 14,435, Amherst 14,090, Henzada 13,129, Myaungmya 11,922, Yamèthin 9,540.

The most serious falling off occurred in Southern Shan States 17,161, Myingyan 6,945, Akyab 5,994, Prome 3,605, Ruby Mines 2,286.

In re-vaccinations Yamèthin heads the list with 159,622 cases followed by Pakôkku 35,351, Rangoon 31,965, Mandalay 25,920, Sagaing 19,202.

Taking the Province by Divisions the chief noticeable points during the triennium have been as follows :—

Arakan.—There has been practically no increase in primary, and little in re-vaccination during the triennium. The Division has been almost altogether free from small-pox ; the stimulus which existed in so many other divisions has been lacking.

Pegu Division—Shows an increase of 17,069 primary cases, but a decrease of 35,431 re-vaccinations. In Prome the decrease has been 3,605 primary and 14,426 re-vaccinations, but no satisfactory explanation has been given. The matter is being enquired into. There was no Supervisor for nine months during 1919-20. Re-vaccinations in Rangoon fell by 25,503, but this is accounted for by the small number of coolies coming to Rangoon during the later years of the war.

Irrawaddy Division.—There has been a very satisfactory increase amounting to 50,830 in primary and 15,713 in re-vaccinations. This has been shared by all districts, but Bassein shows the largest increase. As one might expect, small-pox was prevalent in the division causing 634 deaths in 1919-20.

Tenasserim Division.—There was an increase of 40,157 primary and 11,518 re-vaccinations. All the districts share in the increase except Tavoy where there was a falling off in primary vaccinations of 1,847 and in re-vaccination of 186. The incidence of small-pox in Tavoy was slight, being confined to a few imported cases. The falling off appears partly due to lack of a Supervisor who was on sick leave.

Manda'ay Division.—With the exception of Katha and Ruby Mines, all the districts show a small increase in primary cases, but there has been no large amount of re-vaccination done except in Mandalay itself—where 45,069 cases were re-vaccinated. A severe outbreak of small-pox in Mandalay Town and district provided the necessary stimulus.

Sagaing Division—Shows an increase of 6,696 primary and 27,582 re-vaccinations; of the latter Sagaing itself supplied 16,947 cases, as the result of a moderately severe outbreak of small-pox. The Lower Chindwin shows a decrease of 1,427 primary cases, which is in part due to unwarrantable changes made by the Civil Surgeon in the methods of distribution of the lymph.

Magwe Division.—Primary vaccinations in Thayetmyo District increased by 4,157 cases, but the other three districts, Pakôkku, Magwe and Minbu, showed a slight falling off. There has been an increase of 36,203 re-vaccinations of which the lion's share fell to Pakôkku 28,681.

Meiktila Division.—There has been a heavy falling off in Myingyan of 6,945 cases of primary vaccination. The reason appears to be, that practically no touring has been done during the triennium by the Civil Surgeon. The present Civil Surgeon has been too busy and the late Civil Surgeon too enfeebled by illness to go on tour.

What can be done by vigorous action is well illustrated by the case of Yamèthin. Finding his district threatened on several sides by an invasion of small-pox, the Deputy Commissioner initiated a campaign for the protection of the population by re-vaccination. This was begun in 1918-19 and continued with great vigor throughout 1919-20. During the latter year 159,622 cases were re-vaccinated, in addition to 19,540 cases of primary vaccinations, out of a total population of 306,379. Nor was any enormous staff engaged for this work; it consisted of one Supervisor and seven vaccinators, so that each man vaccinated over 22,000 cases in the year. This gives one furiously to think, and suggests that both our organization and establishments are in need of revision. There is no doubt the excellent results obtained were due to the energy of Lieutenant-Colonel Bigg Wither, the Deputy Commissioner, who is described by the Civil Surgeon Dr. Basu as being the "fountain head and back-bone" of the campaign. The metaphor may be mixed but the inference is clear. All the District officials contributed to the success of the work but the driving power came from the Deputy Commissioner.

It was found that the best results were obtained by concentrating the staff on a limited area, rather than by adopting the usual method of employing single men scattered throughout the district.

The Civil Surgeon himself verified over 28 per cent. of the cases.

Shan States.—There was an increase of 17,443 in the Northern and decrease of 17,161 in the Southern Shan States in primary vaccination work. The amount of reliable inspection done in this part of the Province is very small and I do not place much faith in the returns. The increase in the Northern Shan States is said to be due to improved organization, but no explanation is furnished with regard the decrease in the Southern Shan States.

Chin Hills.—There has been a falling off to the extent of 1,090 primary cases—probably due to the disturbed state of the Hills during part of the triennium.

During the triennium the following percentage of the population was primarily vaccinated in the different divisions.—

Tenasserim	...	13·91	Pegu	...	10·99
Irrawaddy	...	13·34	Arakan	...	10·59
Sagaing	...	12·17	Meiktila	...	10·18
Magwe	...	11·11	Mandalay	...	9·5

2. *Small-pox and Vaccination*.—Small-pox as is well known comes in cycles lasting 2 or 3 years with intervals of 5 or 6 years between them. Epidemics in Burma begin in Rangoon and Lower Burma, afterwards spreading to Upper Burma. They are coincident with epidemics in India and probably due to them. During 1919, 85 cases of small-pox in the eruptive stage were detected amongst immigrants into Rangoon, and the number in whom the disease was in the incubation stage and not therefore detectable, was probably very considerable. The Vaccination Act of 1909 has failed to protect Rangoon and will continue to fail until amended.

The failure lies in the definition of what constitutes an "unprotected person." According to the Act any adult who has been successfully vaccinated at any

period of his life is "protected" and cannot be vaccinated. The definition is founded on the old belief that one vaccination in infancy was sufficient to render an individual immune for life. The fallacy of this belief is now well known, but the definition founded on it has never been altered.

It cannot be too often or too strongly repeated that an adult who has been vaccinated once in infancy is an "unprotected" person, whatever the law may say to the contrary.

Tens of thousands of these unprotected coolies arrive annually in Rangoon, not only bringing the disease with them, but forming a huge susceptible population for the spread of small-pox. Practically the whole of the patients suffering from small-pox in the Contagious Diseases Hospital are Indian coolies, and the burden of looking after them falls on this Province.

Out of 236,139 passengers inspected only 6,455 or 2·73 per cent. were "unprotected" in the eyes of the law, and only this handful could be vaccinated.

3. *Vaccination in Towns.*—Twenty-nine towns show an increase and 29 a decrease in primary vaccination during 1919-20 as compared with 1918-19. Amongst the former are Bassein, Myaungmya, Yamèthin, Kawkareik, Nattalin and Letpadan. Rangoon, Kyaiklat, Mandalay, Bhamo and Pyinmana show a decrease.

The percentage of success obtained in Primary vaccination in towns was 98·31 per cent. This is not a good result, as shown by the fact that in 14 towns the success was 100 per cent. Moulmein stands at the bottom of the list with 86·48, which can only be due to downright bad workmanship. All towns can use their lymph within a week of its issue from the Vaccine Depôt, when its potency is at its highest and there ought to be no such thing as a failure except in those rare cases where the patient is insusceptible to vaccination.

Re-vaccination in towns shows an increase on the preceding year of 16,564 cases.

4. *Infant Vaccination in Towns.*—In 59 towns 21,619 infants were successfully vaccinated in 1919-20, of which 19,502 were registered as having been born in the towns in which they are vaccinated. The difference of 2,117 infants represent immigrants into the towns from the surrounding districts and also probably a number of infants whose births were never registered. A low proportion of available infants were vaccinated in Thôngwa, Zigôn, Letpadan, Gyobingauk, Shwedaung, Kyaiklat, Moulmein, Mandalay and Maymyo.

5. *Dispensary Vaccination.*—There has been an increase of 6,757 cases as compared with the previous triennium—about one-half of this increase occurred in Katha district, where the Sub-Assistant Surgeons at Tigyaing and Mohnyin appear to have taken a good deal of interest in the work. A good deal more could be done in the smaller Hospitals and Dispensaries by the exhibition of a little energy.

6. *Vaccination in Jails.*—A total of 27,248 vaccinations were done in 1919-20 of which 2,873 are described as primary with a percentage of success of 77·06. This low figure is accounted for by the difficulty which often arises in finding out whether a prisoner has been vaccinated or not. If there are no marks either of vaccination or small-pox—he is described as a primary case, although he may have had mild small-pox or been vaccinated many years before and should really be classed as a re-vaccination.

7. *Verification of Primary Vaccinations.*—Civil Surgeons inspected 11·09 per cent. of primary vaccinations as compared with 13·68 and 12·6 in the two previous years. The Lower Chindwin District with a percentage of 55·5 heads the list. Next in order come the Putao 36·5, Ruby Mines 35·7, Kyauksè 29·8, Yamèthin 28·3, Myaungmya 27·2, Sandoway 26·64 and Tavoy 25·1.

The average percentage of success in the cases inspected by Civil Surgeons was 95·17, by Supervisors 96·12, and reported by vaccinators 97·53.

Supervisors verified an averageof 4,987 cases each of primary vaccination or 41·5 per cent. of the total. The amount of work done by these men varies in a most unaccountable way. In Amherst, not an easy district to tour in, 13,430 cases were verified. In Pegu and Insein over 10,000, in Thatôn, Tharrawaddy, Bassein, Myaungmya, Hanthawaddy over 9,000. In Katha only 987 cases were verified as the supervisor resigned and could not be replaced. A similar state of

affairs existed in Magwe. In Yamèthin the supervisor inspected 971 cases only—but this was due to his employment in other directions. In Kyauksè the supervisor was absent on sick leave for five months out of the twelve, but for the seven months he was at work, he verified only 1,399 cases. The Northern Shan States, Tavoy, Mergui, Sandoway, Ruby Mines and Myitkyina have all shown less than 3,000 cases verified by supervisors and other inspecting officers.

The present class of supervisors are capable of doing quite useful work but they themselves require supervision. Rarely can Civil Surgeons devote the necessary time to this work, though generally speaking I think they might do a great deal more than they have done in the past. A District Sanitary Officer, one of whose duties would be the supervision of vaccination, is essential to place the Department on a satisfactory footing.

8. *Quality of the Vaccination.*—The percentage of success in primary vaccination was 97·53 in 1919-20 as compared with 97·83 in 1918-19 and 95·88 in 1917-18.

Taking into consideration the length of time which lymph takes to reach many of the stations—this is a very fair result, and I hope it represents the true state of affairs, but in pessimistic moments I cannot help wondering how some vaccinators in far away lonely places, with lymph sometimes 3 or 4 weeks old, can get just as good results as are got in Rangoon or Meiktila, the two places where lymph is always obtainable, fresh, vigorous and newly made. The Arakan Division, until the end of the war and for some time afterwards, could only be reached *via* Calcutta, and lymph supplies were always a fortnight and frequently three weeks before they reached the vaccinators and perhaps another week before they reached the patient. It is not therefore surprising that this Division shows the lowest percentage of success, *i.e.*, 93·07. On the other hand there seems no reason whatever why Sandoway district with a percentage of success of only 78·34 should be so much worse than any of the other districts in the Division.

As it is a matter of considerable importance to know how long lymph can be depended on to retain in its vitality, a number of experiments were carried out to test its longevity under the ordinary conditions to which it is subjected. Unused returned lymphs which had been twice through the post and carried about for a week or two by a vaccinator were tested. It was found that the lymph retained its vitality for three weeks except during the months of March, April and May, when a fortnight or even less was the usual limit. If kept longer there was a slight but definite falling off in the fourth week and after that a rapid deterioration. A few lymphs however showed remarkable and unexplained vitality—giving good results when from one to four months old. But while such good results are obtainable, that is not to say that the ordinary vaccinator will obtain them, and practically speaking the earlier a vaccinator uses the lymph the more likely is he to get good results. No vaccination should be done during the hot weather months in stations where the lymph cannot be used within 10 or 12 days of its issue. A large number of failures dishearten both people and vaccinator, and unless in the presence of a small-pox epidemic, the risk should not be run.

9. *Lymph Supplies.*—All vaccine lymph used in the Province, outside Rangoon, is made at Meiktila.

Four hundred and eighty-four calves were inoculated during the past year as compared with 523 in 1918-19 and 435 in 1917-18.

The total number of doses issued was 1,068,553. The output per calf being 24·06 grammes, or over 2,000 doses. The total output for the triennium was 2,491,269 doses as compared with 2,179,724 in the preceding three years.

As usual there was a great deal of wastage; some of this is unavoidable but with better organization and greater care on the part of Civil Surgeons, the wastage might be greatly reduced. The following stations have been the worst offenders:—

Lashio	wasted	81·2	per cent.	of the lymph supplied.
Pyu	"	64·8	"	"
Myaungmya	"	55·6	"	"
Tavoy	"	53·4	"	"
Maymyo	"	48	"	"
Kyaiklat	"	45	"	"

Lashio has of recent years always headed the list of offenders.

Calves were obtained by purchase in the district and the local bazaar. Owing to the proximity of a huge camp of Turkish prisoners, the price of stock rose enormously and suitable animals were difficult to obtain. Fodder also reached famine prices. The average cost per calf was Rs. 13-8-0 and the price realized on sale Rs. 9-0-0, so that the loss per calf was Rs. 4-8-0, to which must be added feeding charges amounting to Rs. 3-6-0 per calf—making the total cost of each calf Rs. 7-14-0. It ought to be possible to reduce this amount considerably in the future when conditions become normal.

The output consisted entirely of glycerinated lymph. This was stored in the refrigerator for varying periods before issue, usually one month, but the exigencies of supply, shortage of calves, outbreaks of foot and mouth disease, and defects in the refrigerating machinery made it impossible to store the lymph as long as is desirable.

As is well known storage at a low temperature gradually reduces the extraneous organisms present in all lymphs and since these are largely responsible for the violent and painful reaction that sometimes follows vaccination, their elimination is most desirable.

The refrigerator itself after being thoroughly overhauled in 1918 worked well, but the two engines, gas and oil, which supplied the motive power, caused endless trouble. Moreover, the building which shelters both the refrigerator and engines being made of corrugated iron—the difficulty of maintaining a low temperature during the hot months can be easily imagined.

It was also hoped that a large enough stock of lymph could be collected during the cool months of December, January and February, when calf vaccination is at its best, to carry on through the hot weather and stop calf vaccination altogether during April and May. This hope proved vain—but enough has been done to show that the idea is perfectly feasible.

Plans and estimates for a new building for the refrigerator have been drawn up and the work will soon, I hope, be put in hand.

All lymph is sent out in capillary tubes and after many experiments a good method of closing these tubes without the aid of heat was evolved. This consists in plugging their ends with a mixture of plaster of Paris and a very concentrated solution of gum acacia—the end of the tube being afterwards dipped in a resinous mixture, impervious to air or moisture.

The exclusion of air is in my opinion essential, not only to prevent risk of contamination but also to secure maximum longevity for the lymph, and no system that involves the use of bottles, collapsible leaden tubes, etc., each containing 20 to 50 doses, can approach the capillary tubes as a medium of distribution.

A large number of experiments were carried out with a view of finding a better preservative than glycerine, but without success. Glycerine still holds the field against all comers. A further series of experiments were undertaken with a view of getting rid of extraneous organisms more rapidly than by the slow process of freezing them out. Chloroform vapour does this, but unfortunately it also reduces the longevity of the lymph, so the cure is worse than the disorder. Vapour of Amyl Alcohol gave fairly good result, but hardly sufficient to justify its use. Certain essential oils were also tried, but one and all failed.

The quality of the lymph was good throughout the past year. The only complaint received was from the Medical Officer, Paletwa, and delay in transmission to this distant station was evidently the cause of the deterioration.

The total cost of the Vaccine Depôt last year was Rs. 26,259-6-8 but Rs. 4,704-4-9 was repaid on account of the sale of calves and lymph, and the net cost was Rs. 21,555-1-11 as compared with Rs. 17,928-12-5 in 1917-18 and Rs. 20,396-5-11 in 1918-19. The cost of each dose of lymph issued was 3·87 pies in 1919-20, 4·73 pies in 1918-19 and 5·32 pies in 1917-18, so that the increased expenditure may be said to have justified itself.

In the Rangoon Municipal Vaccine Depôt, 59 calves were inoculated yielding an average of 29·4 grammes each. The lymph was not issued until the calves had been slaughtered and examined by a Veterinary Officer, who certified them

free from disease. Seed lymph was obtained from Meiktila and Bangalore. The quality of the lymph was good, reported results gave 99·87 percentage of success.

10. *Vaccination Establishment.*—The following table gives the strength for the last six years.

Years.	District Superintendents.	Sub-Assistant Surgeons.	Supervisor of Vaccination.	Head Vaccinators.	Vaccinators.
1914-15 ...	41	5	44	...	280
1915-16 ...	41	22	41	...	297
1916-17 ...	42	24	38	3	299
1917-18 ...	42	26	38	3	308
1918-19 ...	42	28	39	3	321
1919-20 ...	42	29	41	3	325

As will be seen there has been a steady increase in the number of vaccinators employed. Three additional Supervisors have been appointed, one in Myaungmya District, one in Toungoo and one in Thatôn.

The three "Head Vaccinators" are employed in the Shan States in place of Supervisors.

The conduct of the Department can hardly be described as good. During the triennium, one Supervisor was removed and one suspended for six months. One Head Vaccinator and thirty-four vaccinators were either removed or dismissed for falsification of returns, neglect of duty, connivance at inoculation, etc.

The average number of cases vaccinated in 1919-20 by each vaccinator was 2,627 of whom 1,518 were primary and 1,109 re-vaccinations. These figures show a marked improvement on those of the previous two years, when they were 1,761 and 1,607 respectively, but they look very small compared with the work done by each individual vaccinator in Yamèthin as previously noted.

A vaccinator's work improves in direct proportion to the amount of supervision he receives. Our present Supervisors vary greatly, some are capable energetic men, but many of them just the reverse. They are not sufficiently separated from the men they inspect, either by education, social position or pay. They go through a six months' course at the Vaccine Depôt, Meiktila, but their previous education is generally so poor, that they do not benefit to the extent they should. Their only idea on arrival is to memorize answers to any questions likely to be asked, and it takes the greater part of the six months to knock this out of them.

Until every District has its Health Officer, and a good Military Assistant Surgeon would probably be the best man for the post, I doubt if district vaccination will ever be satisfactory. Payment of vaccinators by results, combined with good supervision to prevent fraud would soon work wonders.

During the triennium 8 Supervisors and 115 Vaccinators attended the training school at Meiktila. Of these 6 Supervisors and 111 Vaccinators passed the final examination.

11. *Attitude of the people.*—Except in the presence of a small-pox epidemic the attitude of the people towards vaccination is generally apathetic. There are no conscientious objectors, but no one wants to take the trouble. An energetic official will stir the people out of their apathy—but it usually requires the threat of small-pox to produce the energetic official. I have always advocated the extension of the Vaccination Act, to rural circles, because I think it would meet with no opposition, in fact the majority of villagers would never know or realize that any change had been made. At present they bring their

children for vaccination at the summons of the *Thugyi*. The urgency of that summons and the degree of compliance with it depends entirely on the status and influence of the officer who has invoked the aid of the *Thugyi*. Compulsory vaccination would in practice be on exactly the same lines, but the position of the various officials concerned would be regularized and strengthened.

It is a disconcerting paradox that the very success of vaccination in preventing small-pox increases the unwillingness of the people to submit to it. An outbreak of small-pox occurs in a village followed by a vigorous vaccination and re-vaccination campaign. In consequence the village remains free from small-pox until a non-immune population has grown up. Past experience is forgotten—there has been no small-pox for years, why should they take the trouble of having their children vaccinated? This topsy-turvy mentality is very difficult to deal with especially on a voluntary basis.

Inoculation as a preventive of small-pox is widespread especially in Pegu, Tenasserim and Irrawaddy Divisions. It is less common but by no means unknown in Upper Burma, and epidemics have time after time been traced to this source. Apart from its being a time honoured practice, I believe the chief cause of its popularity is the absence in the majority of cases of any troublesome symptoms, such as sometimes follow vaccination under insanitary conditions. The inoculated child may of course develop generalized small-pox and die, this risk is clearly recognized, but accepted, because in the majority of cases the after-effects are almost *nil*. A small pock with perhaps 2 or 3 still smaller ones round it, is the usual course of an inoculation, and the children require little if any attention. That the inoculated child may spread infection and give rise to a severe epidemic of small-pox, is either not recognized, or else considered outside the sphere of human action and fittingly left in the hands of Providence.

To increase the popularity of vaccination all officers concerned lay stress on the importance of the after treatment of the sores, and this point will receive more attention in future. I should like to present the mother of each vaccinated child with a collapsible tube of some antiseptic ointment, to be applied to the vesicle after it has ruptured, but fear the expense would be prohibitive. Some officers both here and in India advocate painting the arm with Iodine before vaccination. They claim that this treatment greatly diminishes the severity of undesirable after-effects. This is quite true, but unfortunately the iodine, while it diminishes undesirable after-effects, also to the same degree diminishes and sometimes completely prevents the desired after-effect, *i.e.*, the formation of a large typical vesicle, and its use should never be permitted. I would suggest that more official notice be taken of *Thugyis* and other Officers, who take an interest in, and help vaccination work. No doubt there have been cases, but I have personally never known one, where a *Thugyi* has been given some decoration or reward for good work of this kind. Yet it is surely as important as helping the Police, Forest Department or Recruiting.

12. *Cost of the Department.*—The annual expenditure increased during triennium by Rs. 43,156-2-4 from Rs. 6,54,416-6-9 to Rs. 6,97,572-9-1. The increase on Establishment was Rs. 18,320-11-0, on Contingencies Rs. 22,185-12-3 and on travelling allowance Rs. 2,649-11-1. Under Contingencies there is a total increase of Rs. 22,185-12-3, the Vaccine Depôt, Meiktila, accounts for Rs. 15,847-5-2 of this, the balance is enhanced expenditure on increased establishment (Rs. 18,320-11-0) and travelling allowance (Rs. 2,649-11-1).

The average cost of each successful operation during the triennium was Re. 0-7-4 as compared with Re. 0-8-7 in the previous triennium or a decrease of Re. 0-1-3.

During 1919-20 the average cost per successful case was annas six and pies four only which was the lowest for several years past. The districts showing highest cost per successful case were Northern Arakan Hill Tracts (Rs. 1-15-10) and Ruby Mines (Rs. 1-6-3). The lowest was returned by Yamèthin District, only ten pies per case. Other districts which returned a low cost were Sagaing (Re. 0-2-8), Katha (Re. 0-3-6), Amherst (Re. 0-4-5), Tharrawaddy (Re. 0-4-6), Bassein (Re. 0-4-7), Magwe and Thatôn (Re. 0-4-11). The cost in Ma-ubin,

Henzada, Toungoo, Mandalay, Shwebo, Lower Chindwin, Upper Chindwin Pakôkku and Meiktila Districts varies between five and six annas.

13. *General remarks.*—Lieutenant-Colonel C. E. Williams, I.M.S., was Superintendent-General during the whole of the triennium. The Vaccine Depôt and training school was in charge of Dr. W. D. Jones during the greater part of 1917, of Lieutenant-Colonel J. Entrican, I.M.S., during 1918 and 1919 and of Captain A. J. Symes, I.M.S., during 1920.

J. ENTRICAN, *M.A., M.D., D.P.H.,*
Lieut.-Col, I.M.S.,
Offg. Superintendent-General of Vaccination, Burma.

APPENDICES.

A.—VACCINATION

STATEMENT No. 1.—*Showing the particulars of Vaccination in the*

No.	Districts.	Population of districts according to 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 Vaccination.				
									Total.	*Successful.*			Unknown.
										Under one year.	One and under six years.	Total of all ages.	
(1)	(2)	(3)	(4)	(5)	(6)			(7)	(8)	(9)	(10)	(11)	(12)
	Arakan Division.				Males.	Females.	Total.						
1	Akyab	529,943	103	11	11,632	8,417	20,049	1,823	17,015	3,689	9,060	15,421	1,228
2	Hill Tracts, Northern Arakan	22,234	15	2	426	308	734	367	674	...	156	566	20
3	Kyaukpyu	184,926	42	6	4,730	4,396	9,055	1,509	8,432	741	3,823	7,620	130
4	Sandoway	152,803	27	4	3,231	3,074	6,305	1,576	4,681	182	1,886	3,341	416
	Total ...	889,906	57	23	20,019	16,124	36,143	1,571	30,802	4,612	14,983	26,988	1,889
	Pegu Division.												
5	Rangoon	298,216	10,476	17	84,491	5,362	89,853	2,510	7,388	4,581	2,003	6,894	985
6	Insein	165,745	186	6	7,984	7,642	14,576	2,921	12,053	2,759	6,477	11,530	435
7	Hanthawaddy ...	83,160	106	8	7,904	7,130	15,034	1,892	12,737	2,422	7,007	12,073	532
8	Pegu	309,066	92	8	7,761	8,165	15,896	1,987	13,261	3,923	6,838	14,691	535
9	Tharrawaddy ...	423,220	151	8	11,412	11,850	23,262	2,907	10,418	4,499	11,668	18,744	595
10	Prome	378,871	130	12	5,604	5,998	11,597	966	9,086	2,702	5,625	8,870	519
	Total ...	2,088,387	153	59	74,176	46,062	120,238	2,037	70,090	20,896	39,378	71,711	3,831
	Irrawaddy Division.												
11	Maubin	304,782	186	9	9,598	9,673	19,271	2,141	17,176	4,037	8,933	15,930	970
12	Pyapon	236,215	119	6	4,746	5,043	9,789	1,632	8,709	1,790	5,647	8,258	431
13	Bassein	440,948	107	11	16,963	15,868	32,831	2,983	29,997	3,131	11,994	20,965	1,841
14	Henzada	532,857	187	14	12,856	13,403	26,259	1,873	25,74	6,537	11,131	24,704	910
15	Myaungmya ...	335,143	126	15	7,608	7,583	15,191	1,013	15,682	1,549	6,466	13,166	232
	Total ...	1,869,485	139	55	51,801	51,570	103,371	1,879	89,303	17,241	47,527	83,033	4,284
	Tenasserim Division.												
16	Amherst	367,918	52	12	17,905	16,951	34,916	2,851	27,125	3,792	15,344	25,992	1,184
17	Tavoy	135,293	25	6	3,362	3,357	6,719	1,120	5,196*	1,742	1,874	5,830	45
18	Mergui	111,474	11	6	3,918	2,881	6,799	1,133	4,410	718	1,744	3,676	367
19	Toungoo	353,076	57	10	9,885	9,609	19,494	1,949	16,110	2,000	7,115	15,378	584
20	Thaton	405,295	84	11	11,951	12,790	24,741	2,249	21,410	3,494	11,389	21,418	785
21	Salween	46,508	17	2	1,529	962	2,491	1,245	1,653	162	480	1,623	...
	Total ...	1,417,644	40	47	48,210	46,250	94,460	2,010	77,883	13,907	38,246	73,187	2,965
	Mandalay Division.												
22	Mandalay	349,770	161	15	20,858	18,093	38,951	2,597	18,042*	7,471	6,210	12,863	40
23	Bhamo	107,811	16	4	1,075	1,464	2,539	635	2,115	697	1,468	2,759	216
24	Katha	198,193	28	4	5,967	5,543	11,510	2,875	10,478	1,319	3,088	10,000	291
25	Ruby Mines ...	100,618	18	3	2,411	1,561	3,662†	1,166	2,746	1,213	1,432	2,697	14
26	Myitkyina	86,577	8	2	2,076	1,393	3,469	1,735	2,152	657	437	2,025	78
27	Putao	31,000	3	...	764	199	963	...	287	19	68	256	10
	Total ...	883,969	21	28	33,431	28,353	61,784	2,241	21,700	11,025	10,953	30,569	649
	Sagaing Division.												
28	Shwebo	326,963	62	8	7,079	8,219	15,298	1,912	11,535	1,450	7,837	11,062	275
29	Sagaing	312,111	171	7	14,036	16,878	30,894	4,699	13,692	6,012	7,409	13,490	171
30	Lower Chindwin ...	316,175	91	6	6,892	7,419	14,011	2,335	11,473*	6,247	3,195	11,405	...
31	Upper Chindwin ...	170,032	11	6	9,116	8,982	18,098	3,016	14,555	667	6,903	12,160	1,501
	Total ...	1,125,271	44	27	36,813	42,498	80,301	2,974	51,225	14,176	24,944	48,067	2,247
	Magwe Division.												
32	Thayetmyo	248,175	52	8	9,797	9,349	19,146	2,393	17,318*	1,896	5,044	11,023	660
33	Pakôkku	436,160	44	10	24,786	17,829	42,615	6,263	17,274	5,008	6,623	15,077	850
34	Minbu	263,042	80	7	4,221	3,935	8,156	1,165	7,393	2,053	3,634	6,784	162
35	Magwe	260,423	93	8	7,699	8,083	15,782	1,973	13,188	6,427	4,867	12,820	137
	Total ...	1,207,900	60	33	46,503	49,206	95,709	2,900	55,213	16,284	19,667	45,304	1,809
	Meiktila Division.												
36	Meiktila	280,262	122	6	6,161	6,630	12,791	2,132	9,897	1,455	6,574	9,549	318
37	Yamèthin	306,879	74	7	88,787	90,375	179,162	25,595	19,540	6,955	6,496	17,411	1,395
38	Kyauksè	141,695	111	3	2,480	2,821	5,301	1,767	2,985*	2,217	605	3,766	73
39	Myingyan	399,288	146	7	5,903	6,434	12,137	1,734	9,309	5,785	4,906	8,212	510
	Total ...	1,127,955	108	23	103,231	106,460	209,391	9,104	42,731	16,912	17,980	39,038	2,296
	Shan States.												
40	Northern Shan States ...	488,959	32	11	7,743	8,298	11,041	1,458	15,321	1,235	4,901	7,538	7,598
41	Southern Shan States ...	900,202	22	11	8,443	7,935	16,378	1,489	15,208	776	7,759	14,153	817
	Total ...	1,389,154	25	22	16,186	16,233	32,419	1,474	30,529	2,011	12,660	21,686	8,415
	Chin Hills.												
42	Chin Hills	119,556	15	2	2,389	2,422	5,011	2,505	4,737	166	750	2,894	1,773
	Grand Total for 1919-20	13,146,217	51	319	433,049	406,778	839,827	2,627	494,853*	134,374	226,478	443,417	29,984
	Grand Total for 1918-19	12,146,217	51	319	303,777	258,894	562,671	1,761	123,582*	120,613	218,165	397,220	16,664
	Grand Total for 1917-18	12,146,917	51	305	282,902	208,372	491,274	1,607	429,417*	123,608	215,037	394,108	17,858

NOTE.—This statement does not include the figures for Dispensary
* Secondary operation.
† Work done by othe

DEPARTMENT.

Province of Burma during the year 1919-20 (Paragraphs 1, 8 and 10).

Re-vaccination.			Percentage of successful cases in which the results were known.		Persons successfully vaccinated per 1,000 of population.	Percentage of unknown cases to total cases.		Average annual number of persons successfully vaccinated during previous five years.		Average annual number of deaths from small-pox during previous five years.		No.
Total.	Successful.	Unknown.	Primary.	Re-vaccination.		Primary.	Re-vaccination.	No.	Ratio per 1,000.	No.	Ratio per 1,000.	
(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
3,004	501	889	98·09	21·69	30·04	7·76	23·59	16,789	31·68	34	·06	1
60	33	6	85·02	61·11	16·49	2·97	10·00	789	35·59	...	...	2
623	188	6	91·79	30·47	42·22	1·54	96	5,903	31·92	5	·03	3
1,624	219	91	78·34	14·29	34·63	8·89	5·60	2,937	28·57	2	·12	4
5,311	941	992	93·07	21·79	33·19	6·13	18·68	26,418	31·45	40	·05	
31,965	12,921	10,409	99·85	59·94	67·55	12·49	31·56	19,659	54·98	113	·38	5
2,543	724	420	99·41	34·10	46·20	3·62	16·52	9,803	35·97	13	·05	6
2,227	919	722	99·00	67·26	39·07	4·18	31·01	10,917	83·92	29	·09	7
2,615	1,002	754	98·78	58·84	35·60	3·95	28·83	12,490	33·72	18	·04	8
2,847	1,355	570	99·32	69·51	48·69	2·63	20·08	20,143	46·69	2	·00	9
1,911	644	551	96·76	47·35	29·11	6·86	28·83	13,152	34·71	...	·00	10
44,108	17,565	13,426	98·91	57·16	49·81	4·64	30·27	85,094	41·03	173	·08	
2,095	711	283	98·67	39·34	54·90	5·65	13·51	15,494	50·79	16	·05	11
1,089	200	304	99·26	22·60	32·68	4·95	18·78	8,006	31·25	37	·14	12
8,834	4,737	2,586	94·62	75·82	58·38	7·67	29·27	16,710	37·89	24	·05	13
641	180	191	99·45	38·24	46·25	3·53	37·15	10,678	88·84	5	·01	14
1,609	704	169	98·62	48·89	41·39	1·71	10·50	9,115	27·22	33	·10	15
14,168	6,432	3,443	97·89	60·44	47·68	4·91	24·30	70,002	37·44	114	·06	
7,091	2,681	1,035	97·38	44·37	75·95	4·26	14·60	18,017	48·97	25	·03	16
803	442	33	99·30	57·78	46·36	·76	4·73	6,224	46·67	2	·01	17
2,479	1,058	477	99·29	52·69	42·49	5·50	19·24	6,320	36·72	21	·86	18
3,284	1,269	296	99·05	41·03	47·42	3·03	8·75	12,709	36·20	9	·03	19
2,351	1,120	372	99·04	57·17	55·60	3·50	18·96	11,317	27·14	17	·04	20
833	358	...	97·89	42·98	42·50	...	...	1,992	41·45	...	...	21
16,921	6,928	2,218	98·14	47·13	56·51	3·82	13·10	56,528	39·53	142	·10	
25,920	16,556	1,012	99·01	66·47	86·33	·31	3·91	15,374	45·19	10	·03	22
324	214	15	98·57	69·26	27·58	7·15	4·63	2,508	23·24	...	...	23
1,022	496	186	93·16	60·96	52·60	2·78	18·20	6,073	30·64	...	...	24
935	493	54	99·45	56·36	31·09	·31	6·73	2,352	23·38	...	...	25
1,317	820	138	97·64	69·30	33·24	3·62	10·48	1,906	22·28	...	...	26
876	224	...	81·59	35·89	14·31	3·48	...	...	...	...	...	27
30,096	18,732	1,415	98·48	65·21	57·06	2·05	4·70	28,503	33·47	...	...	
3,763	2,323	277	98·24	60·64	37·56	2·38	7·36	11,843	38·23	2	·01	28
19,302	15,613	1,456	99·77	76·74	86·84	1·25	7·58	18,486	59·23	6	·02	29
2,573	1,809	...	99·70	70·31	41·79	...	...	11,641	36·82	2	·01	30
3,573	2,714	313	95·10	83·77	86·82	12·40	9·32	8,113	47·35	...	...	31
29,111	20,461	2,065	98·19	75·65	59·31	4·39	7·09	50,083	43·35	10	·01	
6,809	3,955	628	94·40	63·99	60·33	5·85	9·22	9,562	38·51	1	·00	32
38,351	7,473	2,181	93·45	22·50	53·08	4·92	6·03	16,518	37·87	1	·00	33
763	261	28	93·82	35·51	26·78	2·19	3·67	7,845	22·72	...	·00	34
2,594	1,044	86	98·23	41·63	38·47	1·04	3·69	12,782	37·33	1	·00	35
48,517	12,733	2,873	95·70	29·66	45·14	3·60	6·31	46,706	39·18	3	·00	
2,884	1,419	744	99·69	66·00	29·05	3·21	...	7,263	27·70	1	·00	36
159,613	98,042	18,476	95·95	69·46	876·83	7·14	11·67	14,238	46·36	2	·01	37
1,457	1,013	135	99·87	76·63	33·79	1·63	9·27	4,588	33·15	...	·10	38
2,828	1,183	365	91·47	46·00	23·65	5·48	12·91	11,817	28·38	3	·01	39
166,901	101,607	19,720	95·68	69·08	134·69	5·07	11·82	38,501	31·63	6	·01	
650	310	196	90·63	65·28	17·49	49·35	30·15	6,128	13·35	...	...	40
1,170	565	62	99·35	80·09	16·34	6·37	8·30	18,069	20·07	...	...	41
1,820	865	258	97·74	55·38	16·69	27·49	14·18	24,197	17·80	...	...	
274	98	126	97·61	66·91	24·98	37·41	49·27	1,679	14·05	...	...	42
394,236	186,407	46,545	97·53	60·58	51·85	6·18	13·14	627,713	35·17	498	·05	
139,468	76,588	22,133	97·83	65·27	39·05	3·94	15·87	491,020	31·72	912	·09	
62,591	35,685	10,951	95·88	49·74	34·56	4·13	17·50	2,138,470	35·38	2,391	·24	

Vaccination which are shown separately in Statement III.
ncluded.
genetics included.

Summary.

(1)	Total number of persons vaccinated.		Total number of operations performed.		Percentage of successful cases in which results were known.		Average number of persons vaccinated by each vaccinator.		Number of children successfully vaccinated.		Ratio of successful vaccinations per 1,000 of population.	Total cost of Department.	Average cost of each successful case.
	Primary. (2)	Re-vaccination. (3)	Primary. (4)	Re-vaccination. (5)	Primary. (6)	Re-vaccination. (7)	Vaccinators employed. (8)	Persons vaccinated by each vaccinator. (9)	Under one year. (10)	One year and under six years. (11)	(12)	Rs. A. P. (13)	Rs. A. P. (14)
By special staff (Statement I).	484,208	353,835	484,455	353,935	97·53	60·58	319	2,627	114,296	226,281	51·81	2,48,648 13 2	0 6 4
By dispensary staff (Statement III)	7,220	4,685	7,220	4,685	84·62	58·21	...	...	622	1,834	·56	...	...
By other agencies, if any.	398	391	398	391	99·46	61·96	...	...	78	197	·05	...	...
Total for 1919-20	491,831	358,911	492,073	358,911	97·32	60·56	319	2,627	115,066	228,312	52·42	...	...
Total for 1918-19 ..	425,266	141,109	425,818	141,109	97·88	65·30	319	1,761	120,945	218,999	39·26	...	...
Total for 1917-18 ...	430,206	63,854	430,941	63,854	95·87	50·03	345	1,607	123,890	215,757	34·71	...	...

A.—VACCINATION

STATEMENT No. II.—*Showing the cost of the Department in the*

No.	Districts.	European supervising officers.	Expenditure. Pay.	Native supervising officers.	Pay.	Vaccinators.	Pay.	Clerks.	Pay.	Peons, etc.	Pay.	Total pay of establishment.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	Arakan Division.		Rs. A. P.		Rs. A. P.		Rs. A. P.		Rs. A. P.		Rs. A. P.	Rs. A. P.
1	Akyab	...	.....	2	418 2 0	11	3,481 9 9	...	.....	...	.....	3,899 11 9
2	Hill Tracts, Northern Arakan	...	.....	..	.....	2	750 0 0	...	.....	...	.....	750 0 0
3	Kyaukpyu	...	.....	1	500 0 0	6	1,699 1 6	..	.....	...	.....	2,199 1 6
4	Sandoway	...	.....	1	575 0 0	4	1,057 9 8	...	.....	...	.....	1,632 9 8
	Total	...	.....	4	1,493 2 0	23	6,988 4 11	...	.....	...	.....	8,481 6 11
	Prom Division.											
5	Rangoon	...	.....	(a)1	.....	(a)17	420 0 0	1	1,382 0 0	4	707 0 0	2,509 0 0
6	Insein	...	.....	2	1,325 0 0	6	2,710 8 0	...	.....	...	.....	5,535 8 0
7	Hanthawaddy	...	.....	3	1,170 0 0	8	4,211 15 0	..	.....	...	.....	6,381 15 5
8	Pegu	...	.....	2	1,202 3 4	8	4,319 7 3	...	.....	...	.....	6,681 10 7
9	Tharrawaddy	...	.....	0	1,989 2 0	8	2,580 1 7	...	.....	...	.....	3,818 3 7
10	Prome	...	.....	1	751 7 8	12	4,138 6 10	...	.....	...	.....	4,889 14 1
	Total	...	.....	15	6,336 12 7	59	19,160 7 1	1	1,382 0 0	4	707 0 0	27,786 3 8
	Irrawaddy Division.											
11	Ma-ubin	...	.....	3	1,440 0 0	9	2,522 13 8	...	.....	...	.....	3,962 13 8
12	Pyapôn	...	.....	3	840 0 0	6	1,767 1 11	...	.....	...	.....	2,607 1 11
13	Bassein	...	.....	2	840 0 0	11	4,567 4 7	...	.....	...	.....	5,407 4 7
14	Henzada	...	.....	3	868 2 0	14	4,738 14 4	...	.....	...	.....	5,607 0 4
15	Myaungmya	...	.....	5	1,380 0 0	15	3,604 15 4	...	.....	...	.....	4,984 15 4
	Total	...	.....	16	5,368 2 0	55	17,201 0 10	...	.....	...	.....	22,569 2 10
	Tenasserim Division.											
16	Amherst	...	.....	4	1,560 0 0	12	3,090 1 5	...	.....	...	.....	4,650 1 5
17	Tavoy	...	.....	1	1,069 3 11	6	2,137 11 10	...	.....	...	.....	3,206 15 9
18	Mergui	...	.....	1	900 0 0	6	1,749 0 0	..	.....	...	.....	2,649 0 0
19	Toungoo	...	.....	4	863 8 0	13	3,193 13 9	...	.....	...	.....	4,057 5 9
20	Thatôn	...	.....	2	1,493 11 8	11	2,707 15 8	...	.....	...	.....	4,201 11 1
21	Salween	...	.....	...	.....	2	681 8 9	...	.....	...	.....	681 8 9
	Total	...	.....	12	5,886 7 8	50	13,460 3 5	...	.....	...	.....	19,346 10 10
	Mandalay Division.											
22	Mandalay	...	.....	1	650 0 0	15	8,162 0 1	...	.....	...	.....	8,812 0 1
23	Bhamo	...	.....	...	.....	4	1,461 0 0	...	.....	...	.....	1,461 0 0
24	Katha	...	.....	1	150 0 0	4	1,245 7 0	...	.....	...	.....	1,395 7 0
25	Ruby Mines	...	.....	1	1,560 0 0	3	1,304 7 10	...	.....	...	.....	2,864 7 10
26	Myitkyina	...	.....	...	.....	2	1,008 0 0	...	.....	...	.....	1,008 0 0
27	Putao	...	.....	...	.....	...	.....	...	.....	...	.....	.....
	Total	...	.....	3	2,360 0 0	28	13,181 4 11	...	.....	...	.....	15,541 4 11
	Sagaing Division.											
28	Shwebo	...	.....	1	685 0 0	8	2,693 4 9	...	.....	...	.....	3,378 4 9
29	Sagaing	...	.....	1	720 6 11	7	2,319 11 8	...	.....	...	.....	3,040 2 7
30	Lower Chindwin	...	.....	1	1,350 0 0	6	1,909 1 8	...	.....	...	.....	3,259 1 8
31	Upper Chindwin	...	.....	1	802 5 4	6	2,474 12 5	...	.....	...	.....	3,276 1 9
	Total	...	.....	4	3,557 12 3	27	9,396 14 6	...	.....	...	.....	12,754 10 9
	Magwe Division.											
32	Thayetmyo	...	.....	2	1,320 0 0	8	2,790 3 9	...	.....	...	.....	4,110 3 9
33	Pakôkku	...	.....	1	1,200 0 0	10	3,338 14 1	...	.....	1	208 8 0	4,747 6 1
34	Minbu	...	.....	2	744 0 0	7	1,990 0 0	...	.....	...	.....	2,734 0 0
35	Magwe	...	.....	3	840 0 0	8	2,719 7 0	...	.....	...	.....	3,559 7 0
	Total	...	.....	8	3,804 0 0	33	10,838 8 8	...	.....	1	208 8 0	14,841 0 8
	Meiktila Division.											
36	Meiktila	...	.....	1	625 0 0	6	1,676 0 0	...	.....	...	.....	2,301 0 0
37	Yamèthin	...	.....	2	1,376 6 5	7	2,538 2 9	...	.....	...	.....	3,914 9 2
38	Kyaukse	...	.....	1	834 10 9	3	1,056 0 0	...	.....	...	.....	1,890 10 9
39	Myingyan	...	.....	3	1,140 0 0	7	2,163 15 0	...	.....	...	.....	3,303 15 0
	Total	...	.....	7	3,976 1 2	23	7,434 1 9	...	.....	...	.....	11,410 2 11
	Shan States.											
40	Northern Shan States	...	.....	1	480 0 0	13	3,762 9 11	...	.....	...	.....	4,242 9 11
41	Southern Shan States	...	.....	5	2,005 13 4	11	6,100 3 2	1	65 15 9	7	1,638 5 1	9,810 5 4
	Total	...	.....	6	2,485 13 4	24	9,862 13 1	1	65 15 9	7	1,638 5 1	14,052 15 2
42	Chin Hills	...	.....	...	.....	3	904 12 8	...	.....	...	.....	904 12 8
43	Meiktila Vaccine Depôt	1	1,800 0 0	1	1,920 0 0	...	.....	2	5,285 0 1	...	.....	9,005 0 1
44	Office of the S.G.V., Burma	...	.....	...	.....	...	.....	...	.....	...	.....	.....
	Grand Total for 1919-20	1	1,800 0 0	(b)76	86,083 2 9	325	108,618 7 5	4	6,782 15 10	12	2,553 13 1	1,05,748 7 1
	Grand Total for 1918-19	1	1,800 0 0	73	35,204 11 4	321	101,219 15 9	3	3,290 0 0	7	2,323 5 0	1,43,748 0 1
	Grand Total for 1917-18	1	1,800 0 0	70	37,992 12 5	308	99,443 15 8	2	1,914 5 8	23	4,292 8 8	1,44,843 10 5

* The average cost in this column is calculated on the total number of successful † Revised

(a) No share of pay and allowance of 1 Superintendent of Vaccine Depôt, 2 Female Registrar-Vaccinators and 16 Assistant Registrar Vaccinators

(b) This includes 29 Sub-Assistant Surgeons receiving Vaccination allowance, 1 Superintendent in charge of Vaccine Depôt, Rangoon Vaccination and 2

DEPARTMENT.

Province of Burma during the year 1919-20 (Paragraphs 9, 10 and 12).

Travelling allowance.	Contingencies.	Total cost.	Paid from: Imperial Funds.	Provincial Funds.	Local Funds.	Municipalities.	Native States.	Total.	Number of all successful vaccinations and re-vaccinations.	Average cost of each successful case.*	No.
(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.		Rs. A. P.	
2,002 0 0	40 5 5	5,942 1 2	.....	.....	3,025 8 7	916 8 7	.....	5,942 1 2	15,922	0 6 0	1
980 15 0	...	1,170 15 0	.....	1,170 15 0	.....	.....	.....	1,170 15 0	589	1 15 10	2
1,287 8 0	88 11 6	3,515 0 0	.....	.....	2,383 0 0	132 0 0	.....	3,515 0 0	7,808	0 7 2	3
797 7 0	.....	2,480 0 8	.....	.....	2,310 0 8	120 0 0	.....	2,480 0 8	3,560	0 10 11	4
4,477 9 0	99 0 11	13,058 0 10	.....	1,170 15 0	10,718 9 3	1,168 8 7	.....	13,058 0 10	27,879	0 7 6	
210 3 9	10,387 12 4	13,107 0 1	.....	420 0 0	.....	12,687 0 1	.....	13,107 0 1	19,427	0 10 10	5
3,226 12 3	91 2 0	8,866 6 3	.....	.....	8,131 0 3	735 6 0	.....	8,866 6 3	12,224	0 11 7	6
2,998 9 3	158 8 0	8,134 0 8	.....	.....	7,573 4 8	560 12 0	.....	8,134 0 8	13,992	0 10 0	7
4,419 6 3	200 10 6	10,071 11 4	.....	.....	8,985 11 4	1,086 0 0	.....	10,071 11 4	13,008	0 11 10	8
2,066 1 6	100 0 0	6,986 5 1	.....	.....	5,326 5 1	660 0 0	.....	6,986 5 1	21,099	0 4 6	9
1,479 4 6	...	6,369 2 7	.....	.....	4,893 2 7	1,476 0 0	.....	6,369 2 7	9,514	0 10 9	10
13,807 5 6	10,941 0 10	69,534 10 0	.....	420 0 0	34,909 7 11	17,903 2 1	.....	53,534 10 0	88,869	0 9 6	
2,151 13 2	.....	6,114 9 10	.....	.....	5,401 15 2	712 10 8	.....	6,114 9 10	16,701	0 5 10	11
1,067 19 0	...	3,664 11 11	.....	.....	2,704 11 11	960 0 0	.....	3,664 11 11	8,408	0 7 0	12
1,909 4 0	...	7,316 8 7	.....	.....	4,795 8 7	2,521 0 0	.....	7,316 8 7	25,702	0 4 7	13
2,318 1 6	64 4 0	7,984 5 10	.....	.....	7,042 2 10	942 3 0	.....	7,984 5 10	24,834	0 5 2	14
3,074 9 0	87 5 0	8,146 13 4	.....	.....	7,030 13 4	1,116 0 0	.....	8,146 13 4	13,870	0 9 5	15
10,506 5 8	151 9 0	31,227 1 6	.....	.....	26,981 4 1	6,245 12 8	.....	33,227 1 6	89,515	0 5 11	
2,767 12 4	238 12 6	7,656 10 8	.....	.....	6,117 9 7	1,539 0 7	.....	7,656 10 8	27,943	0 4 5	16
1,693 3 0	189 8 9	5,080 10 9	.....	.....	4,442 4 9	638 6 0	.....	5,080 10 9	6,272	0 13 0	17
1,510 6 [illegible]	... .	4,459 6 0	.....	.....	3,850 14 0	609 8 0	.....	4,459 6 0	4,734	0 15 1	18
1,464 4 9	157 4 10	5,618 15 4	.....	.....	4,303 14 [illegible]	1,315 1 4	.....	5,618 15 4	16,517	0 5 5	19
2,728 5 6	...	6,930 0 8	.....	.....	6,443 0 8	487 0 0	.....	6,930 0 8	23,538	0 4 11	20
882 8 0	.....	964 0 9	.....	386 4 9	597 12 0	.....	.....	964 0 9	1,981	0 7 9	21
14,786 7 7	676 9 4	30,709 11 9	.....	386 4 9	25,664 7 1	4,673 15 11	.....	30,709 11 9	80,115	0 6 2	
1,297 7 0	162 5 6	10,272 2 7	.....	3,432 2 9	.....	6,839 15 10	.....	10,272 2 7	29,418	0 5 7	22
613 10 0	4 12 3	2,079 6 3	.....	1,784 6 3	.....	295 0 0	.....	2,079 6 3	2,978	0 11 2	23
881 7 6	... ...	2,276 14 6	.....	2,276 14 6	.....	.....	.....	2,276 14 6	10,496	0 3 6	24
1,333 0 9	.....	4,217 7 10	.....	3,450 0 0	.....	.....	767 7 10	4,217 7 10	3,033	1 6 3	25
455 0 0	.....	1,463 0 0	.....	1,463 0 0	.....	.....	.....	1,463 0 0	2,845	0 8 3	26
.....	.....	.....	.....	.....	.....	.....	.....	.....	450	...	27
4,609 8 6	167 1 9	20,308 15 2	.....	12,406 7 6	.....	7,134 15 10	767 7 10	20,308 15 2	49,145	0 6 7	
1,632 1 6	...	4,950 6 3	.....	4,678 8 11	.....	271 13 4	.....	4,950 6 3	13,385	0 5 11	28
1,432 8 0	.....	4,481 10 7	.....	4,217 14 11	.....	263 11 8	.....	4,481 10 7	27,105	0 2 8	29
1,302 11 2	.....	4,411 12 10	.....	4,113 15 2	.....	2.7 13 8	.....	4,411 12 10	13,214	0 5 4	30
1,945 10 9	.....	5,223 11 9	.....	5,223 11 9	.....	.....	.....	5,223 11 9	14,814	0 5 8	31
6,312 14 8	...	19,067 9 5	.....	18,234 2 9	.....	833 6 8	.....	19,067 9 5	68,518	0 4 5	
1,749 8 0	32 14 0	5,892 7 2	.....	.....	4,972 15 2	919 8 0	.....	5,892 7 2	14,978	0 6 4	32
3,071 14 0	.....	7,809 4 1	.....	7,449 4 1	.....	360 0 0	.....	7,809 4 1	22,150	0 5 5	33
829 1 0	7 13 0	3,640 14 0	.....	3,021 14 0	.....	619 0 0	.....	3,640 14 0	7,045	0 8 3	34
990 7 0	... ...	4,239 14 0	.....	2,947 7 6	.....	1,292 6 6	.....	4,239 14 0	13,864	0 4 11	35
6,700 14 0	40 9 0	21,582 7 3	.....	13,418 9 7	4,972 15 2	3,190 14 6	.....	21,582 7 3	59,037	0 5 10	
1,986 3 6	6 8 0	8,593 11 6	.....	8,343 11 6	.....	250 0 0	.....	8,593 11 6	10,968	0 5 3	36
1,909 15 3	.....	5,824 8 5	.....	5,074 1 6	.....	750 6 11	.....	5,824 8 5	115,453	0 0 10	37
700 10 0	.....	2,591 4 9	.....	2,591 4 9	.....	.....	.....	2,591 4 9	4,779	0 8 8	38
995 6 6	.....	4,259 5 6	.....	3,413 7 4	.....	845 14 2	.....	4,259 5 6	3,445	0 7 3	39
4,852 3 3	6 8 0	16,268 14 2	.....	14,422 9 1	.....	1,846 5 1	.....	16,268 14 2	140,645	0 1 10	
2,276 4 7	... .	6,518 14 6	.....	3,206 3 6	.....	.....	1,312 11 0	6,518 14 6	7,848	0 13 4	40
2,480 13 0	80 1 11	12,341 4 3	.....	10,282 2 10	.....	.....	2,059 1 5	12,341 4 3	14,708	0 13 5	41
4,757 1 7	80 1 11	18,860 2 9	.....	13,488 6 4	.....	.....	3,371 12 5	18,860 2 9	22,561	0 13 5	
442 6 0	... ..	1,347 2 8	.....	1,347 2 8	.....	.....	.....	1,347 2 8	2,937	0 7 3	42
.....	20,500 1 10	21,555 1 11	.....	21,555 1 11	.....	.....	.....	21,555 1 11	...	...	43
...	128 15 9	128 15 9	.....	128 15 9	.....	.....	.....	128 15 9	...	...	44
67,243 11 9	24,661 10 4	2,48,648 13 2	.....	98,998 11 4	1,03,146 12 3	42,504 1 4	4,139 4 3	2,48,648 13 2	6,29,251	0 6 4	
63,034 13 6	20,936 7 4	2,27,709 4 11	.....	90,561 3 9	96,239 12 1	34,540 0 6	6,368 4 7	2,27,709 4 11	4,73,578	0 7 8	
62,868 7 7	14,002 5 0	2,21,214 7 0	.....	88,027 12 0	95,341 15 11	31,866 7 1	5,678 4 0	2,21,214 7 0	14,25,088	0 2 4	

vaccinations and re-vaccinations by the special staff only.
figures.
of Rangoon Municipality have been included in the cost. Out of 17, only 1 Vaccinator employed in Rangoon Cantonment was paid by Government, Municipality, 1 Assistant Director, Vaccine Depôt, Meiktila, 1 State official appointed by the Saohpwa of Hsipaw State, 41 Supervisors of Head Vaccinators.

B.—DISPENSARY

STATEMENT No. III—*Showing Dispensary Vaccination in the*

No.	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.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Arakan Division.					
1	Akyab			1		
2	Hill Tracts, Northern Arakan			106		65
3	Kyaukpyu			31		7
4	Sandoway					
	Total			137		72
	Pegu Division.					
5	Rangoon					
6	Insein			70		85
7	Hanthawaddy			199		157
8	Pegu					
9	Tharrawaddy			259		168
10	Prome					
	Total			528		360
	Irrawaddy Division.					
11	Maubin			285		41
12	Pyapon					
13	Bassein			677		98
14	Henzada			49		7
15	Myaungmya			600		254
	Total			1,611		395
	Tenasserim Division.					
16	Amherst			78		76
17	Tavoy					
18	Mergui			10		9
19	Toungoo					
20	Thaton					
21	Salween					
	Total			88		85
	Mandalay Division.					
22	Mandalay			1,810		541
23	Bhamo					
24	Katha			2,095		2,908
25	Ruby Mines					
26	Myitkyina			1,918		196
27	Putao					
	Total			6,818		4,507
	Sagaing Division.					
28	Shwebo			196		49
29	Sagaing			14		7
30	Lower Chindwin					
31	Upper Chindwin			944		694
	Total			1,154		750
	Magwe Division.					
32	Thayetmyo					
33	Pakokku			650		389
34	Minbu					
35	Magwe			11		
	Total			661		389
	Meiktila Division.					
36	Meiktila			92		58
37	Yamethin					
38	Kyaukse					
39	Myingyan					
	Total			92		58
	Shan States.					
40	Northern Shan States			189		132
41	Southern Shan States			488		293
	Total			677		425
42	Chin Hills			189		179
	Grand Total for 1919-20			11,905		7,220
	Grand Total for 1918-19			3,701		2,066
	Grand Total for 1917-18			2,786		1,594

VACCINATION.

Province of Burma for the year 1919-20 (Paragraph 5).

Primary Vaccination.				Re-vaccination.			Percentage of successful cases in which the results were known.		Percentage of unknown cases to total cases.		No.
Successful.			Unknown.	Total.	Successful.	Unknown.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	
Under one year.	One and under six years.	Total of all ages.									
(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
...	...	...	...	...	...	...	...	...	...	...	1
...	...	...	...	1	1	...	...	100·00	...	...	2
97	18	59	2	40	10	11	99·65	84·48	8·08	97·50	3
...	...	7	...	24	6	...	100·00	19·67	...	...	4
97	18	66	2	65	15	11	94·29	27·78	2·78	15·22	
...	...	...	...	...	...	...	...	...	...	...	5
4	22	33	1	38	15	...	94·12	42·86	2·85	...	6
20	81	111	6	42	14	6	100·00	41·18	8·82	19·05	7
...	...	...	...	...	...	...	...	...	...	...	8
47	99	147	19	91	24	64	93·68	88·89	11·31	20·33	9
...	...	...	...	...	...	...	...	...	...	...	10
71	202	330	26	168	53	72	93·80	55·21	7·22	43·26	
...	...	21	20	224	3	180	100·00	8·19	48·78	83·04	11
...	...	...	...	...	...	...	...	...	...	...	12
7	21	91	...	884	193	291	100·00	100·00	...	66·95	13
...	...	...	7	42	...	42	...	...	100·00	100·00	14
72	78	251	1	866	104	11	99·21	89·20	·39	3·01	15
79	99	365	28	1,216	300	574	99·46	45·78	7·09	47·29	
72	4	76	...	2	1	...	100·00	50·00	...	...	16
...	...	...	...	...	...	...	...	...	...	...	17
9	...	9	...	1	...	...	100·00	...	...	...	18
...	...	...	...	...	...	...	...	...	...	...	19
...	...	...	...	...	...	...	...	...	...	...	20
...	...	...	...	...	...	...	...	...	...	...	21
81	4	85	...	3	1	...	100·00	33·33	...	...	
64	473	536	1	1,269	864	54	99·07	71·11	·18	4·25	22
...	...	...	...	...	...	...	...	...	...	...	23
69	387	1,089	1,103	127	5	62	58·39	11·11	37·16	64·87	24
...	...	...	...	...	...	...	...	...	...	...	25
150	201	857	104	915	511	29	93·62	57·67	10·42	5·17	26
...	...	...	...	...	...	...	...	...	...	...	27
283	1,011	2,481	1,208	2,311	1,380	165	74·80	64·30	26·80	7·14	
12	20	41	8	147	63	30	100·00	59·85	16·31	8·41	28
4	3	7	...	7	5	...	100·00	71·43	...	...	29
...	...	...	...	...	...	...	...	...	...	...	30
...	10	697	37	250	124	126	100·00	100·00	5·33	50·40	31
16	33	705	45	404	192	156	100·00	77·42	6·10	38·61	
...	...	...	...	...	...	...	...	...	...	...	32
74	166	376	5	261	103	9	97·92	40·87	1·29	3·45	33
...	...	...	...	11	...	10	...	...	...	90·91	34
...	...	...	...	...	...	...	...	...	...	...	35
74	166	376	5	272	103	19	97·92	40·71	1·29	8·99	
12	44	56	2	34	4	18	100·00	25·00	3·45	52·94	36
...	...	...	...	...	...	...	...	...	...	...	37
...	...	...	...	...	...	...	...	...	...	...	38
...	...	...	...	...	...	...	...	...	...	...	39
12	44	56	2	34	4	18	100·00	25·00	3·45	52·94	
14	94	123	5	7	3	2	96·06	60·00	3·79	28·57	40
35	163	215	70	195	85	40	98·41	38·98	25·89	20·51	41
49	257	337	75	202	88	42	99·29	36·25	17·65	20·79	
...	...	...	179	10	...	10	...	...	100·00	100·00	42
693	1,881	4,781	1,570	4,685	2,106	1,067	84·62	58·21	21·75	22·77	
337	831	1,764	272	1,641	747	533	98·49	67·42	13·18	32·48	
392	720	1,307	153	1,363	499	550	95·40	70·98	10·05	44·34	

COMPARATIVE STATEMENT No. IV—*Showing the number of persons primarily vaccinated Burma in each of the under*

Establishments.	Persons prima									
	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.
	1910-11.		1911-12.		1912-13.		1913-14.		1914-15.	
(1)	(2)		(3)		(4)		(5)		(6)	
Government	142,542	132,235	166,142	158,300	181,794	174,078	171,608	158,682	166,553	150,189
Municipal	37,145	30,208	44,023	40,089	35,714	31,275	33,098	31,476	33,006	30,815
Local Funds	154,649	142,051	190,361	180,546	186,389	171,957	210,401	192,887	192,408	175,416
Native States	13,177	10,462	11,357	9,194	8,502	7,516	6,826	5,751	2,944	2,172
Dispensary	8,268	7,304	5,786	4,121	5,966	5,518	3,573	3,077	1,704	1,509
Other Agencies	...	...	...	...	...	...	...	...	7,544	6,879
ARMY.										
Europeans	102	69	47	40	62	59	69	64	42	30
Natives	190	153	388	334	464	393	255	234	253	174
Total ...	356,073	295,285	421,704	332,944	429,015	333,793	425,830	392,111	404,553	367,184

STATEMENT No. V—*Showing particulars of Vaccination verified*

No.	Districts.	Total number of persons vaccinated.		Total number inspected			
				By Deputy Sanitary Commissioner or Civil Surgeons.		*By Supervisors or other Inspecting Officers.*	
		Primary.	Re-vaccinations.	Primary.	Re-vaccinations.	Primary.	Re-vaccinations
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Akyab	17,645	3,094	300	96	4,235	2,645
2	Hill Tracts, Northern Arakan ..	674	61	31	3	16	3
3	Kyaukpyu	8,497	663	808	85	3,331	96
4	Sandoway	4,588	1,648	1,349	68	2,699	1,189
5	Rangoon	7,888	31,965	884	417	6,054	20,263
6	Insein	12,068	3,578	1,712	194	10,542	1,538
7	Hanthawaddy	12,884	2,369	1,071	212	9,810	1,048
8	Pegu	13,281	2,615	1,534	147	10,597	1,578
9	Tharrawaddy	20,583	2,738	1,124	82	9,622	969
10	Prome	9,616	1,911	1,065	27	1,014	280
11	Ma-ubin	17,217	2,319	1,719	302	7,336	1,139
12	Pyapôn	8,700	1,089	1,490	21	6,210	764
13	Bassein	24,490	2,413	534	138	9,206	2,942
14	Henzada	25,785	683	2,325	2	4,929	3
15	Myaungmya	13,836	1,975	3,765	225	9,130	934
16	Amherst	27,201	7,093	2,618	131	13,480	3,287
17	Tavoy	5,926	893	1,489	488	2,314	35
18	Mergui	4,329	2,480	107	61	2,601	1,113
19	Toungoo	16,110	3,384	685	24	4,417	865
20	Thatôn	22,410	2,531	3,586	215	9,880	874
21	Salween	1,658	813	35	14	...	...
22	Mandalay	13,572	27,189	276	668	7,678	3,702
23	Bhamo	3,015	324	139	44	133	8
24	Katha	13,446	1,149	1,611	321	987	661
25	Ruby Mines	2,526	936	975	680	2,928	868
26	Myitkyina	3,150	2,292	305	417	2,767	1,677
27	Putao	287	576	105	425	...	...
28	Shwebo	11,584	3,910	313	90	6,714	1,767
29	Sagaing	13,659	19,209	2,195	2,754	1,454	2,787
30	Lower Chindwin ...	11,434	2,573	6,350	797	8,023	1,461
31	Upper Chindwin	15,219	3,823	426	48	6,758	1,749
32	Thayetmyo	12,287	6,859	766	434	7,828	3,848
33	Pakôkku	17,663	35,612	2,927	3,227	5,457	9,700
34	Minbu	7,893	763	1,616	185	3,919	551
35	Magwe	13,188	2,605	1,176	171	590	40
36	Meiktila	9,955	2,993	61	...	7,624	1,975
37	Yamèthin	19,540	159,622	5,540	35,671	971	5,355
38	Kyaukse	3,844	1,457	1,146	445	1,399	381
39	Myingyan	9,309	2,928	...	...	5,702	1,778
40	Northern Shan States ...	15,593	657	859	137	1,213	130
41	Southern Shan States ...	15,301	1,965	132	15	5,146	183
42	Chin Hills	4,316	284	151	63	...	...
	GRAND TOTAL, 1919-20 ...	491,831	353,911	54,538	49,694	201,461	80,774
	GRAND TOTAL, 1918-19 ...	498,266	141,109	58,170	11,633	203,960	65,567
	GRAND TOTAL, 1917-18 ...	480,206	62,854	54,286	4,735	230,374	19,706

and the number of those persons who were successfully vaccinated in the Province of mentioned official years.

RILY VACCINATED.

Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Establishments.
1915-16.		1916-17.		1917-18.		1918-19.		1919-20.		
(7)		(8)		(9)		(10)		(11)		(12)
149,958	139,601	155,431	141,836	155,824	143,536	146,541	133,337	179,204	162,143	Government.
32,705	31,123	38,123	34,709	33,590	30,953	27,209	25,269	38,604	35,973	Municipal.
198,458	184,045	213,420	200,118	237,468	212,064	231,214	216,462	257,218	239,580	Local Funds.
3,390	2,302	10,391	10,025	11,186	7,153	7,854	7,249	9,177	5,045	Native States.
2,849	2,585	2,899	2,300	1,823	1,307	2,063	1,764	7,220	4,731	Dispensary.
7,241	5,559	2,314	878	705	402	304	303	398	371	Other Agencies.
										ARMY.
23	25	10	10	12	11	24	23	23	24	Europeans.
555	513	597	514	415	346	483	431	67	27	Natives.
395,471	365,565	423,185	393,459	439,623	395,772	425,772	399,933	491,916	448,249	Total.

by Inspecting Officers during the year 1919-20 (Paragraph 7).

Percentage of inspections to total number vaccinated				Percentage of cases found successful of total number inspected				Percentage of success reported by vaccinators.		No.
By Deputy Sanitary Commissioner or Civil Surgeons.		*By Supervisors or other Inspecting Officers.*		*By Deputy Sanitary Commissioner or Civil Surgeons.*		*By Supervisors or other Inspecting Officers.*				
Primary.	Re-vaccinations.	Primary.	Re-vaccinations.	Primary.	Re-vaccinations.	Primary.	Re-vaccinations.	Primary.	Re-vaccinations.	
(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
1·76	8·20	24·85	68·08	93·33	25·00	95·44	18·48	98·09	28·69	1
4·49	4·92	2·37	7·28	98·55	66·67	93·78	50·00	85·08	58·93	2
9·51	8·30	39·20	14·48	78·71	61·64	77·66	58·33	91·79	30·47	3
26·64	4·13	57·57	72·15	79·34	17·65	73·66	7·82	79·34	14·29	4
10·81	1·30	76·75	65·60	99·30	33·13	99·90	60·66	99·86	59·09	5
14·19	7·33	87·35	59·06	99·42	16·49	99·79	80·17	99·41	34·10	6
8·31	8·95	76·14	44·24	98·92	40·57	99·44	44·94	99·00	57·26	7
11·55	5·62	79·79	60·34	98·50	53·74	99·16	62·22	98·78	52·84	8
5·45	2·79	46·75	32·98	99·61	75·61	99·20	77·71	99·32	59·51	9
11·09	1·41	10·45	14·65	97·56	10·00	95·16	23·21	98·76	47·35	10
9·08	14·75	42·61	49·12	93·65	28·51	97·37	21·63	98·67	59·24	11
17·13	1·93	71·38	70·16	100·00	61·90	95·41	18·59	99·26	22·80	12
2·22	2·00	38·21	35·49	90·26	79·87	89·61	75·28	94·62	75·78	13
9·03	·34	19·14	·51	99·63	50·00	99·45	...	99·46	38·24	14
27·31	11·39	65·99	47·24	99·60	96·89	97·96	83·40	98·69	48·89	15
9·02	1·85	49·37	46·34	96·60	36·03	96·59	35·47	97·38	44·27	16
25·17	73·23	39·11	4·26	91·53	61·29	97·84	22·85	99·20	57·78	17
2·47	2·06	57·77	44·85	83·92	47·06	90·88	45·10	98·99	52·85	18
4·25	·71	27·42	25·56	100·00	54·17	99·00	87·63	99·05	41·05	19
16·05	9·23	44·09	16·04	96·30	50·97	98·57	39·30	99·01	57·17	20
2·11	1·63	...	...	100·00	33·71	...	...	97·89	42·74	21
2·03	2·46	56·57	13·62	98·21	54·68	99·90	68·04	99·01	66·47	22
6·27	13·58	4·41	2·47	91·58	70·45	89·47	25·00	98·57	69·26	23
11·98	28·29	7·34	57·53	99·56	17·85	97·06	21·47	98·16	50·96	24
23·77	78·66	88·40	92·09	81·23	27·20	97·72	42·46	99·45	56·86	25
9·68	18·68	87·84	75·13	88·62	76·02	95·68	60·47	97·64	69·57	26
26·59	78·78	...	...	72·54	24·70	...	...	81·69	38·89	27
2·70	2·30	57·96	45·19	94·25	43·22	98·60	68·70	98·24	66·64	28
15·02	14·34	10·61	14·50	97·36	78·07	98·07	80·62	99·77	76·72	29
55·62	30·98	74·51	56·78	98·05	75·02	97·96	71·18	99·80	70·31	30
2·80	1·12	44·41	45·75	85·80	58·14	90·91	72·68	95·10	83·77	31
6·20	6·39	63·45	56·51	96·04	100·00	94·50	63·95	94·40	68·99	32
12·61	9·06	30·90	27·24	97·93	37·09	97·29	26·23	99·45	22·60	33
21·86	24·25	63·00	78·21	97·96	73·51	94·74	50·62	93·82	39·51	34
8·92	6·56	4·47	1·54	97·62	47·95	74·92	42·50	98·28	41·63	35
·61	...	76·58	67·45	100·00	...	98·94	49·16	98·69	66·00	36
22·35	22·35	4·97	2·35	83·54	76·68	95·16	72·16	95·95	69·46	37
29·51	30·54	36·39	67·33	91·54	91·24	84·18	50·94	99·87	76·63	38
...	...	61·45	60·87	...	...	90·90	39·20	94·47	46·00	39
5·53	20·85	7·81	22·83	98·37	90·51	98·65	84·00	96·63	68·06	40
·85	1·10	33·20	11·21	83·33	...	97·65	60·78	98·35	50·09	41
3·07	22·18	...	...	100·00	100·00	...	...	97·61	66·91	42
11·09	13·87	41·57	42·51	96·17	70·83	96·12	62·80	97·53	60·58	
13·68	8·21	47·96	46·47	93·45	62·87	96·19	58·35	97·83	65·27	
12·60	7·42	53·55	46·52	94·13	52·08	94·88	53·12	95·88	49·74	

APPENDIX A.

Statement showing the ratio per 10,000 successfully vaccinated and the mortality from small-pox by quinquennial periods for Lower Burma only.

Official year. (1)	Ratio per 10,000 successfully vaccinated. (2)	Quinquennial mean. (3)	Calendar year. (4)	Ratio per 10,000 of mortality from small-pox. (5)	Quinquennial mean. (6)
1904-05	815·63		1904	2·46	
1905-06	874·98		1905	10·48	
1906-07	857·65	826·98	1906	14·69	6·58
1907-08	794·95		1907	2·87	
1908-09	789·84		1908	1·89	
1909-10	800·97		1909	1·57	
1910-11	788·91		1910	3·97	
1911-12	895·05	844·69	1911	9·13	5·45
1912-13	850·56		1912	9·61	
1913-14	850·31		1913	2·87	
1914-15	839·06		1914	·39	
1915-16	850·44		1915	·23	
1916-17	404·85	283·80	1916	1·06	·77
1917-18	389·20		1917	·89	
1918-19	422·32		1918	1·16*	
1919-20	461·63	...	1919	2·31	

* Revised figure.

APPENDIX B.

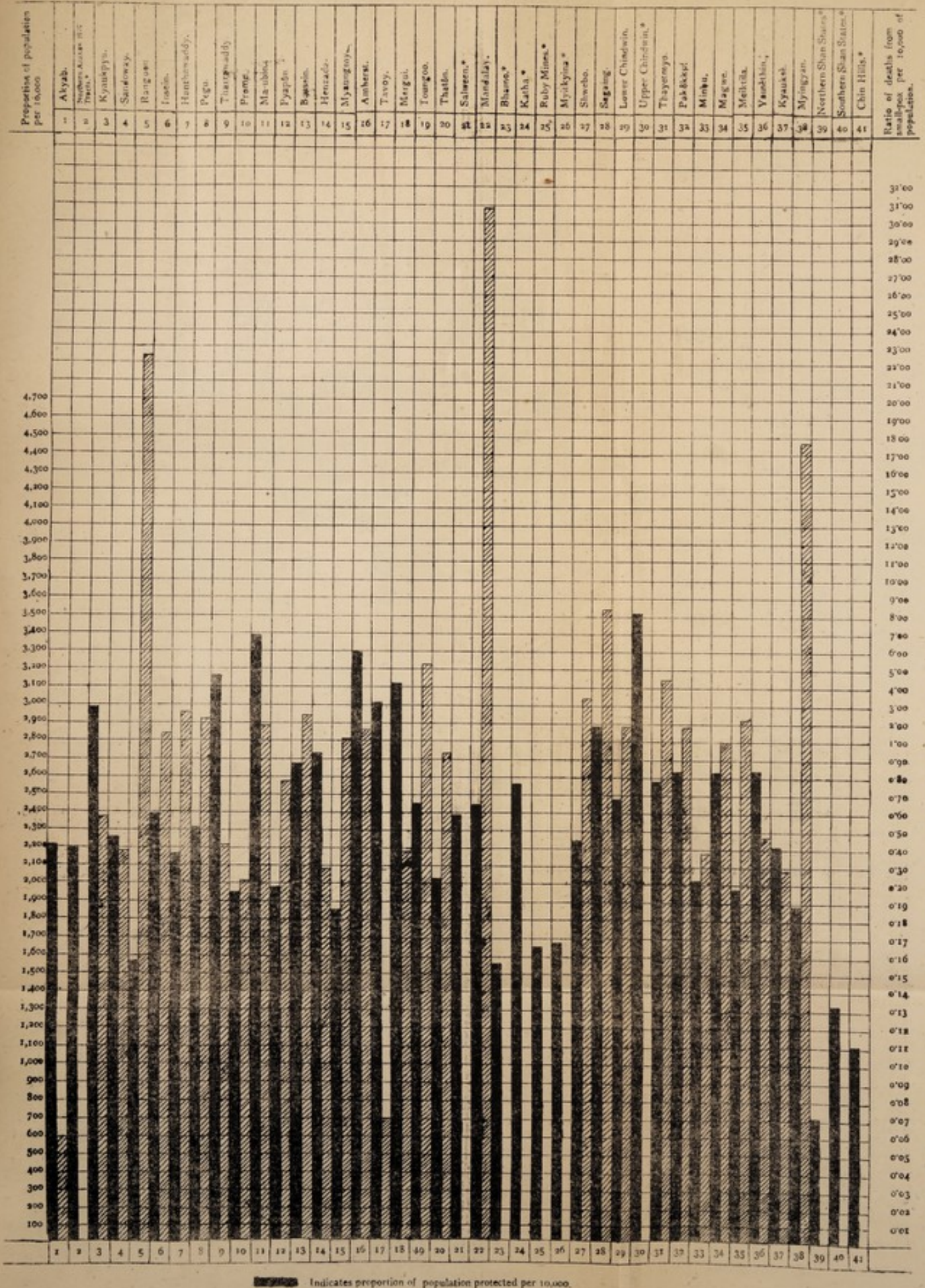
Statement showing the number of vaccinations performed in Municipal towns and notified areas (to which Vaccination Act has been extended) on children under one year of age (Paragraph 14).

Towns. (1)	Number of births during the year 1919-20. (2)	Number of deaths among children under one year during the year 1919-20. (3)	Number of successful operations on children under one year during the year ending 31st March 1920. (4)	Date of extension of Vaccination Act into towns. (5)
Akyab	606	164	467	August 1883.
Kyaukpyu	67	6	55	April 1894.
Sandoway	95	19	52	September 1890.
Rangoon	6,052	2,669	4,881	April 1884.
Insein	200	46	209	14th March 1912.
Syriam	199	41	122	29th January 1918.
Thôngwa	260	49	190	3rd March 1914.
Pegu	501	97	524	March 1893.
Nyaunglèbin	221	56	245	20th March 1910.
Thônzè	240	45	181	October 1897.
Zigôn	225	41	138	11th May 1914.
Letpadan	215	71	124	January 1897.
Gyobingauk	231	81	157	February 1897.
Minhla	106	21	54	11th May 1914.
Nattalin	104	12	87	11th May 1914.
Prome	582	54	418	June 1890.
Paungdè	405	137	238	August 1890.
Shwedaung	242	68	146	10th September 1917.
Ma-ubin	196	42	149	October 1891.
Yandoon	223	44	182	January 1892.
Danubyu	187	65	121	9th July 1909.
Pyapôn	172	14	173	November 1901.
Kyaiklat	219	54	190	15th December 1904.
Bassein	962	375	667	September 1888.
Ngathainggyaung	182	39	107	February 1890.
Henzada	588	139	334	January 1889.
Myanaung	175	23	120	July 1889.
Kyangin	202	41	94	August 1891.
Myaungmya	155	43	119	June 1894.
Wakèma	229	28	186	27th April 1907.
Moulmein	1,866	187	708	August 1883.
Kawkareik	134	20	183	December 1889.
Tavoy	865	206	885	October 1891.
Mergui	493	176	335	October 1891.
Thatôn	373	89	276	March 1897.
Kyaikto	149	23	142	May 1889.
Toungoo	477	101	301	January 1890.
Shwegyin	124	27	114	January 1920.
Pyu	148	23	106	August 1891
Mandalay	4,061	2,261	4,081	October 1912.
Maymyo	454	107	154	26th October 1894.
Bhamo	119	20	66	June 1894.
Shwebo	287	147	164	April 1894.
Sagaing	401	134	277	March 1893.
Mônywa	333	79	279	May 1889.
Thayetmyo	342	142	253	May 1901.
Allanmyo	289	34	270	April 1892.
Pakôkku	523	146	518	March 1896.
Minbu	170	45	114	March 1896.
Salin	183	45	95	10th March 1913.
Magwe	216	62	180	February 1893.
Taungdwingyi	228	81	90	10th March 1913.
Yenangyaung	126	44	226	June 1906
Meiktila	216	73	157	February 1898.
Yamethin	287	96	223	November 1891.
Pyinmana	264	129	471	May 1912.
Pyawbwe	98	58	86	May 1894.
Kyaukse	187	56	143	September 1891.
Myingyan	434	199	341	
Total ...	28,804	8,702	21,619	

G.B.C.P.O.—No. 8, S.C., (5), 30-3-1921—500.

APPENDIX C.

Diagram showing the Proportion of Population protected during the seven official years from 1913-14 to 1919-20 and the Death-rate from Small-pox during the calendar year 1919 in districts where registration is in force.



* Registration of vital statistics is not carried out in these districts.

TRIENNIAL REPORT

ON

VACCINATION IN BURMA

FOR THE YEARS 1917-18 TO 1919-20

RANGOON

OFFICE OF THE SUPERINTENDENT, GOVERNMENT PRINTING, BURMA

1921