

HAFFKINE INSTITUTE

PAREL · BOMBAY

GOVERNMENT PLAGUE REPORT

Plague Driving in the Pegu Division

Plague Seasons, 1910–11 and 1911–12

BY

Captain W. F. Brayne, B.A., M.B., I.M.S.

Special Plague Medical Officer, Pegu Division, Burma

PUBLISHED BY

Rangoon: Office of the Superintendent, Government Printing, Burma, 1912.

This research work belongs to Captain W. F. Brayne. No content of this work may be circulated or used for any commercial purpose without the consent of the respective researcher.

Disclaimer

This research work belongs to

Captain W. F. Brayne

No content of this work can be
circulated or used for any
commercial purpose without the
consent of respective researcher

PLAGUE DRIVING

IN THE

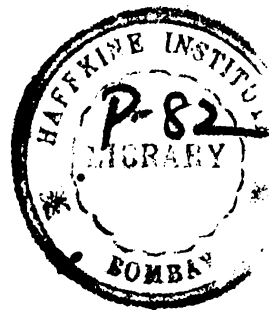
PEGU DIVISION

PLAGUE SEASONS, 1910-11 and 1911-12

BY

Captain W. F. BRAYNE, B.A., M.B., I.M.S.

SPECIAL PLAGUE MEDICAL OFFICER, PEGU DIVISION, BURMA



RANGOON

OFFICE OF THE SUPERINTENDENT, GOVERNMENT PRINTING, BURMA

1912

TABLE OF CONTENTS.

MAP.

	PAGE
No. 1.—Prome Town	... opposite 6

CHARTS.

No. 1.—Prome Plague Epidemics	... do.	4
No. 2.—Prome Plague Cycles	... do.	4
No. 3.—Prome Mortality	... do.	4
No. 4.—Prome Trapping	... do.	16
No. 5.—Paungdè Mortality	... do.	24
No. 6.—Zigôn Mortality	... do.	34
No. 7.—Gyobingauk Mortality	... do.	40
No. 8.—Minhla Mortality	... do.	59
No. 9.—Letpadan Mortality	... do.	64
No. 10.—Thônzè Mortality	... do.	73
No. 11.—Paungdè to Thônzè Mortality	... do.	99

CONTENTS.

Appendices	137—180
Attitude of the people	107
Bacteriological examination, value of	127—130
Building improvements	106—108
Building improvements, (Gyobingauk	53
Building improvements, Letpadan	72
Building improvements, Paungdè	25, 28, 29
Building improvements, Prome	18—21, 107, 108
Building improvements, Thônze	76
Conclusions	97—108
Deiku	87—90, 102, 103, 151, 159
Distribution of Staff	2—4
Divisional Scheme	8
Failures, Analysis of	107, 108
Fractional Rât destruction, value of	124—127
General Strategy	4
Godown Improvements—	
Nyaunglèbin	94
Paddy Husk floors	21, 28, 106
Paungdè	28
Prome	21, 106
Gyobingauk	40—53
	99—101, 106, 108, 117, 118, 125—127, 144, 175, 176
Henzada	104
Infected Blocks, Analysis of	84, 88, 109—124
Insein	81—84
Introductory Note	1
Investigations concerning Plague	130—135
Kayan	86
Kyauktaga	95—96
Kyauktan	84—86
Letpadan	64—72
	99—101, 106, 120—122, 125, 126, 148, 175, 176
Lodging-houses, Prome	20, 21
Magwe	104
Mandalay	125, 178, 179

	PAGE
Market Improvements—	
Deiku	87
Letpadan	72
Minhla	60
Paungde	28
Pegu	87
Prome	21
Pyuntaza	90
Thônze	76
Measures employed—	1, 2, 6, 106, 107
Meiktila	104, 178, 179
Mill Improvements—	
Paungdè	28
Prome	21
Minhla	59—62, 99—101, 106, 119, 120, 126, 146, 175, 176
Monyo	77, 78
Nattalin	29—34, 99—101, 115, 116, 142
Nyaunglebin	91—95, 102, 103, 125, 153
Okkan	80
Okpo,	54—58, 99—101, 106, 118, 119, 126, 145, 175, 176
Othegon	59
Padigon	140, 175, 176
Paungdè	24—29, 99—101, 106, 113, 114, 125, 126, 141, 175, 176
Penwegôn	97, 103, 104, 154
Peinzalok	97
Pegu	87, 103, 126, 150
Pogaung	78, 79
Prognosis,—1913	108
Prome Town	4—21, 99—101, 106—113, 125—130, 138, 175, 176
Prome to Thônzè area	97—124, 175, 176
Pyawbwè	86
Pyinmana	127, 178, 179
Pyuntaza	90, 102, 152
Rest of Burma Plague Towns	178—179
Rangoon	102, 103, 173
Sanywe	79
Sitkwin	63, 147, 175, 176
Syriam	86
Taikkyi	79, 80
Thayetmyo	4, 102, 174, 180
Thègôn	21—24, 99—101, 108, 125, 139, 175, 176
Thônzè	72—76, 99—101, 106, 122, 126, 149, 175, 176
Toungoo District	105, 106, 155—172, 178, 179
Torches, Use of—for dislodging rats	1, 2, 107
Trapping Figures—	
Gyebingauk	50
Insein	84
Kyauktan	86
Letpadan	72
Minhla	61

TABLE OF CONTENTS.

iii

								PAGE
Trapping Figures—								
Mônyo	...	...	...	...	...	...	...	78
Nattalin	...	...	...	...	...	...	...	34
Nyaunglèbin	...	...	...	...	...	...	...	95
Okkan	...	...	...	...	...	...	...	80
Ôkpo	...	...	...	...	...	...	...	58
Paungdè	...	...	...	...	...	...	...	27
Prome	...	...	...	...	...	...	...	16
Sitkwin	...	...	...	...	...	...	...	63
Thônzè	...	...	...	...	...	...	...	76
Zigôn	...	...	...	...	...	...	...	39
Wanetchaung	...	...	...	...	...	...	...	81
Zigôn	...	...	...	...	...	...	...	34—39
								99—101, 106, 116, 126, 143, 175—176

•

EXPLANATIONS OF ABBREVIATIONS AND TERMS USED.

A. P. M. O. ... Assistant Plague Medical Officer.
Plague Season ... The period from 1st May in one year to 30th April
in the next.
T. S. ... Trapping Square.

The house numbers are shown as follows :—

T.S. 1-2-26 indicates ... Trapping Square, 1 Block, 2 House, Number 26.

N.B.—For a map of the Pegu Division, see “Notes on the effect of Plague
driving, etc.,” 1911.

PLAGUE DRIVING IN THE PEGU DIVISION.

DURING THE PLAGUE SEASONS 1910-11 AND 1911-12.

Introductory Notes.

This report is a report on the work in the Pegu Division during the two seasons 1910-11 and 1911-12.

The general contents are as follows :—

Pages 1 to 4 contain a description of measures employed and staff.

Pages 4 to 97 contain detailed description of the work done in each town.

Pages 97 to 135 are devoted to conclusions and discussions on results and other matters of interest arising out of the work.

Pages 137 to 180 (Appendices) contain mortality tables for the Prome to Thônzè! area and the Pegu District area and some of the control towns for the period 1906 to 1912.

Figures for these areas prior to 1906 where not given in this report will be found in the Appendices to "Notes on the effect of plague driving, etc.," published in 1911.

This report is a direct continuation of Prome Plague Drive Report, 1910. Plague Driving in the Pegu Division, 1910, and Notes on the effect of Plague Driving on Human Mortality, 1911, and should be read in conjunction with these as measures, etc., described in these reports are not again given in this.

MEASURES EMPLOYED.

I. Drives as described in previous reports.

The following modifications and additions to drive procedure have been adopted as the result of past experience :—

(a) *Search Parties.*—On a case of plague occurring in a non-infected area or town, a few coolies are collected locally by the officer sent to investigate the case, and a rapid search is made in the houses in the vicinity of the case for dead rats. A proper drive is not attempted ; but boxes are removed, firewood turned over, and the houses rapidly searched. This is also sometimes done in the food bazaar. Any live rats seen are killed, and if any dead rats are found, spleen smears are taken from all rats whether killed or found dead ; but no attempt is made to drive the houses. The object is to search as many houses as possible in the day using untrained local coolies.

In this way very valuable information of rat infection has been obtained, in many cases at a much earlier date than would have been possible by moving in the trained gangs and driving.

(b) *Torches.*—Flaming torches, made by tying a piece of sacking soaked in earth oil on an iron stake, are used for dislodging rats from corrugated iron, tile and shingle roofs. The flaming torch is rapidly passed over all likely

corners and hiding places. This is found to be a much more effectual method of bolting the rats than beating, and no damage is done to the roof such as is apt to occur when it is beaten by coolies.

Stringent rules have been framed to prevent careless use of the torch, and careful precautions are taken to prevent fire. With each torch a powerful Hydro-nette syringe and a bucket of water are kept ready for use, so fire is practically impossible. This method has now been in use for the whole season 1911-12, and no case of damage has occurred from its use.

(c) *Flooding*.—In order to avoid the great labour and expense entailed by smoking and digging out large colonies of *Nesokia Bengalensis* under godowns and other buildings, wherever the natural lie of the land is favourable during the monsoon, these buildings have been flooded by the construction of small dams and the diverting of a water course, or pumping in water.

This is an excellent method as all rats which do not come out are drowned, and it is perfectly certain that the last rat in the building has been destroyed.

In Letpadan in one godown 278 rats, of which 198 were *Nesokia Bengalensis*, were obtained in one morning by this means.

(d) When rat plague is found to be present in any town the following procedure, if the circumstances admit of its adoption, has been found to be very efficacious in cutting short the infection :—

- (1) Drive the market and any other distributing centre.
- (2) Begin a drive in the healthy rat area beyond the spreading edge of the infection, and drive back in line towards and then over the infected area.
- (3) The whole quarter of the town in which infection was found is then driven; in the case of a small town the whole town is driven.

II. Trapping on the trapping square system as described in previous reports.

III. *Building Improvement*.—Building improvement schemes were carried out in Prome and Paungdè during 1910-11. During 1911-12 the work in these towns as well as work which had been commenced in Gyobingauk, Thônzè and Letpadan had to be stopped owing to the fact that no engineering supervision could be obtained for the work.

DISTRIBUTION OF STAFF.

The following were the areas into which the Division was divided and the staff in charge of them during the plague season 1910-11.

PROME TOWN.

Assistant Plague Medical Officer,
Third Class Military Assistant Surgeon, P. A. Scanlon.
Plague Myoðks, Maung Po Chit and Maung Po Thein.

PROME DISTRICT, EXCLUDING PROME TOWN.

Assistant Plague Medical Officer.
First Class Military Assistant Surgeon, G. P. O'Brien.
Plague Myoðk, Maung Tha Si.

THARRAWADDY DISTRICT.

Assistant Plague Medical Officer.
Third Class Military Assistant Surgeon, H. H. Lynsdale,
Plague Myoðks, Maung Shwe Hman and Maung Pe.

HANTHAWADDY DISTRICT.

Assistant Plague Medical Officer.
Second Class Military Assistant Surgeon, C. W. Rebeiro.

PEGU DISTRICT.

Assistant Plague Medical Officer.
Second Class Military Assistant Surgeon, A. A. Frend-Hart.
Plague Myoðk, Maung Saing.

DISTRIBUTION OF STAFF DURING THE PLAGUE SEASON,
1911-12.

Lieutenant E. V. Wills, I.A., 9th Infantry, was on general plague duty in the Division.

PROME TOWN.

Assistant Plague Medical Officer.
Third Class Military Assistant Surgeon, P. A. Scanlon, 1st May 1911 to 6th October 1911.
Third Class Military Assistant Surgeon, A. C. Pereira, from 6th October 1911 to 14th December 1911.
Third Grade Civil Assistant Surgeon, Subrahmanyam, 14th December 1911 to 30th April 1912.
Plague Myoðks, Maung Po Chit and Maung Po Thein.

PROME DISTRICT, EXCLUDING PROME TOWN.

Assistant Plague Medical Officer.
First Class Military Assistant Surgeon, G. P. O'Brien, from 1st May 1911 to 28th September 1911.
Third Class Military Assistant Surgeon, A. C. Pereira, from 28th September 1911 to 6th October 1911.
After 6th October 1911 there was no Assistant Plague Medical Officer.

THARRAWADDY DISTRICT.

As in 1910-11.

HANTHAWADDY DISTRICT.

Second Class Military Assistant Surgeon, C. W. Rebeiro, from 1st May 1911 to 29th October 1911.
After this there was no Assistant Plague Medical Officer or Plague Myoðk.

PEGU DISTRICT.

Assistant Plague Medical Officer.
Third Class Military Assistant Surgeon, A. C. Pereira, 15th April 1911 to 28th September 1911.
First Class Military Assistant Surgeon G. P. O'Brien, 28th September 1911 to 29th December 1911, and from 22nd January 1912 to 30th April 1912.
From 29th December 1911 to 22nd January 1912 there was no Assistant Plague Medical Officer.
Plague Myoðk, Maung Saing.
The Assistant Plague Medical Officers were in entire charge of all plague work in their sections, but on severe plague occurring in any town which the

Assistant Plague Medical Officers of the section was unable to cope with, other Assistant Plague Medical Officers and their staff were called in to help him. In this way it was possible to concentrate a large force on any infected place.

GENERAL STRATEGY DURING THE PLAGUE SEASONS, 1910-11 AND 1911-12.

The conclusions concerning the areas to which severe epidemic plague is limited stated in the 1909-10 report were found to be correct during these seasons also.

The severest plague was limited to the Prome and Tharrawaddy districts, while fairly severe plague was also experienced in Pegu district, north of Pegu.

During the season 1910-11, owing to lack of staff, it was found to be impossible to deal effectively with both of these areas at the same time. Our whole energies were therefore concentrated on the more severely epidemic area of Prome and Tharrawaddy districts, somewhat it is feared to the neglect of the Pegu area.

During the 1911-12 season we were again severely handicapped by lack of staff, just at the time when the season was at its height and every man was wanted.

Out of the staff of five Assistant Plague Medical Officers in the Division—

Assistant Surgeon Scanlon was transferred.

Assistant Surgeon Pereira died of cholera.

Assistant Surgeon Hart was severely attacked by cholera and sent away on leave.

Thus in December 1911 there were only two Assistant Plague Medical Officers who had been trained in drive work in the whole division. On plague being reported at Thayetmyo orders were received to despatch an Assistant Plague Medical Officer there, and it was therefore necessary to send Assistant Surgeon G. P. O'Brien from Nyaunglèbin. This was most unfortunate, a few cases had just been reported at the latter place, and had a drive been at once carried out the epidemic would have been checked. As a fact no drive was carried out in Thayetmyo and on Assistant Surgeon O'Brien's return to Nyaunglèbin plague in Nyaunglèbin and Deiku had already made such headway that very little could be done to control the epidemic.

In the Prome to Thônzè area to which we were obliged to confine our attentions there was infection at the time in Prome, Thègôn, Paungdè, Ôkpo, and Letpadan.

It was only owing to the untiring energy and excellent work of Lieutenant E. V. Wills, I.A.

Assistant Surgeon H. H. Lynsdale and Plague Myoôks Maung Shwe Hman, Maung Pe, Maung Po Chit and Maung Po Thein, that we were able to save the situation and with the exception of Thègôn to keep the Prome to Thônzè area clear of plague.

Detailed descriptions of the work in each Town.

PROME TOWN.

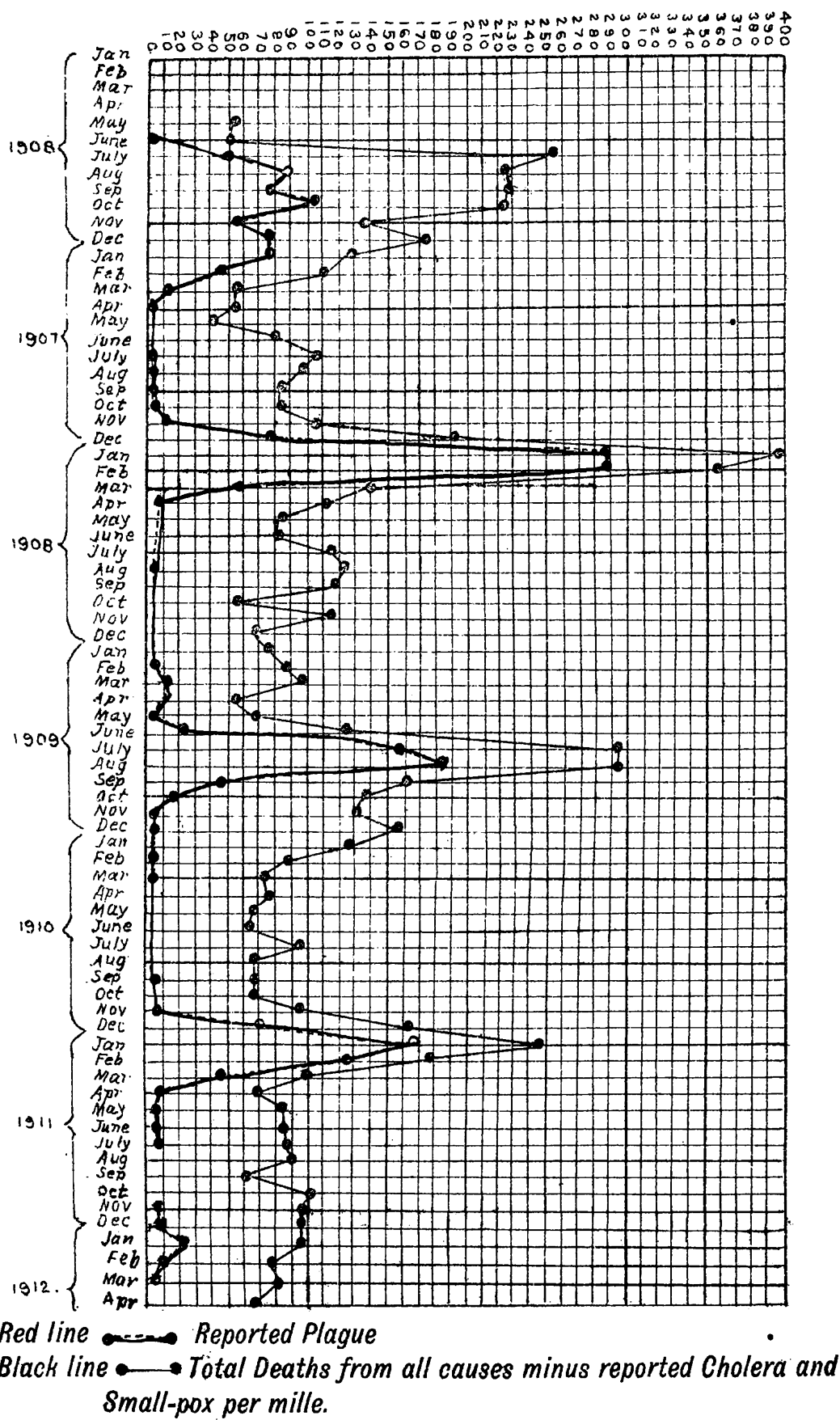
Census, 1901	...	...	27,375
Census, 1911	...	...	26,911

PLAGUE SEASON, 1910-11.

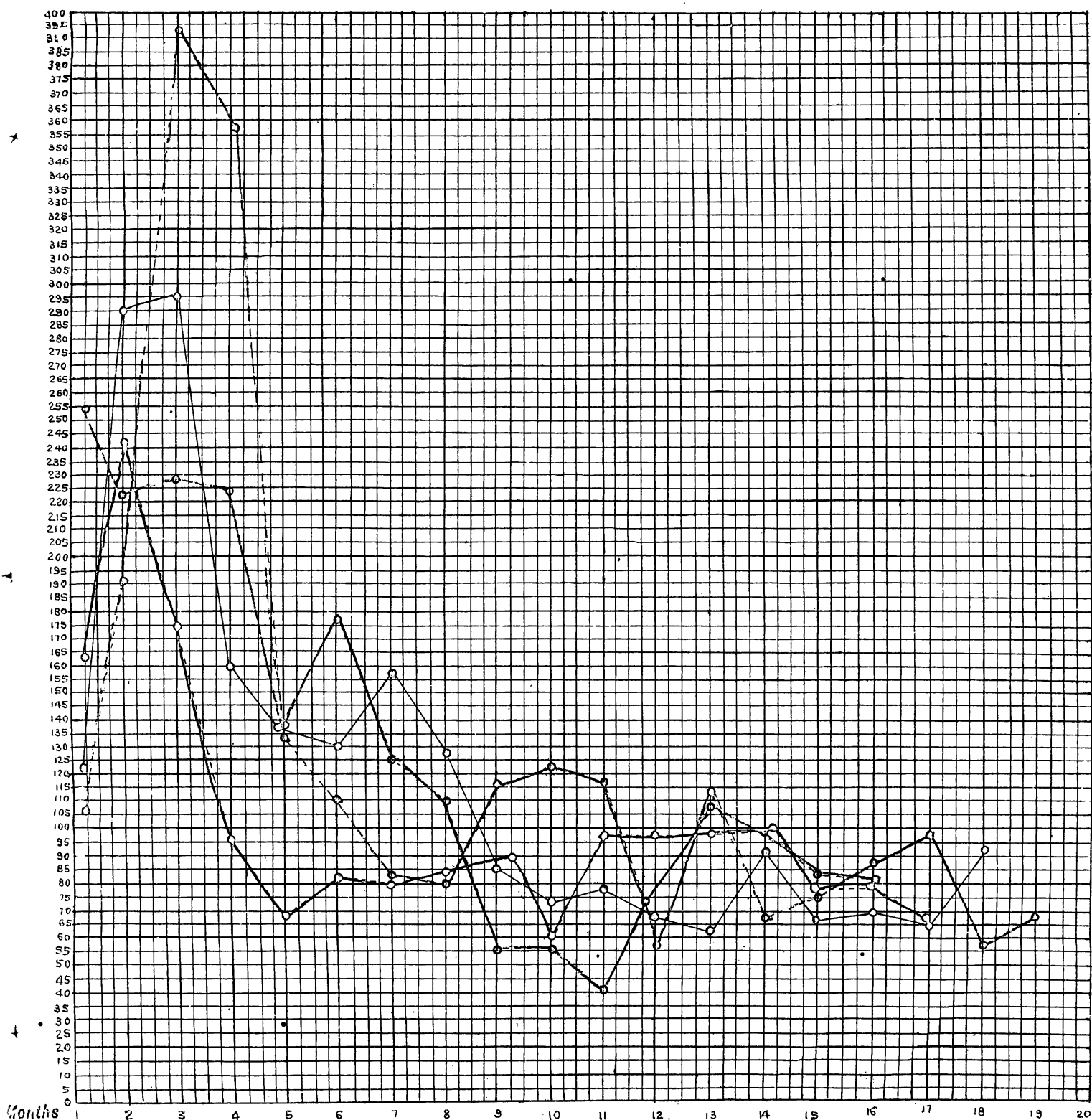
General Sketch of the Work.—As described in the report on Plague driving in the Pegu Division 1909-10, a systematic drive in the line through the town with 60 coolies was commenced on 11th April 1910. This drive continued till 31st August 1910 during which time the following area was driven:—

T.S. 2, 3, 4, 5, 6, 7, 12 and 14.

PROME PLAGUE EPIDEMICS



To face Page 4.

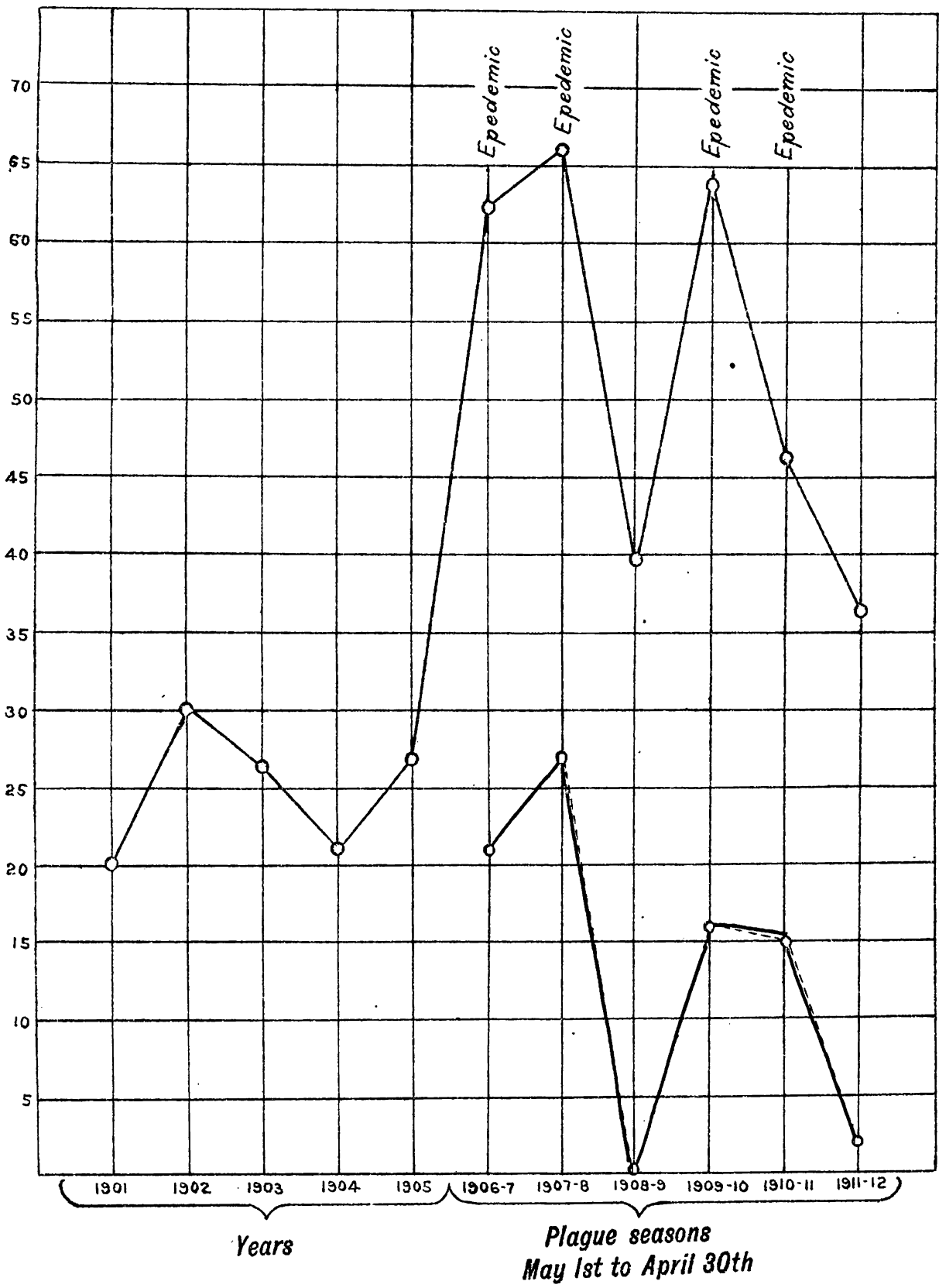


Total Deaths from all causes minus Reported Cholera and Small-pox from the beginning of each Plague Epidemic. Deaths over 100 counted as beginning of epidemic.

1st cycle	Blue	1906-07 Epidemic.
2nd cycle	Yellow	1907-08 do.
3rd cycle	Black	1909-10 do.
4th cycle	Red	1910-11 do.

To face Page 4.

PROME



Black ●—● Total Deaths from all causes minus reported Cholera and Small-pox per mille.
Red ○—○ Reported Plague per mille

To face Page 4.

In September 1910 three human plague cases occurred in T.S. V and a drive with 60 coolies round the area was done. This is all fully described in the 1909-10 report, page 61.

The following is therefore a direct continuation of the abovementioned report.

In October 1910 three suspicious human deaths occurred in T.S. XII blocks 5A, 5 and 12.

T.S. XII blocks 1, 2, 3, 4, 5, 5A, 6, 7, 11, 12, were driven with 75 coolies.

Result of Drive.

Number of houses driven.	Rats.	
	Alive.	Dead.
187	172	0

12th November 1910.—A human plague death occurred in T.S.V—12—24, 25.

16th November 1910.—A drive began and an attempt was made to limit the infection by driving a circle of blocks round the infected block. Heavy rat infection was then found in Trapping Square V—12.

The following blocks were driven between 16th and 23rd November 1910 :—

T.S. V-13, V-3, IV-1 and V-4. T.S. IV-2, 3 a part, T.S. V-12, 9, 10, 6, 5 a part. The position of these blocks with regard to T.S. V-12, the originally infected block, is shown in the annexed chart.

Rat infection was found in the following of these blocks IV-2 and V-4 and 12.

During this drive the following human plague cases occurred :—

21—23-11-10 T.S. IV-1.	16-11-10. T.S. V-13.	17-11-10 T.S. V-3.
21—23-11-10. T.S. IV-2.	T.S. V-12. 17 & 18-11-10.	21-22—11—10 T.S. V-4.
22—23-11-10. T.S. IV-3 a part.	T.S. V-11 Pagoda.	23-11-10 T.S. V-5 a part.
	T.S. V-9, 10 Food Bazar 18— 19-11-1910.	23-11-10. T.S. V-6.

Date.	Trapping Square Number.
16th November 1910 ...	... XII-13 Cooly Barracks, working in V-12.
16th November 1910 ...	... X-2-17.
17th November 1910 ...	.. V-12-21.
23rd November 1910 ...	... IV-8-17.

This drive was done too late to limit the spread of the infection, and infection was found to exist outside the circle. Some difficulty was experienced in recruiting coolies locally, and owing to the urgent necessity to drive the whole section of the town in which infection existed, it was decided to mobilise and call in the Pegu, Hanthawaddy and Paungdè staffs. Owing, however, to the fact that the Plague staff was not then directly under the Special Plague Medical Officer, and the Deputy Commissioner was absent at the time, considerable delay was experienced in obtaining the necessary funds and sanctions to move the men, and when these were obtained a number of the men recruited had deserted. As a result of this we were severely handicapped by insufficient staff at a time when every hour was precious.

The following table showing the number of men employed during the first few weeks of the drive makes this clear.

PROME TOWN—*contd.* (6) -

First plague death, 12th November 1910.

	No. of coolies employed.
16th to 19th November 1910	75
21st to 26th November 1910—	
21st and 22nd November 1910	196
23rd November 1910	205
24th November 1910	214
25th and 26th November 1910	303

From 24th to 26th November 1910 a further attempt was made to limit the infection by driving the whole section of the town in which the infection lay.

The following blocks were driven:—

T. S. V-1, 2, 5 (a part) ; 7 (a part) ; Market ; (part) *i.e.*, 9 & 10.

T. S. IV-3 (a part) ; 7, 8, 9 (a part) ; and 14 (a part).

Infection was found in the following blocks:—

IV-3 and V-5.

During this period the following human plague death occurred.

T. S. No.	Date.
V-12, 21	26th November 1910.

As Promé is a long and somewhat narrow town spread along the river, (*vide* map No. 1) another attempt was then made to limit the spread of infection by driving an area two blocks broad straight through the town beyond the edge of the infection, on the principle of the fire-lines used in forestry to limit forest fires.

The blocks driven were :—

VII-6.		VII-7
VII-5		VII-4
VI-11		VI-2
VI-10	VI-11	VI-12
VI-9	VI-16	VI-13
VI-8	VI-15	VI-14

This fire line it will be seen from the map cuts Promé in two, and at the time of driving it infection was limited to the northern half of the town with the exception of T. S. XII and XIII which were infected early. This fire line was a success ; and though infection afterwards became general and extremely severe in the northern part of the town, its spread into the southern part was arrested for some time, and time was gained in which we were able to drive the whole area to the south ; so that later when plague spread into the southern part of the town it was not severe. The following is seen from the plague figures in the various Trapping squares given below :—

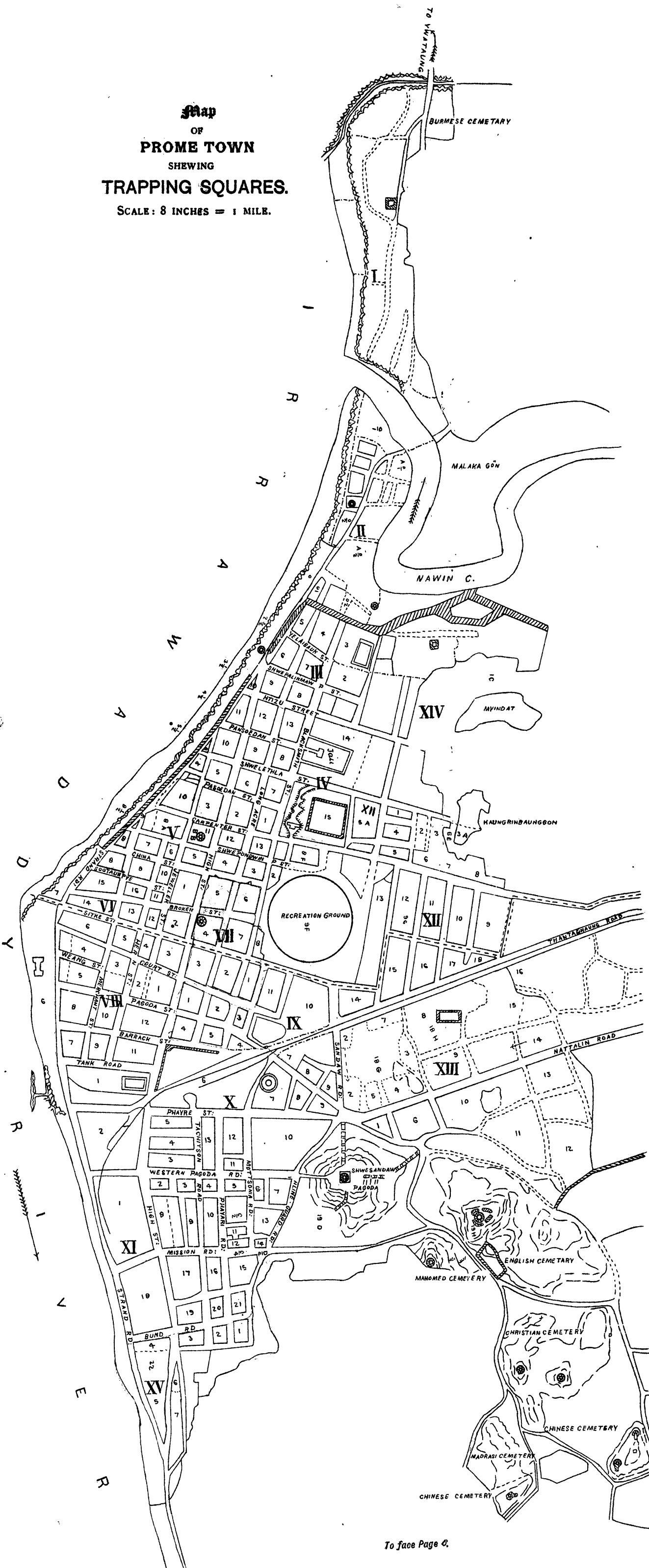
	Plague Deaths.
Trapping Squares, north of fire line ... {	T. S. II 26
	T. S. III 35
	T. S. IV 79
	T. S. V 29
	T. S. VI part 11
	T. S. VII part 23

FIRE LINE.

Trapping Squares, south of fire line ... {	T. S. VI part	12
	T. S. VII part	19
	T. S. VIII	17
	T. S. IX	27
	T. S. X	16
	T. S. XI	17
	T. S. XII	25
	T. S. XIII	64
	T. S. XIV	6
	T. S. XV	8

} Infected
early.

Map
OF
PROME TOWN
SHOWING
TRAPPING SQUARES.
SCALE: 8 INCHES = 1 MILE.



To face Page 6.

The driving of this fire-line was done between 2nd December 1910 and 8th December 1910 and the rats destroyed were as follows :—

Alive.	Old dead.	Recently dead.
1,355	45	15

After the completion of this fire-line the choice lay between driving the area to the north of the infection in the northern part of the town, or driving T. S. XII and XIII to which infection had been imported in the southern part. It was impossible to drive both efficiently with the staff we had available.

We decided to drive the area to the north of the fire-line as in this area during previous epidemics plague had been severe.

The northern part of the town was therefore driven and the whole area north of the fire-line was completed. Rat infection was found for a considerable distance north of the original infected area.

While this was being done plague was increasing in the infected area in T. S. XII and XIII in the southern part of the town. This therefore was then driven but not in time to prevent a severe epidemic and in T. S. XIII sixty-four deaths from plague occurred and 25 in T. S. XII, which are the highest figures recorded for these Trapping Squares. This however is not a true comparison owing to the amount of plague concealed during previous epidemics.

The whole of the southern half of the town was then driven.

While this was being done severe plague began in the northern part of the northern half of the town which had been previously driven, so half of the staff was sent to redrive this area and T. S. III-3, 4, 5, 6, 7, 8, 9 and 10.

T. S. IV-13, 12, 8, 9, 7, 6, 5, 1, 2 and 3.

T. S. VI-3.

T. S. V. Bazaar and blocks 4, 5, 12, 13, 3, 2 and 1 were redriven.

This driving and redriving was completed by January 11th, 1911, and as it was considered that there were not sufficient rats left for severe plague to continue long, and as the staff was required for other infected towns in the division, the Pegu, Hanthawaddy and Paungde staffs were sent away, and the Promé staff was left to drive any areas where it was considered that good could be done.

The Promé staff continued driving till April 1911.

Average numbers of drive coolies employed during each week of the drive :—

16th to 19th November 1910	...	...	75
20th to 26th November 1910	...	...	236
27th November to 3rd December 1910	...	...	295
4th to 10th December 1910	...	...	381
11th to 17th December 1910	...	...	399
17th to 24th December 1910	...	...	450
27th to 31st December 1910	...	...	429
2nd to 7th January 1911	...	...	388

PRACTICAL LESSONS LEARNT FROM THE PROMÉ DRIVE.

1. It is impossible with a large staff of untrained coolies to reduce the rat population sufficiently to prevent plague no matter how carefully they are supervised.

Thus in this drive the whole area T. S. IV, V, VI, VII, VIII and IX was driven before Human plague began and while rat infection was only just beginning. If the work had been efficiently done, this area should have been comparatively free of plague. There was however an extremely severe epidemic in the area and on redriving a large number of rats were obtained and rat infection was found to have spread all over the area.

This however was not the only reason for this failure. This matter is discussed further on page 107.

A further proof of this was obtained by the fact that the average number of rats obtained per house was much higher during the latter part of the drive than at the beginning.

During the first week the men employed were all trained men and the rat figure was high, later when the untrained men were in the majority the rat figure fell and only rose again when these men were trained.

Date.	Houses.	Rats caught.		Rats per house.	
		Alive.	Dead.	Alive.	Dead.
16th to 20th November 1910	62	373	27	6'01	'43
20th to 26th November 1910	249	1,567	41	6'2	'16
27th to 30th November 1910	223	950	33	4'26	'14
1st to 3rd December 1910	271	1,291	30	4'76	'11
4th to 10th December 1910	585	2,974	118	5'08	'19
11th to 17th December 1910	898	5,722	97	6'35	'10

2. It is absolutely essential for success that the whole staff of the division should be under the entire control of the Special Plague Medical Officer, and that he should be able to move the men by wire without previously obtaining sanction from any one. It is also essential that the Special Plague Medical Officer should have control of sufficient funds to enable him to move the staff at a moment's notice, so that the absence on tour of Deputy Commissioners or others may not cause delay.

Both these have now been accomplished by the New Divisional Scheme.

3. The value of the driving a broad fire-line through a town with a view to limiting the spread of infection was clearly seen. The fire-line in Promé arrested the spread of infection, and in the southern part of the town, with the exception of T. S. XII and XIII where plague was early imported and allowed to run its course, severe epidemic plague did not occur, while in the northern part it was extremely severe.

PLAGUE SEASON, 1911-12.

PLAGUE FOCUS NO. I.

23rd May 1911.—Human plague death (No. 1) in T. S. XIV-15-3. This was imported from Rangoon and did not cause infection.

PLAGUE FOCUS II. T.S. IX, X AND XI.

18th June 1911.—Human plague death (No. 2) in T. S. X-5-1.

DRIVE.

27th and 28th June 1911.

Area driven.—T.S. X Block 5 and 3 houses in T.S. X Block 13.
Number of coolies employed, 30.

Result :—

	No. driven.	Rats.		Old dead.
		Alive.	Fresh dead.	
Houses	28	32	0	1

11th July 1911.—Death No. 5 in T.S. X-8-16.

14th July 1911.—Death No. 6 in T.S. X-7-24.

16th July 1911.—Death No. 7 in T.S. IX-2-10.

DRIVE.

17th to 27th July 1911.

Result :—

Area driven.	Date.	No. of houses driven.	Rats.		
			Alive.	Fresh dead.	Old dead.
T.S. IX except blocks 10 and 11	17th to 24th July 1911	122	335	3	2
T.S. X blocks 7, 8, 9	24th to 27th July 1911	55	226	1	4

17th November 1911.—Death No. 8 in T.S. XI-9-18.

18th and 19th November 1911.—T.S. XI-9 was driven and rat infection found.

22nd November 1911.—Death No. 9 in T.S. XI-16-10.

A general drive in the area began on 22nd November 1911 and continued till 2nd December 1911.

Number of coolies employed,

18th and 19th November 1911 30

20th November to 2nd December 1911 200

Result :—

Area driven.	Date.	Number of houses driven.	Rats.		
			Alive.	Fresh dead.	Old dead.
T. S. XI	18th November 1911 to 2nd December 1911.	281	876	24	55
Small market	19th November 1911.	...	178	.....	2
T. S. X—blocks 3, 4, 5, 9, 10, 11, 12 and 13.	29th and 30th November 1911.	141	468	...	6
T. S. X-5—Street stalls. *	2nd December 1911.	.....	36	.....	.....
	Totals ...	422 houses, small market and 5 stalls.	1,558	24	63

During the drive the following deaths occurred :—

24th November 1911. Death No. 10 in T. S. XI—16—10.

26th November 1911. Death No. 11 in T. S. XI—9—15.

27th November 1911. Death No. 12 in T. S. XI—9—15.

Case No. 12 was removed to Thabaung a suburb of Promé. On 27th November 1911, thirty coolies drove ten houses in Thabaung, and obtained fifteen live rats.

Deaths after the drive.

Serial Number.	T. S. Number of house.	Date of death.
14	11-10-21	7th December 1911.
15	11-10-35	16th December 1911.
16	11-10-26	17th December 1911.
17	11-2-7	22nd December 1911.
18	11-10-9	25th December 1911.

As plague still continued in the area the whole area was re-driven and some adjacent blocks were also driven from 27th December 1911 to 4th January 1912.

Number of coolies employed, 195.

Result :—

Redrive of area previously driven from 22nd November 1911 to 2nd December 1911.

Area driven.	Date.	Number of houses driven.	Rats.		
			Alive.	Fresh dead.	Old dead.
T. S. XI ...	30th December 1911 to 4th January 1912.	269	189	4	13
Small market ...	30th December 1911.	.....	4	.....	1
T. S. X blocks 3, 4, 5, 6, 10, 11, 12 & 13.	27th to 30th December 1911.	140	145	2	2
T. S. X—5, Street stalls.	29th December 1911.	... ..	19	.....	.....
Totals ...		409 houses, small market, street stalls.	357	6	16

Infection was found in T. S. XI-5 and 8 and T. S. X-4 and 13.

It is interesting to note that in the first drive in this area 3·9 rats were obtained per house, while in the re-drive one month later only 0·9 rats per house were got.

Drive of New Area.

Area driven.	Date.	Number of houses driven.	Rats.		
			Alive.	Fresh dead.	Old dead.
T. S. X blocks 1, 2, 6, 7 & 8.	29th December 1911 to 1st January 1912.	65	284	.....	7
Railway station stalls.	28th December 1911.	.....	55	.....	1
T. S. XV blocks 1, 2, 3, 16, 17, 18 and 19.	3rd and 4th January 1912.	66	145	2	3
	Totals	131 and Railway Stalls.	484	2	11

Infection was found in a live rat in T. S. X-2-6 and 7.

8th January 1912.—A human death occurred in T. S. IX-1-18-21.

From 11th to 17th January 1912 and on 1st February 1912 a redrive of T. S. IX was done with the following result.

Number of houses driven.	Rats.		
	Live.	Fresh dead.	Old dead.
149	1,110.	5	10

Rat infection was found in T. S. IX-6.

The following deaths then occurred in this area :—

Serial No.	Date.	Trapping Square number.
19	27th December 1911	... XI-10-16.
21	5th January 1912	... XI-8-13.
22	6th January 1912	... XI-12-12.
23	8th January 1912	... IX-1-18-21.
24	8th January 1912	... X-4-15.
26	18th January 1912	... XI-8-13.
29	18th January 1912	... XI-9-6.
30	19th January 1912	... X-5-19 to 24.
31	20th January 1912	... X-11-11.
37	24th January 1912	... X-5-19 to 24.
38	25th January 1912	... X-5-31.
39	25th January 1912	... X-2-6 and 7.
40	27th January 1912	... XI-6-6.
41	27th January 1912	... X-5-26.
46	7th February 1912	... X-5-33.
47	14th February 1912	... X-13-8.

Statement of Deaths and Drives in the area T. S. IX, X, XI, for all blocks in which Human Plague occurred.

FOCUS No. II.

Block Number.	Serial No. of death.	Date of deaths.	Dates of drives.	Rats.			No. of houses driven.	Bacillus Pestis found in rats.
				Alive.	Fresh dead.	Old dead.		
T. S. X-5	9	27th June 1911	27th, 28th June 1911	26	...	1	24	
	30	10th January 1912		...	...	...	...	
	32	24th January 1912		...	...	...	...	
	38	25th January 1912		135	...	3	24	
	41	27th January 1912		55	...	1	24	
T. S. X-7	46	7th February 1912	25th, 27th July 1911	...	...	...	...	
	4	8th July 1911		...	...	...	...	
	6	14th July 1911		117	1	...	22	
T. S. X-8	5	11th July 1911	25th June 1911	...	...	...	17	Bacillus Pestis in live rat.
T. S. X-4	24	8th January 1912	30th November 1911	...	...	...	28	
			29th, 30th December 1911	...	...	...	28	
T. S. X-11	31	20th January 1912	1st December 1911	...	...	1	13	Bacillus Pestis in one live bandicoot.
T. S. X-3	39	25th January 1912	29th December 1911	...	...	...	13	
			1st January 1912	...	...	3	13	
T. S. X-13	47	14th February 1912	30th November 1911	...	...	...	28	Bacillus Pestis in one live rat.
T. S. IX-2	7	16th July 1911	28th, 29th December 1911	...	...	...	27	
			19th, 20th July 1911	...	...	...	7	
T. S. IX-1	23	8th January 1912	17th, 18th July 1911	116	2	2	15	
			11th, 12th January 1912	...	...	...	15	
T. S. XI-9	8	17th November 1911	18th, 19th November 1911	...	...	...	...	Bacillus Pestis in one dead rat
	11	26th November 1911		...	...	...	...	
	12	27th November 1911		...	...	...	...	
	29	18th February 1912		97	3	10	23	
T. S. XI-96	10	22nd November 1911	22nd, 23rd November 1911	...	...	...	...	
	14	24th November 1911		...	...	...	...	
	15	7th December 1911		61	3	...	16	
	16	16th December 1911		15	...	...	16	
T. S. XI-10	13	17th December 1911	25th, 27th November 1911	...	...	...	...	Bacillus Pestis found in four dead rats.
	16	17th December 1911		...	...	...	...	
	18	25th December 1911		...	...	...	...	
	19	27th December 1911		63	12	1	35	
T. S. XI-3	17	22nd December 1911	27th December 1911 and 2nd January 1912	6	1	12	35	
				...	...	...	...	
T. S. XI-8	21	5th January 1912	28th November 1911	...	54	1	21	Bacillus Pestis found in one dead rat.
	26	11th January 1912	30th December 1911	...	...	0	1	
			23rd to 25th November 1911	...	120	2	5	
T. S. XI-6	40	27th January 1912	30th December 1911 and 1st January 1912	17	1	3	26	Bacillus Pestis in one dead rat.
			2nd February 1911	...	45	...	...	
T. S. XI-12	22	6th January 1912	1st January 1912	...	14	...	...	9
			1st December 1911	...	80	...	...	16
			2nd January 1912	...	20	...	...	14

PROME TOWN—contd.

(12)

PLAGUE FOCUS No. III.

8th July 1911.—Human Plague Death (No. 4) occurred in T. S. XIII-1—10. This case was moved when ill from T. S. X-7—18. Drive.

Area driven.	Date.	No. of houses driven.	Rats.		
			Alive.	Fresh dead.	Old dead.
T. S. XIII blocks 1, 6 and part of 2.	24th to 25th July 1911.	37	50	...	...

No infection was found in the rats and no plague occurred here subsequently.

PLAGUE FOCUS No. IV.

4th December 1911.—One death (No. 13) occurred in T. S. XIII-1—40. Three Houses in T. S. XIII-11 and one house in T. S. VII-5—4 where deceased was working were driven. Eight rats were caught and no rat infection was found. So this case must have been imported from some other area.

PLAGUE FOCUS No. V.

29th December 1911.—One death (No. 20) occurred in T. S. XIV-9—18. Ten houses were driven and 14 live rats obtained in which no plague infection was found and no subsequent plague occurred. So this case must have been imported from some other area.

PLAGUE FOCUS No. VI.

6th July 1911.—Human Plague. Death (No. 3) in T. S. V-4—5.

7th July 1911 to 29th July 1911.—Drive.

Area driven. T. S. V and large Market, T. S. VI blocks 1 and 10.

T. S. VII blocks 5 and 6.

Number of coolies employed

From 7th July 1911 to 10th July 1911	...	60
From 11th July 1911 to 18th July 1911	...	90
From 19th July 1911 to 25th July 1911	...	110
From 25th July 1911 to 29th July 1911	...	110

Result—

Date.	Area driven	Houses driven.	Rats.		
			Alive.	Fresh dead.	Old dead.
7th to 29th July 1911 ..	T. S. V. ...	124	464	21	11
17th to 26th July 1911	Large market ...	Whole ...	940	11	12
12th and 13th July 1911	T. S. VI-1 and 10 ...	32	70	3	3
9th to 14th July 1911	T. S. VII-5 and 6 ...	50	52	...	4
-	Total ..	206 and Market	1,526	35	30

The large market was re-driven on 5th and 6th January 1912 with 300 men.

Result—

—	Rats.		
	Alive.	Fresh dead.	Old dead.
-	782	...	17

PROME TOWN—*contd.* (14)

Five hundred of these 782 rats were examined bacteriologically, but no *Bacillus Pestis* was found.

19th December 1911.—A dead rat was found in T. S. VI-1—23, and *Bacillus Pestis* was found in spleen smears.

20th December 1911.—Six houses round T. S. VI-1—23 were searched and one live rat obtained which was not infected.

6th January 1912.—T. S. VI-1 was driven and heavy rat infection found. A systematic drive was then done in the area until 10th February 1912.

Number of coolies employed—

From 6th to 14th January 1912	...	300
From 15th to 20th January 1912	...	200
From 21st January 1912 to 3rd February 1912	...	300
From 4th February 1912 to 6th February 1912	...	200
From 7th February 1912 to 10th February 1912	...	100

The area driven was—

T. S. III except Blocks 3 and 4.
T. S. IV, V, VI, VII, VIII except Block 6.

Result—

Houses driven.	Rats.		
	Alive.	Fresh dead.	Old dead.
1,043	4,578	80	136

The following blocks were infected—

T. S. IV Blocks 7 and 12.
T. S. V Blocks 4, 5 and 6.
T. S. VI Blocks 1, 2, 6, 10 and 15
T. S. VII Block 3.
T. S. VIII Blocks 1, 7, 11 and 12.

T. S. VIII-1 and 12 were re-driven on 12th and 13th March 1912 with 100 men with the following result:—

—	Houses driven.	Rats.		
		Alive.	Fresh dead.	Old dead.
T. S. VIII-1 ...	12	65	3	...
T. S. VIII-12 ...	26	10	1	...

Plague deaths in this area—

Number.	Date.	Trapping squares.
27	12th January 1912	VI-1—5.
28	13th January 1912	VI-6—20.
29	21st January 1912	VI-1—8 to 12.
33	21st January 1912	VI-1—36 and 37.
34	21st January 1912	VI-1—30 and 37.
35	21st January 1912	VI-1—36 and 37.
42	20th January 1912	VI-1—5.
43	4th February 1912	III-8—10.
44	5th February 1912	VI-6—9.
45	6th February 1912	VI-1—32.
48	22nd February 1912	VI-9—1.
49	20th February 1912	VIII-12—25.
50	20th February 1912	VIII-1—13 and 44.
51	1st March 1912	VIII-1—13 and 44.
52	17th March 1912	VII-3—8 and 10.

Statement of deaths and drives in the area T. S. III, IV, V, VI, VII, VIII, for all blocks in which Human Plague occurred.

Block Number.	Serial No. of death.	Date of death.	Dates of drives.	Rats.			Number of houses driven.	Bacillus Pestis found in rats.
				Alive.	Fresh dead.	Old dead.		
T. S. III-8	45	4th February 1912	7th February 1912	25	...	1	16	Bacillus Pestis in one live rat.
T. S. IV-13	36	21st January 1912	6th and 7th February 1912	79	...	8	17	
T. S. V-4	3	6th July 1911	8th January 1912	102	1	3	13	
T. S. VI-1	27	12th January 1912	6th January 1912	34	5	5	24	Bacillus Pestis in two dead rats.
	32	21st January 1912						
	33	21st January 1912						
	34	21st January 1912						
	35	21st January 1912						
T. S. VI-6	44	5th February 1912	26th and 27th January 1912	71	17	24	23	Bacillus Pestis in two dead rats.
	45	6th February 1912						
	48	23rd February 1912						
T. S. VI-9	52	17th February 1912	9th to 12th January 1912	126	1	1	21	Bacillus Pestis in one dead rat and one live rat.
T. S. VII-3	50	29th February 1912	22nd to 24th January 1912	289	5	6	19	Bacillus Pestis in two dead rats.
T. S. VIII-1	51	1st March 1912	12th March 1912	65	3	...	12	Bacillus Pestis in one dead and two live rats.
T. S. VIII-12	49	29th February 1912	22nd and 23rd January 1912	124	1	3	28	
			12th and 13th March 1912	10	1	...	26	

(15)

PROME TOWN—contd.

The following cases were imported :—

Serial Number.	Date of death.	T. S. Number.	Where imported from	Whether infection caused or not.
1	23rd May 1911	XIV—15-3	Rangoon	No
25	9th January 1912	XII—15	Thbgan	No
36	21st January 1912	IV—13-16	Bassein	No

Case No. 53 occurred on 18th February 1912, in a *Kyaung* which was not driven.

The Plague work in Promé during this season was considerably hampered by a severe small-pox epidemic, there being 740 seizures during the season while many more were concealed.

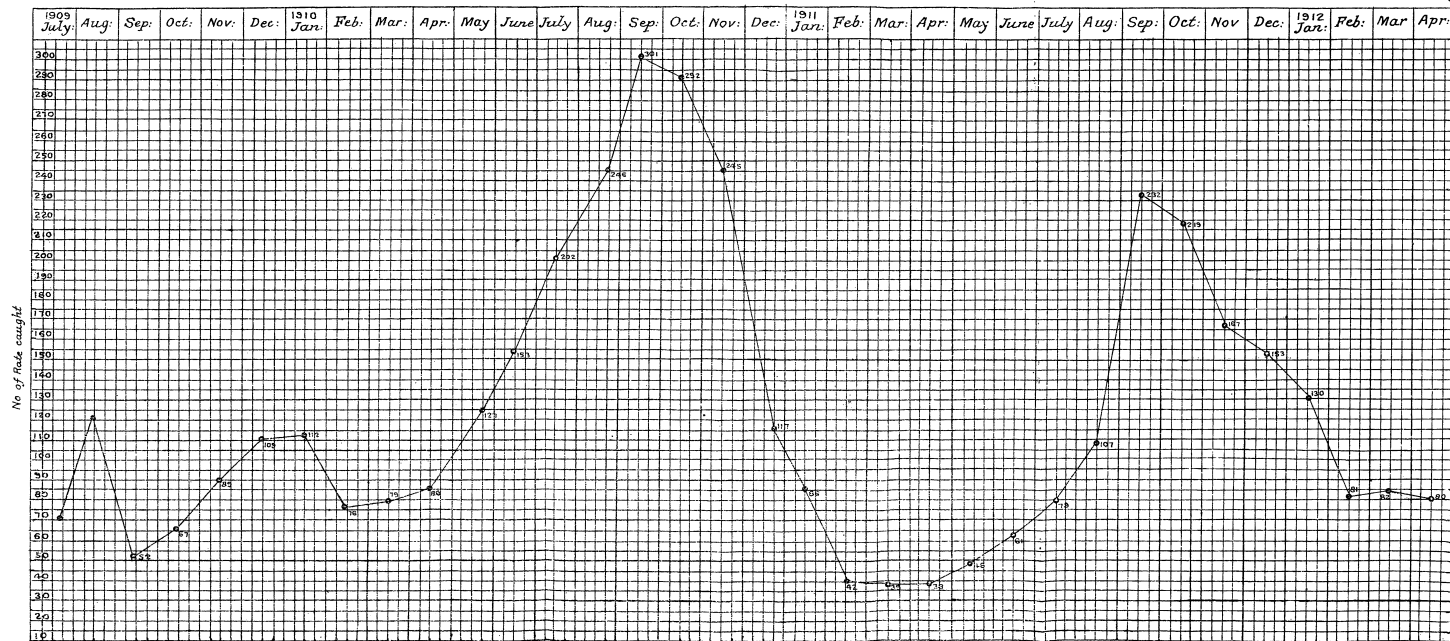
Statement of rats caught by Trapping from 1909 to 1912.

Months.	1909-10.	1910-11.	1911-12.	Remarks.
May ...	...	1,289	617	
June ...	...	2,149	780	
July ...	212	2,829	1,015	
August ...	710	3,448	1,334	
September ...	402	1,224	3,509	
October ...	777	4,059	4,201	
November ...	1,106	2,417	3,222	
December ...	1,234	1,600	2,947	
January ...	1,419	1,207	2,506	
February ...	996	586	1,538	
March ...	1,105	503	1,573	
April ...	1,212	488	1,535	
Total ...	9,173	26,299	24,807	

The average number of traps in use has been as follows :—

July 1909 to December 1909	...	917
January 1909 to September 1911	...	1,372
October 1911 to May 1912	...	1,916

CHART SHOWING NUMBER OF RATS CAUGHT IN PROME TOWN PER 100 TRAPS FROM JULY 1909 TO APRIL 1912.



G. B. C. P. O. - No. 8, C. P. D., 21-5-1912. 207. L. M.

To face Page 16.

Average number of rats obtained by drive and trapping per 100 houses driven and trapped.

Average number of human plague deaths per 100 houses trapped (i.e., whole area dealt with).

Trapping Squares.	Seasons.	Human Plague.	Live Rats.		Dead Rats.		No. of houses driven.	No. of houses trapped.
			Trapping.	Driving.	Trapping.	Driving.		
T.S.II	1909-10 ...	376	20135	26069	...	586	239	239
	1910-11 ...	1040	41840	61920	...	1880	250	250
	1911-12 ...	...	44096	...	...	...	...	247
T.S.III	1909-10 ...	1531	15576	11106	...	645	217	217
	1910-11 ...	1628	66674	44419	...	1302	215	215
	1911-12 ...	47	36197	11865	...	671	134	213
T.S.IV	1909-10 ...	2155	30318	11591	...	6781	283	283
	1910-11 ...	2772	1,08035	1,35949	...	12406	266	285
	1911-12 ...	36	99275	47897	...	1513	271	276
T.S.V	1909-10 ...	2133	24966	32733	...	22266	150	150
	1910-11 ...	1908	189737	2,08461	...	20769	130	152
	1911-12 ...	68	2,21689	4,13852	...	9679	135	148
T.S.VI	1909-10 ...	2222	43248	6140	...	4251	228	234
	1910-11 ...	1009	1,28509	60088	...	6535	228	228
	1911-12 ...	452	1,16832	45391	...	3447	206	221
T.S.VII	1909-10 ...	3737	27626	2602	...	3776	196	198
	1910-11 ...	2176	1,06984	81477	...	2614	176	193
	1911-12 ...	56	28666	4755	...	982	103	186
T.S.VIII	1909-10 ...	1684	38724	8010	...	2959	196	196
	1910-11 ...	885	1,33777	65128	...	1212	138	122
	1911-12 ...	152	1,11269	49247	...	1882	186	197
T.S.IX	1909-10 ...	1859	48651	8782	...	2436	156	156
	1910-11 ...	1799	1,33728	1,19240	...	1050	158	155
	1910-11 ...	125	89874	92222	...	1282	156	159
T.S.X	1909-10 ...	2018	22330	7265	...	812	224	234
	1910-11 ...	678	69304	24680	...	2255	235	236
	1911-12 ...	551	64110	59953	...	1137	211	236
T.S.XI	1909-10 ...	570	15872	11778	...	1409	298	298
	1910-11 ...	569	61338	66610	...	1254	295	299
	1911-12 ...	539	59025	43001	...	3462	280	297
T.S.XII	1909-10 ...	559	33676	46755	...	2471	340	340
	1910-11 ...	735	40118	49205	...	362	340	340
	1911-12 ...	58	67947	...	...	...	...	344
T.S.XIII	1909-10 ...	637	10245	66520	...	3873	408	408
	1910-11 ...	1580	44889	89102	...	4693	401	405
	1911-12 ...	24	51538	13750	...	...	40	415
T.S.XIV	1909-10 ...	158	10367	22688	...	107	253	253
	1910-11 ...	236	31180	22047	...	906	254	254
	1911-12 ...	82	39347	14000	...	...	10	245
T.S.XV	1909-10 ...	Not known	10913	10776	...	...	219	219
	1910-11 ...	339	44536	38117	...	673	223	223
	1911-12 ...	...	49192	21970	...	757	66	203

(*Building Improvement.*)

During the Plague Season 1910-11 the rebuilding was under the control of R. S. Baker, Esq., Public Works Department, who by the great keenness and tact he displayed in the work soon gained the confidence of the people and a house building boom began in Promé.

A further grant of Rs. 50,000 was given by Government towards the rebuilding. With this money Mr. Baker erected model sanitary cottages for those people whose houses were dangerous from a plague point of view but who were unable to afford to rebuild them themselves. Those who were able to rebuild for themselves he assisted with his advice and suggestions. Numbers of private owners, without any suggestion from us, as soon as they realised the advantages and comfort of the sanitary houses being built by Mr. Baker, pulled down their old houses and rebuilt them on the new lines. All the work done was closely supervised by Mr. Baker.

It was extremely interesting to notice how the erection of a model cottage in a block of old insanitary buildings would stimulate three or four of the neighbours to build similar houses each a little higher or a little better than the last.

Mr. Baker's work in Promé has been of immense value. He has shewn the people how to build sanitary houses, and how to build them well and cheaply, and if proper supervision is exercised over rebuilding in the future, it is merely a question of time for the old insanitary houses to disappear entirely from the town.

Mr. Baker was ably assisted in the work by Assistant Surgeon P. A. Scanlon to whom also great credit is due for the success of the work.

List showing building improvements completed up to April 30th, 1912.

Trapping squares.	No. of blocks.	Total number of houses in T. S. in 1909-10.	Number newly built or rebuilt		Number of complete pukka floor.	Number of partial pukka floor.	Number of complete pukka floor and general repairs.	Number of partial pukka floor and general repairs.	Number of houses in which new pukka floor, roof and general repairs have been done.		Houses in which a new roof has been put on.	New roof and general repairs.	General repairs.	Roof and pukka floor.	Number demolished not yet rebuilt.
			With pukka floor.	Without pukka floor.					Whole Plinth.	Partial Plinth.					
II ...	19	239	1	12	...	...	...	...	...	...	...	2	...	...	13
III ...	10	217	6	1	5	...	...	...	...	...	1	...	27	...	6
IV ...	15	283	26	19	17	5	10	6	4	...	3	3	1	3	9
V ...	13	150	9	12	22	11	8	6	3	1	4	1	1	...	3
VI ...	16	234	20	12	8	1	22	...	4	...	1	1	...	1	9
VII ...	8	198	17	25	5	...	33	...	3	...	...	1	1	1	6
VIII ...	12	196	10	5	5	22	...	...	4	...	...	5	6	...	10
IX ...	11	156	11	3	8	...	31	...	1	...	...	3	2	...	5
X ...	23	234	4	10	2	...	5	...	1	...	1	6	...	1	4
XI ...	21	298	3	8	...	...	4	...	...	...	1	3	...	...	3
XII ...	19	340	5	0	1	...	1	...	...	...	...	...	...	1	1
XIII ...	16	408	10	11	...	...	5	...	...	...	...	...	38	...	0
XIV ...	19	253	...	1	...	...	...	...	...	...	...	...	...	...	3
XV ...	20	219	...	4	...	...	...	...	...	...	...	1	...	...	21
Total	14	212	3,425	122	123	73	39	119	12	20	1	11	26	77	93

(19)

PROME TOWN—contd.

It will be seen from the figures that out of a total of 3,425 houses in the area 629 have been rebuilt or repaired and 93 have been demolished and not built. That is to say that one-fifth of the total houses in the area have been dealt with. The greater part of the work has been done in the central and congested part of the town. In these trapping squares the following proportion of the total houses have been dealt with:—

Trapping Square IV	...	...	...	3
Trapping Square V	...	...	...	3
Trapping Square VI	...	...	...	3
Trapping Square VII	...	...	...	3
Trapping Square VIII	...	...	...	3

The lines on which these improvements have been carried out are as follows:—

- (1) All pukka floors to be of sound brick or cement, and the whole area of the floor to be surrounded by a 'curtain wall' extending 2 feet below ground to exclude burrowing rats.
- (2) No wooden wall frames, lintels, walls, or beams, to be embedded in masonry floors.
- (3) All corners of wooden houses to be so built as to afford no shelter to rats.
- (4) All ceilings to be of standard rat free pattern.
- (5) Sufficient light and ventilation.
- (6) Proper drains.
- (7) Proper cook-houses and pukka bathing places.
- (8) A 3 feet space to be left (between his house and his boundary on each side) by every house owner rebuilding his house.
- (9) That the building bye-laws as regards height of floor, size of rooms, and all other details necessary to proper construction should be observed.
- (10) The prevention of building all over the site area, ⅓rd of site area to be left unbuilt on if possible.
- (11) Sufficient latrines.

LODGING HOUSES.

The following was the state of the lodging houses in April 1911 when they were inspected for the granting of licenses for the year.

Serial No.	Condition of Lodging Houses.	Number.
1	Repaired and passed as fit	80
2	Condemned under section 125, Municipal Act	3
3	Occupied by owners	29
4	Empty	7
5	Work done awaiting inspection	8
6	Dismantled	2
7	Ceased to be used as a lodging house	10
8	Under repair or construction	4
9	Occupied by Burmans only	20
10	Exempted	12
11	Condemned under section 130, Municipal Act	3
12	Unlicensed unoccupied	20
* Total		198

It is extremely regrettable that the bye-laws preventing overcrowding in Lodging Houses have not been enforced by the Municipality and the good done

by improving the houses has been partly neutralised by the extreme overcrowding of many of them.

Among the many in Prôme who have helped the work by putting their own houses in order and inducing others to do the same it is invidious to make distinctions. The public spirit however displayed by Maung San Pe a member of the Municipal Committee is worthy of special notice. He is the owner of one of the Paddy Mills in the town and has spent some Rs. 10,000 in rendering his godowns and mill impermeable to rats and making all the houses and coolie quarters on his property sanitary. His mill is now practically free from rats and is shown as a model to all.

The following is the statement of the work done in the mills.

Name of Mill.	Mill.	Godowns.	Out-houses	Remarks.
Chetty, C.R.M.M.	Standard plinth to the mill. 2. Pucca passages between the godowns in the mill. 3. Pucca floor to the verandah west of the mill.		Three new pucca cooking places and general repairs done to coolie barrack. One new cow shed with pucca floor, general repairs and pucca floor to store rooms and carpenters' room.	Total approximate cost Rs. 4,600.
Myawaddy ...	New inner plinth put in. Another plinth repaired.	Standard plinths to two godowns.	Old coolie barrack dismantled and new one is under construction.	Total approximate cost Rs. 2,355.
Zeyawaddy, Maung San Pe's mill.	1. Standard plinth all round the mill. 2. Floor cemented except the husk godowns.	1. Cement floor and general repairs to the old godowns. 2. A new godown with plinth and pucca floor.	Standard plinth to coolie barrack. Pucca floor and general repairs.	Total approximate cost Rs. 10,000.

The following work has been done in the Municipal markets:—

(1) *Main Market*.—The walls and floor of the whole market have been thoroughly repaired, and there is not at present a rat hole in the market.

In the Cloth Market all the almirahs have been raised on legs one foot above the ground. The total cost was Rs. 2,148.

(2) *Singsu Market*.—Plinth curtain walls two feet below ground have been built round the whole market, the stalls have been repaired and the passages made pucca. The total cost was Rs. 1,174.

THEGON.

Census 1901	...	...	1,576
Census 1911	...	...	2,366

The area dealt with in Thègon contains 228 houses, 1 market, 44 paddy godowns, 3 paddy mills.

This area is contained in one Trapping Square.

Outside this area there are three houses.

No trapping was done in the town.

PLAGUE SEASON, 1910-11.

For a description of the work up to August 30th, 1910, see pages 55, 56 and 57 of the report on plague driving in the Pegu Division. Plague Season 1909-10 published in 1911.

The following is a continuation of the above report.

DIARY OF WORK DONE.

6th November 1910. } Three human plague cases occurred in the same
9th November 1910. } house T. S. I., block VII, house 14.
22nd November 1910. }

9th and 10th November 1910, block VII and the market were redriven, and
23 live and 6 dead rats obtained.

Plague cases in the block have therefore occurred on the following dates :—

First case 3rd October 1910.

Second case 6th November 1910.

Third case 9th November 1910.

Fourth case 22nd November 1910.

There are 25 houses in the block.

The following are the drives which have been done in the block :—

Date.	Rats.	
	Alive.	Dead.
29th July 1910	102	3
7th and 9th October 1910	3	...
9th and 10th November 1910	16	6
29th February 1911	52	24

In February 1911 plague broke out again and human plague deaths occurred as follows :—

6th February 1911, T.S. I Block V, House 6.

13th February 1911, T.S. I Block VIII, House 24.

21st February 1911, T.S. I Block V, House 2.

21st February 1911, T.S. I Block IV, House 15.

23rd February 1911, T.S. I Block V, House 2.

23rd February 1911, T.S. I Block V, House 2.

24th February 1911, T.S. I Block IV, House 15.

23rd February to 4th March 1911 :—*Drive.*

Area driven.—Whole town.

Number of coolies employed, 96.

Result :—

	Number driven.	Rats.	
		Alive.	Dead.
Market	1	3	1
Houses	228	805	85
Godowns	44	155	5
Paddy Mills	3	32	...
Total	...	995	91

No further human cases occurred since during this season.

PLAGUE SEASON, 1911-12.

18th December 1911 } Three human plague deaths occurred in Block
 20th December 1911 } 11, house 11 (Railway Station).
 21st December 1911 }

21st December 1911 to 4th January 1912.

Drive.

Number of coolies employed, 100.

Area driven.—T. S. 1, block 11, 1, 5, 9, 4, 3, 7, 10 and market.

Result :—

	Number driven.	Rats.	
		Alive.	Dead.
Houses	129	900	33
Godowns	21	67	1
Mills	1	...	1
Market	1	47	6

Number of houses driven in each block, first drive :—

Block Number.	Number of houses in block.	Number of houses driven.
1	27	12
2	14	...
3	18	15
4	12	11
5	15	14
6	Market.	Market.
7	24	24
8	29	...
9	65	44
10	24	4
11	52	27
	281	152

Between January 5th and February 25th, 1912 21 Human plague deaths occurred in the following blocks :—

Trapping Square 1 Block 4 Deaths 6

" " " 5 " 4
 " " " 9 " 2
 " " " 11 " 2
 " " " 7 " 2
 " " " 10 " 4
 " " " 8 " 1

26th February to 8th March 1912.

Drive.—Number of coolies employed, 100.

Area driven.—The whole town, i.e., blocks 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 and 13.

Result :—

	Number driven.	Rat s	
		Alive.	Dend.
Houses	277	1,107	180
Godowns	27	36	24
Market	1	...	4

From 27th February to 13th March 1912.—Five Human plague deaths occurred in the following blocks :—

Block 12	2 deaths
Outside the town	1 death
Block 8	1 "
Block 2	1 "

Number of houses driven in each Block—second drive.

Block No.	Number of houses in block.	Number of houses driven.	Remarks.
1	27	12	
2	11	5	
3	13	9	
4	12	7	
5	15	15	
6	Market.	Market.	
7	24	23	
8	28	21	
9	66	57	
10	24	17	
11	52	29	
12	26	26	
13	83	83	
	382	305	

The first drive did not cover a sufficiently large area and was not efficiently done. This was due to the fact that at the time there was only one Assistant Plague Medical Officer trained in drive work in the whole division, and plague was just beginning in Promé.

The second drive was not done with a view of stopping the plague, but with a view of lessening if possible the number of plague fleas available for export into Paungdè which is close to Thègon.

It is interesting to note the severity of the plague in this town in which we failed to stop the epidemic, as it shows that the low death rate in other towns near was not due to it being a mild plague season.

The deaths from all causes for Thègon for the different plague seasons are given on page 139.

A statement of infected blocks and the subsequent plague is not given as in other towns, as only portions of blocks were driven during the first drive and this drive cannot therefore be taken as a test of drive results.

PAUNGDE.

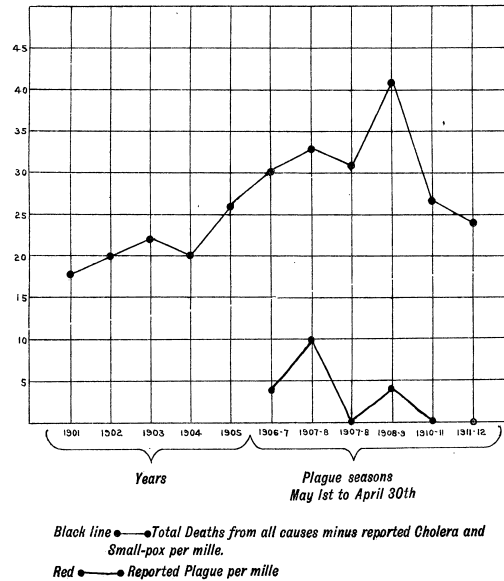
Census, 1901	11,105
Census, 1911	12,104

The area dealt with in Paungdè contained in 1910 the following :—

Houses, 921.	Paddy godowns, 65.
Market, 1	Paddy mills, 3.

CHART No. 5

PAUNGDE



To face Page 24.

This area is divided into 3 Trapping Squares.

Outside this area there are 1,128 houses and 17 godowns.

These houses outside the area are Burman houses standing well apart, and extending for 2 miles along two of the roads leading out of Paungde.

PLAGUE SEASON, 1910-11.

One imported human case of plague occurred in Paungde in July 1910, but no rat plague occurred during the whole season.

From 1st May to 17th November 1910 a small staff of 30 coolies was kept up, and continuous driving of houses liable to harbour many rats was done.

Special attention was paid to *Nesokia Bengalensis* which was so numerous during the 1909-10 season. Men were employed to search for the burrows of this rat and whenever found the rats were destroyed by smoking and digging.

The following is the result of this work:—

	Number driven.	Rats.	
		Alive.	Dead.
Houses	861	2,083	...
Godowns	86	673	...
Market.	2	137	...

From 3rd January to 22nd February 1911 a general drive of the town was done.

Number of coolies employed—

January—300

February—100.

Result:—

	Number driven.	Rats.	
		Alive.	Dead.
Houses	924	2,519	35
Godowns	66	184	14
Market	2	115	...

N.B.—The dead rats were all old dried skeletons.

During the drive in January 1911 plague was imported amongst the plague coolies who came from Promé, but no deaths occurred and infection of the rats was prevented.

The main feature of the work during the plague season 1910-11 was the continuation by Captain Butterfield, I.A., Subdivisional Officer and Assistant Surgeon G. P. O'Brien, Assistant Plague Medical Officer of the work of rebuilding the central portion of the town. During the plague season 1911-12 a few more houses only were re-built.

PLAGUE SEASON, 1911-12.

4th October to 3rd November 1911.

A preventive drive.

Number of coolies employed, 100.

Area driven—

Trapping Square I Blocks 1, 2, 3, 4, 5 part, 6.

" " II " 1, 2, 3, 4, 5, 6, 7.

" " III " 1, 2.

Result—

	Number driven.	Rats.	
		Alive.	Dead.
Houses	351	3395	53
Godowns	30	240	1
Market	1	463	3
Mills	2	84	1
Total	384	4188	58

Recently dead rats were found in T.S. I-2 and 3, T.S. II-2 and T.S. III-1.

No microscopical examination was however done.

11th January 1912.—One human plague death in T.S. I-7-8.

15th January 1912.—One human plague death in T.S. I-8-77.

16th to 23rd January 1912.

DRIVE.

Area driven—

T.S. I Blocks 5, 7 and 8.

T.S. II " 6 (part) and 7 (part).

Number of coolies employed, 160.

Result—

	Number driven.	Rats.	
		Alive.	Dead.
Houses	157	936	26
Godowns	6	20	0
Total	163	956	26

Rat infection was found in T. S. I-7.

31st January 1912.—Human plague death in T.S. II-7-9A.

14th February 1912.—Human plague death in T.S. I-2-30.

15th February 1912.—Human plague death in T. S. I-2-30.

19th February to 14th March 1912.

DRIVE.

Area driven—

T. S. I, Blocks 1, 2, 3, 4.

T. S. II, Blocks 2, 3, 4, 5, 6 and 7.

T. S. III, Blocks 1, 4, 5, 6, 7, 8, 9, 10, 11 and 12.

Number of coolies employed,
 19th to 23rd February 1912—50.
 23rd to 29th February 1912—200.
 4th to 14th March 1912—100.

Result—

—	Number driven.	Rate.	
		Alive.	Dead.
Houses	443	1,043	69
Godowns	20	69	6
Markets	1	223	2
Total ..	464	2,335	77

Rat infection was found in—

T. S. I, Blocks 1 and 2.
 T. S. II, Blocks 4, 5, 6 and 7.
 T. S. III, Blocks 5, 6, 8 and 10.

2nd March 1912, Human plague death (a plague coolie, imported).
 5th March 1912, Human plague death in T. S. II-7-6.
 6th March 1912, Human plague death in a village 2 miles away.
 10th March 1912, Human plague death (a plague coolie, imported).

Statement of rats caught by trapping from 1909—12.

Number of Traps employed, 338.

Months.	Number of rats caught.		
	1909-10.	1910-11.	1911-12.
May	...	303	352
June	...	283	665
July	...	313	524
August	...	468	1,160
September	...	593	489
October	...	583	Not trapped.
November	3,575	566	338
December	1,546	597	288
January	435	109	113
February	300	311	261
March	230	346	69
April	168	207	86
Total	6,254	4,079	4,345

Average number of rats obtained by drive and trapping per 100 houses driven and trapped.

Average number of human plague deaths per 100 houses trapped (*i.e.*) whole area dealt with.

	1909-10.	1910-11.	1911-12. *
Number of houses driven	...	998	990
Number of houses trapped	...	998	1024

Plague seasons.	Human plague.	Live rats.		Dead rats.	
		Trapping.	Drive.	Trapping.	Drive.
1909-10	4'91	626.6	991.88	...	29.96
1910-11	0'10	472.63	566.26	...	4.95
1911-12	0'88	424.3	1088.65	...	23.44

REBUILDING.

Up to the end of the season 1911-12, the following work has been completed:—

Houses newly built or re-built with pukka masonry plinth and floor	...	28
Houses newly built or re-built without pukka floor	...	49
Houses in which a pukka plinth and floor were put in, and a new roof put on	...	21
Houses in which a pukka plinth and floor were put in and the house generally repaired	...	14
Houses rendered Sanitary by general repairs...	...	13
Total	...	125

Fifty-three of these houses are in the central congested area of the town which was delimited in 1910, and in which special efforts were made to improve the houses. This area contained in 1910 149 houses and 23 paddy godowns. There are now 142 houses and 19 godowns. This reduction in number is due to the fact that owing to the intense congestion of the houses, in several cases two houses were pulled down and only one rebuilt on the two sites; while several of the paddy godowns had to be removed for the same reason.

A grant of Rs. 10,000 was given by Government for the improvement of the market and really sound masonry stalls and floor were put in. The work was done under the personal supervision of R. S. Baker, Esq., Public Works Department, and Paungde market is now absolutely impermeable to burrowing rats and a model for other towns to copy.

Mills and Godowns.—The 3 mills as mentioned in the 1909-10 report have put in plinth curtain walls round all their godowns and made the passages and other parts of the mills pukka.

There were in Paungde in 1909 ninety-three paddy godowns with low wood floors or no floor at all.

At present there are 75 godowns in the following condition:—

With pukka floors and curtain walls extending 2 feet below ground	...	25
With paddy husk floors and similar curtain walls	...	29
Partially dismantled and not in use...	...	10
Nothing done	...	11

There are 12 other godowns outside the area dealt with, the condition of which is not known.

N.B.—Of the godowns in which nothing has been done 3 are not now used for the storage of grain.

Two hundred and fifty-one latrines of good pattern with 294 seats have been built in the town.

A grant of Rs. 10,000 was given by Government in April 1911 to drain the central part of the town. Up to date work has not been commenced.

NATTALIN.

Census, 1901	...	...	4,445
Census, 1911	...	...	3,428

The area dealt with in Nattalin contains the following:—

355 houses.
1 market.
54 paddy godowns.
3 paddy mills.

This area is contained in 2 trapping squares.
Outside this area there are 47 houses.

PLAGUE SEASON, 1910-11.

Diary of work done—

8th January 1911.—Human plague death occurred in T. S. 1, block 2. This death was concealed.

11th January 1911.—A human plague death occurred in the same house. This death was reported. —

DRIVE.

17th January 1911 to 24th January 1911.

Area driven.—T. S. 1, block 2 and 8 houses in block 3.

Number of coolies employed—30.

Result:—

—	Number driven.	Rats.	
		Alive.	Dead.
Houses	36	188	15

As plague infection was found 100 coolies were moved in and the following drive done from 24th January 1911 to 7th February 1911.

Area driven.—The whole town, i.e., both squares.

Result:—

	Number driven.	Rats.	
		Alive.	Dead.
Houses	319	1,041	16
Godowns	53	124	3
Market	1	41	31
Total	373	1,206	50

As heavy infection was found in the market on driving, the market was shut for fifteen days, and an open air market opened on the outskirts of the town.

Human Plague.—

24th February 1911.—One death in T. S. 1, block 6, house 4.

2nd March 1911 { One death in T. S. 1, block 9, house 6.
One death in T. S. 1, block 5, house 11.

Re-drive.—4th March 1911 to 11th March 1911.

Area driven.—T. S. 1, block 5 (9 houses), market excluded.

T. S. 1, block 6 (3 houses out of 8).

T. S. 1, block 9 (whole).

T. S. 1, block 1 (25 houses out of 65).

T. S. 1, block 2 (9 houses out of 28).

Number of coolies employed 50.

Result :—

	Number driven.	Rats.	
		Alive.	Dead.
Houses	63	61	7

Deaths during this drive—

1 on 5th March 1911, T. S. 1, block 2, house 12.

1 on 9th March 1911, T. S. 1, block 1, house 6.

After the drive—2 on 18th March 1911 in T. S. 1, block 3, house 10 and 11.

DRIVE.

25th March 1911 to 29th March 1911.

Area driven—

T. S. 1, block 3 (whole).

T. S. 2, block 5, 10 houses out of 30. (*N.B.*—1 suspicious death not returned as plague occurred in house 27 of this block on 22nd March 1911.)

Number of coolies employed—50.

Result.—

		Rats.	
		Alive.	Dead.
T. S. 1, block 3, 16 houses		5	12
T. S. 2, block 5, 10 houses		11	3
Total 26 houses		16	15

Dead rats were found in houses Nos. 10, 11, 8, 7, 6 and 2 of T. S. 1, block 3 and in house 27 of T. S. 2, block 5.

Statement of deaths and drives for all blocks in which Plague infection was found, 1910-11.

Block No.	Number of houses in block.	Date of drives and deaths.	Number of houses driven.	Result.	
				Rats.	
				Alive.	Dead.
T.S. 1, block 2.	28	<i>Drives—</i> 1. 8th January 1911. 2. 11th January 1911. <i>Drive—</i> 17th to 21st January 1911 <i>Death—</i> 5th March 1911. <i>Re-drive—</i> 11th March 1911.	28	153	14
T.S. 1, block 3.	16	<i>Drive—</i> 22nd to 24th January 1911 <i>Deaths—</i> 1. 18th March 1911. 2. 18th March 1911. <i>Re-drive—</i> 25th to 28th March 1911	16	76	5
T.S. 1, block 4.	36	<i>Drive—</i> 26th to 27th January 1911	36	205	1
T.S. 1, block 5.	9 houses and market.	<i>Drive—</i> 24th to 26th January 1911 <i>Death—</i> 2nd March 1911. <i>Re-drive—</i> 4th to 6th March 1911 '	9 houses and market.	77	33
T.S. 1, block 6.	8	<i>Drive—</i> 25th January 1911 <i>Death—</i> 24th February 1911. <i>Re-drive—</i> 8th March 1911	8	19	1
T.S. 1, block 9.	18	<i>Drive—</i> 30th January 1911 <i>Death—</i> 2nd March 1911. <i>Re-drive—</i> 9th March 1911.	18	81	3
T.S. 1, block 1.	65	<i>Drive—</i> 30th to 31st January 1911 <i>Death—</i> 9th March 1911. <i>Re-drive—</i> 10th March 1911	65	172	1
T.S. 2, block 5.	30	<i>Drive—</i> 4th February 1911 * Suspicious death, 22nd March 1911. <i>Re-drive—</i> 29th March 1911	30	133	3
T.S. 2, block 6.	22	<i>Drive—</i> 4th to 6th February 1911	22	62	8

* Not returned as plague.

PLAGUE SEASON, 1911-12.

Human deaths—1 death, 15th August 1911, T. S. 1, block 8, house 7.
 1 death, 23rd August 1911, T. S. 2, block 1, house 13.
 1 death, 25th August 1911, T. S. 2, block 2, house 22.
 1 death, 27th August 1911, T. S. 2, block 1, house 16.
 1 death, 28th August 1911, T. S. 2, block 1, house 14.
 1 death, 29th August 1911, T. S. 1, block 5, house 20.

DRIVE.

30th August to 5th September 1911.

Area driven—

T. S. 1, block 2, 5 houses out of 28, block 4, 4 houses out of 40.
 Block 5, market and 9 houses out of remaining 12.
 Block 8, 11 houses out of 13.
 T. S. 11, block 1, 27 houses out of 36, block 2, 29 houses out of 47.
 Number of coolies employed—200.

Result :—

	Number driven.	Rats.	
		Alive.	Dead.
Houses	80	372	15
Markets	1	20	...
Godowns	5	5	...

Human deaths—1. 6th November 1911, T. S. 1, block 2, house 20.
 2. 8th November 1911, T. S. 2, block 2, house 14.

DRIVE.

8th November 1911 to 8th December 1911.

Number of coolies employed :—

8th to 13th November 1911, 50 men.
 14th to 24th November 1911, 100 men.
 25th November to 5th December 1911, 50 men.
 6th to 8th December 1911, 250 men.

Area driven—

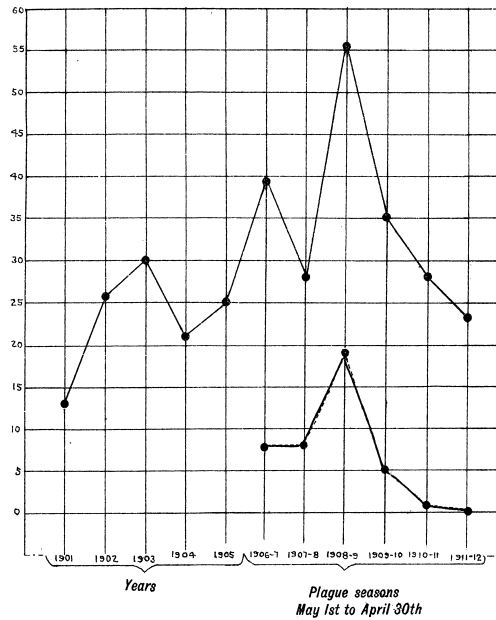
Whole town (except part of block 4, 3 Rice Mills and 36 Godowns) and 47 other houses not in Trapping square maps.

Result :—

	Number driven.	Rats.	
		Alive.	Dead.
Houses	416	2,186	87
Markets	Whole	36	1
Godowns	18	114	3

Human deaths—1. 2nd December 1911 during drive T. S. 1, block 11, house 8.
 2. 9th December 1911 after drive T. S. 2, block 1, house 6.

ZIGON



Black line —●— Total Deaths from all causes minus reported Cholera and Small-pox per mille.

Red line —●— Reported Plague per mille.

To face Page 34.

29th December 1910.—One human plague death on the Railway Station.

DRIVE.

7th to 9th January 1911.

Number of coolies employed—80.

Area driven.—Trapping Square III, Blocks 8 and 12.

Result.—

—	Number driven.	Rats.	
		Alive.	Dead.
Houses	17	47	7

17th January 1911.—One human plague death in Trapping Square III, Block 14, house 15.

18th January 1911.—One human plague death. The man was found dead by the Railway line. He was a coolie whose place of residence was not known. The rice and saw mills were suspected.

DRIVE.

21st to 24th January 1911.

Number of coolies employed—80.

Area driven—

The Rice Mill in Trapping Square I.

Trapping Square III, Block 1 (The Saw Mill).

Result.—

—	Number driven.	Rats.	
		Alive.	Dead.
The Rice Mill	Whole with cooly lines	245	35
The Saw Mill	Whole with cooly lines	229	5

28th January 1911.—Human Plague death in Trapping Square I, Block 12, house 10.

DRIVE.

30th January to 9th February 1911.

Number of coolies employed—100.

Area driven.—

The Market T.S. 1-1.

T.S. I, Blocks 2, 3, 4 (7 houses only), 8, 9, 10, 11, 12 and 13.

T.S. II, Block 11.

Result.—

—	Number driven.	Rats.	
		Alive.	Dead.
Houses	143	851	15
Market	Whole	59	11

ZIGON—*contd.*

(36)

HUMAN PLAGUE DEATHS.

20th February 1911, in the Rice Mill.
 21st February 1911, T. S. 2, block 17, house 15.
 4th March 1911, Railway Station.
 7th March 1911, T. S. 3, block 12, house 14.

DRIVE.

24th to 27th February 1911.
 Number of coolies employed—30.

Area driven—

T. S. II, block 17, houses 3.
 T. S. II, block 18, houses 5.
 T. S. II, block 16, houses 18 (Redriven).
 Rice Mill (redriven).

Result:—

—	Number driven.	Rats.	
		Alive.	Dead.
Houses	26	135	3
Rice Mill	Whole redriven ...	22	2

The following human deaths occurred in houses which had been previously driven, and if infected in these houses were infected by fleas from rats which died subsequently to the drive.

1. T. S. III. Block 8 (Railway Station).

Dates of deaths 18th January 1911 and 4th March 1911.

Date of Drive and Results.

Date.	Rats.	
	Alive.	Dead.
7th January 1911	26	1

2. Rice Mill.—

Date of death,—20th February 1911.

Dates of drives and results.

Date.	Rats.	
	Alive.	Dead.
21st January 1911	245	35
27th February 1911	22	2

3. T. S. II, block 17.

Date of death,—21st February 1911.

Dates of Drives and Results.

Houses driven.	Date.	Rats.	
		Alive.	Dead.
6 out of a total of 15 houses in the block.			
Houses Nos. 1, 2, 3, 4, 5, 6 ...	26th November 1910	54	
3 out of a total of 15 houses in the block.			
Houses Nos. 13, 14, 15 ...	24th February 1911	12	...

N.B.—This block was driven on 26th November 1910 because *Bacillus Pesticus* had been found in rats in Block 9 across the road. So the case was possibly infected in Block 9.

4. T. S. 3, block 12, house 14.

Date of death,—7th March 1911.

Date and result of driving 8 houses out of a total of 27 in the block in which the house is situated.

Date of drive.	Rats.	
	Alive.	Dead.
9th January 1911	21	6

PLAGUE SEASON, 1911-12.

23rd November 1911—One human plague death in Hospital. Imported from Nattalin.

DRIVE.

13th and 14th December 1911.

(This drive was delayed owing to urgent work elsewhere and the coolies being in segregation for cholera.)

Area driven.—One rice mill and vicinity and T. S. III, block 16, T. S. II, block 1.

Number of coolies employed—100.

Result :—

—	Number driven.	Rats.	
		Alive.	Dead.
House	34	168	...
Rice Mill	1	6	1
Godowns	4	18	...

No infection was found and the drive was discontinued until 20th December 1911.

From 20th December 1911 to 27th December 1911.

DRIVE.

This was a preventive drive.

Number of coolies employed, 100.

Area driven.—The market.

T. S. I, blocks 11, 12 and 13.

T. S. II, block 10.

Result :—

—	Number driven.	Rats.	
		Alive.	Dead.
Houses	52	419	7
Market	Whole	197	5
Godowns	2	33	4

One death from plague occurred, in T. S. II—10—14 on 25th December 1911, during the drive.

One death in T. S. II—18—1 on 29th December 1911, not in the area driven was reported as plague. This was considered to be not a case of plague, so no drive was done in the block in which it occurred.

No more plague either rat or human has occurred since.

Human Plague and Rat destruction statement.

—	Human plague.	Dwelling houses.				Markets.				Stores and Godowns.				Period.
		Number of houses.	Rats.		Number of markets.	Rats.		Number of stores, etc.	Rats.					
			Alive.	Dead.		Alive.	Dead.		Alive.	Dead.				
Human Plague	95	...	...	...	...	...	...	...	...	...	...	...	1908-09, 365 days before work began.	
1909-10. Human Plague	19	...	...	...	...	...	...	...	...	...	...	...	1st May 1909 to 14th Oct. 1909, 167 days before work began.	
Human Plague	7	...	...	...	...	...	...	...	...	...	...	...	15th October 1909 to 30th April 1910, 197 days.	
Drive ...	...	775	1,841	25	1	42	...	59	96	5	...	...	...	
Trapping ...	...	783	1,800	...	1	62	...	63	97	...	...	...	...	
1910-11. Human Plague	8	...	...	...	...	...	...	...	...	...	...	...	365 days, 1910-11.	
Trapping ...	...	783	7,776	...	1	388	...	63	302	...	...	...	...	
Drive ...	...	208	1,175	31	1	69	11	3	267	37	...	...	...	
1911-12. Human Plague.	2	...	...	...	...	...	...	...	...	...	...	...	366 days 1911-12.	
Drive ...	...	86	587	7	1	197	...	13	57	5	...	...	...	
Trapping ...	...	783	4,420	...	1	248	...	63	334	...	...	...	...	

Average number of rats obtained by driving and trapping per 100 houses of the area driven and trapped.

	1909-10	1910-11	1911-12
Number of houses driven	835	212	99
Number of houses trapped	847	847	847
Average number of Human Plague deaths per 100 houses in the area trapped.			

Season.	Human Plague.	Live Rats.		Dead Rats.	
		Trapping.	Drive.	Trapping.	Drive.
1909-10	3'07	231'17	237'01	.. ..	3'59
1910-11	1'06	999'53	807'07	.. ..	37'26
1911-12	0'24	590'55	849'49	.....	17'17

Statement of rats caught by Trapping from 1909 to 1912.

Number of traps employed—300

Month.	Number of rats caught.		
	1909-10.	1910-11.	1911-12.
May .. .. .	.....	411	554
June .. .. .	.....	597	537
July .. .. .	.....	817	122
August .. .. .	.....	781	763
September .. .. .	.....	1,068	926
October	330	878	493
November	357	946	466
December	236	880	309
January	257	652	262
February	209	415	231
March	330	553	166
April	260	488	173
Total	1,959	8,466	5,002

GYOBINGAUK.

Census, 1901 ... 6,030

Census, 1911 ... 7,410

The area dealt with in Gyobingauk contains 856 houses, 36 paddy godowns and 1 market.

It is divided into four Trapping Squares. There are only 136 houses remaining in the town which are not included in this area.

These houses are in remote and isolated parts of the town (Thègôn and Pandin).

DIARY OF THE WORK DONE.

From 12th May to 27th June 1910.

Human Plague 5 deaths as follows:—

- (1) T. S. II, 9, 9 on 12th May 1910.
- (2) T. S. IV, 5, 40 on 24th June 1910.
- (3) T. S. II, 10, 24 on 24th June 1910.
- (4) T. S. II, 7, 2 on 26th June 1910.
- (5) T. S. III, 2, 6, on 27th June 1910.

DRIVE.

From 9th August to 5th September 1910.

Area Driven.—

T. S. II, Blocks 3, 9, 10.

T. S. III, Market.

T. S. I, Block 13.

Result:—

—	Number driven.	Rats.	
		Dead.	Alive.
Houses	80	30	533
Market	1	.....	230

Human Plague during the drive—3 deaths.

- (6) T. S. II, 3, 55, 56 on 10th August 1910.
- (7) T. S. II, 3, 55, 56 on 17th August 1910.
- (8) T. S. II, 3, 55, 56 on 18th August 1910.
- (9) T. S. II, 3, 55, 56 on 6th September 1910.

N. B.—No. (9) was infected after the drive.

30th October 1910—Human Plague—one death. No. 10 in T. S. II, 2, 12-13.

DRIVE.

From 2nd November 1910 to 5th November 1910.

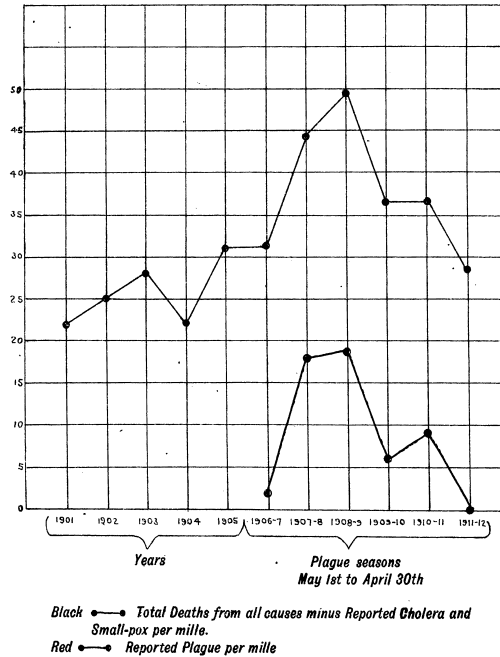
Area Driven.—

T. S. II Block 2

T. S. III „ 3, 4, 11, and market.

CHART No. 7

GYOBINGAUK



To face Page 41.

T. S. I, block 3. Number of houses—16.

Deaths behind the drive.

9th March 1911.

13th March 1911.

DRIVES.

Date.	Rats.	
	Dead.	Alive.
17th January 1911	1	66
3rd February 1911	1	11
18th March 1911	1	2

T. S. I, block 7. Number of houses—21.

Deaths.

17th January 1911 before the drive.

27th February 1911 behind the drive.

DRIVES.

Date.	Rats.	
	Dead.	Alive.
22nd and 23rd January 1911	6	84
28th February 1911	2	16

T. S. I, block 8. Number of houses—13.

Deaths.

13th December 1910 } before and during the drive.

19th December 1910 }

26th January 1911 behind the drive.

DRIVES.

Date.	Rats.	
	Dead.	Alive.
15th December 1910	10	106
17th January 1911	1	3

T. S. I, block 12. Number of houses—15.

Deaths.

23rd December 1910

26th December 1910

23rd January 1911

3rd January 1911

16th January 1911

18th January 1911

22nd January 1911

1st February 1911

18th February 1911

7th March 1911

} Behind the drive

Drives.	Date.	Rats.	
		Dead.	Alive.
Part of the block, 7 houses out of 15 ...	2nd December 1910 ...	1	108
Whole block	23rd December 1910	45	225
Whole block	14th January 1911 ..	...	4

T. S. II. Block 2. Number of houses, 20.

Deaths. 30th October 1910 before drive.

DRIVE.

Date.	Rats.	
	Dead.	Alive.
2nd November 1910	9	161
17th January 1911	...	25

T. S., II. Block 3. Number of houses, 20.

Deaths.

10th August 1910 }
 17th August 1910 } before the drive.
 18th August 1910 }
 6th February 1910 }
 1st February 1911 } behind the drive.
 6th February 1911 }
 14th February 1911 }

DRIVE.

Date.	Rats.	
	Dead.	Alive.
From 9th to 11th August 1910 and from 19th to 22nd August 1910.	10	98
From 17th to 19th December 1910	9	74
30th and 31st January 1911	2	28
15th February 1911	2	...

T. S. II. Block 5. Number of houses, 26.

Deaths.

12th January 1911 before the drive.

DRIVE.

Date.	Rats.	
	Dead.	Alive.
From 19th to 26th January 1911	7	140

T. S. II Block 7. Number of houses, 44.

Deaths.

26th June 1910 }
21st November 1910 } before the drive.
31st December 1910 }

Drive of 36 houses out of 44.

Date.	Rats.	
	Dead.	Alive.
From 3rd to 18th January 1911	1	111

T. S. II Block 9. Number of houses, 20 out of 22 in the block.

Deaths.

12th May 1910 before the drive.

21st February 1911 behind the drive.

DRIVES.

Date.	Rats.	
	Alive.	Dead.
From 1st to 5th September 1910	152	...
2nd and 3rd December 1910	104	3
16th January 1911	14	...
25th February 1911	29	...

N.B.—This block also is close to paddy godowns which could not be driven.

T. S. II Block 10. Number of houses, 19.

Deaths.

24th June 1910 before the drive.

10th January 1911 behind the drive.

DRIVES.

Date.	Rats.	
	Dead.	Alive.
From 27th August 1910 to 1st September 1910	14	160
From 29th December 1910 to 30th December 1910	11	49

T. S. III Block 2.* Number of houses, 32.

Deaths.

26th June 1910 }
25th January 1911 } Before the drive.

DRIVES.

—	Date.	Rats.	
		Dead.	Alive.
11 houses out of 32	1st February 1911 ...	...	37
Houses driven on 1st February 1911 re-driven	16th and 17th February 1911.	...	21
Rest of Block	16th and 17th February 1911.	2	18

T. S. III. Block 4. Number of houses, 19.

Deaths.

27th November 1910.

• • • DRIVES.

Date.	Rats.	
	Dead.	Alive.
5th November 1910	4	120
28th and 29th November 1910	2	84
20th February 1911	...	11

T. S. III. Block 5. Number of houses, 3 granaries.

Deaths.

11th February 1911.

19th February 1911.

The block is paddy godowns and cannot be driven.

T. S. III. Block 7. Number of houses 5.

Deaths.

12th January 1911. During the drive.

9th February 1911 } Behind the drive.

22nd February 1911 }

DRIVES.

Date.	Rats.	
	Dead.	Alive.
12th January 1911	...	39

T. S. III. Block 9. (Market).

Deaths. Behind the drive.

2nd January 1911.

8th January 1911.

17th February 1911.

DRIVES.

Date.	Rats.	
	Dead.	Alive.
13th to 15th August 1910	...	230
3rd November 1910	...	105
20th December 1910	9	81
11th January 1911	7	3
16th to 18th February 1911	2	...

T. S. III. Block 10. Number of houses, 21.

Deaths. Behind the drive.

6th January 1911.

12th January 1911.

16th January 1911.

21st January 1911.

26th January 1911.

8th February 1911.

2nd March 1911.

9th March 1911.

DRIVES.

Date.	Rats.	
	Dead.	Alive.
24th to 28th December 1910	20	170
20th to 23rd January 1911	25	36
9th to 11th February 1911	2	7
3rd March 1911	...	...

T. S. III. Block 11. Number of houses, 20.

Deaths. Behind the drive.

21st January 1911.

2nd February 1911.

DRIVES.

Date.	Rats.	
	Dead.	Alive.
3rd and 4th November 1910	...	190
31st December 1910 to 2nd January 1911	4	76
26th January 1911	3	3

T. S. III. Block 12. Number of houses, 10.

Deaths.

6th February 1911.

The Block is paddy godowns and cannot be driven.

T. S. IV. Block 5. Number of houses, 39.

Deaths.

24th June 1910. Before the drive.

DRIVES.

Date.	Rats.	
	Dead.	Alive.
23rd January 1911	1	100

T. S. IV. Block 6. Number of houses, 11.

Deaths. Behind the drive

13th February 1911.

1st March 1911.

21st March 1911.

DRIVES.

Date.	Rats.	
	Dead.	Alive.
12th February 1911	...	30
13th February 1911	...	11
2nd March 1911	...	4
20th & 21st March 1911	...	...

T. S. IV. Block 7. Number of houses, 13.

Deaths.

11th January 1911. During the drive.

DRIVES.

Date.	Rats.	
	Dead.	Alive.
10th & 11th March 1911	11	66

T. S. IV. Block 9. Number of houses, 27.

Deaths.

26th December 1910. Before the drive.

6th February 1911. Behind the drive.

DRIVES.

Date.	Rats.	
	Dead.	Alive.
26th & 27th December 1910	1	95
8th to 10th February 1911	...	6

T. S. IV. Block 12. Number of houses, 26.

Deaths.

9th March 1911. Behind the drive.

DRIVES.

Date.	Rats.	
	Dead.	Alive.
31st December 1910	3	85
21st March 1911	...	5

T. S. IV. Block 13. Number of houses, 20.

Deaths.—Behind the drive.

14th March 1911.

18th March 1911.

19th March 1911.

20th March 1911.

21st March 1911.

DRIVES.

Date.	Rats.	
	Dead.	Alive.
28th December 1910	1	94
6th February 1911	1	60
17th February 1911	...	10

The total number of plague deaths in the town was 72, of which 46 occurred behind the drive.

These 46 deaths occurred in 16 blocks.

In seven blocks 10 deaths occurred before the drive, but none after the drive.

In eight blocks no deaths occurred before the drive, but 28 deaths occurred behind the drive.

In all of these blocks dead rats were found during the first drive.

In eight blocks 14 cases occurred before and 19 cases behind the drive; in six of these blocks dead rats were found on the first drive.

Plague infection was present at the time of the first drive in all the blocks except one in which cases occurred after the drive.

From this it would appear that there was no spread of infection after the drive, but that infection still persisted in the infected blocks in spite of the drive.

It will be seen from the foregoing that the work in Gyobingauk was throughout the season a losing fight, and it reflects the greatest credit on Assistant Surgeon Lynsdale and all concerned that in spite of repeated failures to stop infection they turned what had every appearance of being an entire failure into a success.

PLAGUE SEASON, 1911-12.

10th January 1912.—One suspected death from plague, but not returned as plague, was reported in Trapping Square II Block 3, Houses (8 and 9).

A search party was sent with the following result :—

T. S. 11, Block 2 and Houses 8 and 9, 7, 10 and 11, 12 and 13, were searched,
14 live rats were caught. Dead *nil*.

No rat infection being found, no drive was considered necessary.

No human plague deaths have occurred during the season.

Number of rats caught by trapping at Gyobingauk in 400 traps by months.

Months.	Number of rats caught by trapping.	Months.	Number of rats caught by Trapping.
November 1909 ...	325	February 1911 ...	169
December 1909 ...	717	March 1911 ...	165
January 1910 ...	682	April 1911 ...	214
February 1910 ...	624	May 1911 ...	454
March 1910 ...	703	June 1911 ...	No trapping done.
April 1910 ...	383	July 1911 ...	605
May 1910 ...	500	August 1911 ...	1,335
June 1910 ...	551	September 1911 ...	1,093
July 1910 ...	777	October 1911 ...	1,086
August 1910 ...	699	November 1911 ...	1,092
September 1910 ...	987	December 1911 ...	729
October 1910 ...	776	January 1912 ...	851
November 1910 ...	928	February 1912 ...	948
December 1910 ...	536	March 1912 ...	1,043
January 1911 ...	226	April 1912 ...	989

Average number of rats obtained by driving and trapping per 100 houses of the area driven and trapped.

Number of houses driven $\frac{1909-10}{540} \frac{1910-11}{861} \frac{1911-12}{893}$

Number of houses trapped 893 893 893.

Average number of human plague deaths per 100 houses in the area trapped.

Seasons.	Human plague.	Live rats.		Dead rats.	
		Trapping.	Drive.	Trapping.	Drive.
1909-10 ...	526	384 56	977 407	...	1907
1910-11 ...	806	730 34	586 88	...	31 36
1911-12 ...	...	1,131 69	...	...	...

Human Plague and Rat destruction statement, 1911-12.

Description.	Human plague.	Dwelling houses.			Market.			Stores and godowns.			Period.
		Number.	Rats.		Number.	Rats.		Number.	Rats.		
			Alive.	Dead.		Alive.	Dead.		Alive.	Dead.	
Plague ...	<i>Nil.</i>	...	...	...	...	...	...	...	...	365 days, 1st May 1911 to 30th April 1912.	
Trapping ...		856	8,608	...	1	1,092	...	36	406	...	Do.

An area in the centre of Gyobingauk was delimited as was done previously in Paungde, and the people living in the area agreed to make their houses sanitary either by re-building or repairs. Owing however to the fact that no engineering supervision could be obtained for the work, the scheme had to be abandoned and those people who had already pulled down their houses rebuilt them on much the same lines as before.

OKPO.

(54)

OKPO.

Census	...	{ 1901	...	...	...	3,210
		{ 1911	...	...	...	3,050

The area dealt with in Okpo contains 373 houses, 1 market and 30 paddy godowns.

This area is contained in one trapping square.

Outside this area there are 6 houses.

PLAGUE SEASON, 1910-11.

Diary of Work done.

12th January 1911.—One case of human plague in Gyobingauk was found by enquiry to have been imported from Okpo Police lines.

13th January 1911.—

Drive.—Number of coolies employed 50.

Area Driven.—The Police lines.

Result—

	Number driven.	Rats.	
		Alive.	Dead.
Houses	34	166	...

No rat infection was found.

12th February 1911.—One human death from plague in block 8—12.

19th February 1911.—One human death from plague in block 8—17.

DRIVE.

17th February 1911, 11th March 1911.

Number of coolies employed 100.

Area driven.

The whole town.

Except Blocks 1 and 15 Paddy Godowns.

14 Railway Station.

16, 17, 18 and 19. Isolated from rest of Town.

Detail of Drive.

Block Number.	Houses driven.	Rats.			Date of driving.
		Alive.	Old dead.	Recently dead.	
Market ...	...	279	5	2	17 and 18-2-1911.
5	21	181	30	42	20-23-2-1911.
9	23	144	4	...	25-27-2-1911.
11	6	84	3	...	27 and 28-2-1911.
13	34	66	2	...	28-2-1911—3-3-1911.
Market redriven ...	...	9	2	...	28-2-1911.
7	23	122	1	...	1 and 2-3-1911.
6	15	112	5	...	2 and 3-3-1911.
5	27	175	1	3	3, 4 and 6-3-1911.
4	33	140	3	...	4-7-3-1911.
3	22	87	12	...	7-3-1911.
21	24	150	4	...	9-12-3-1911.
20	31	130	1	...	9 and 10-3-1911.
19	16	47	...	...	9 and 10-3-1911.
TOTALS—Houses ...	274	1,438	66	48	23 days.
Market ...	1	288	7	2	...

During the drive four more deaths occurred from Plague, but none behind the drive.

Block 8-12 ... 23rd February 1911.
 " 8-24 ... 25th February 1911.
 " 8-16 ... 28th February 1911.
 " 12-12 ... 4th March 1911.

PLAGUE SEASON, 1911-12.

Diary of Work done.

11th July 1911.—Station Master, Ôkpo, reported rat mortality on the Railway Station.

DRIVE.

12th July to 15th July 1911.
 Number of coolies employed 32.

Area driven.

Railway buildings and adjacent houses and the main bazaar building.

Result—

—	Number driven.	Rats.	
		Alive.	Dead.
Houses	11	81	6
Bazaar	Part	33	...

Bacillus Pestis was found in spleen smears from the dead rats.

6th December 1911.—One human plague death in Block 8-23. This death was reported by the Burman Trapping Maistri.

DRIVE.

8th December 1911 to 23rd December 1911.

Number of coolies employed.
 The drive began with 64 coolies but six days later the number had been increased to 250.

The average number employed during the drive was 111.

Area driven.

The whole town west of the Railway except the Paddy Godowns, *i.e.*, Blocks 3, 4, 5, 6, 7, 8, 9, 11, 12, 13.
 15 houses in Block 16.
 5 houses in Block 15.

Result—

—	Number driven.	Rats.	
		Alive.	Dead.
Houses	254	1,497	133
Market	Whole	201	5

OKPO—contd.

(56)

Bacillus Pestis was found in spleen smears from the dead rats.

Dead rats were found in 8 blocks out of a total of 12 driven.

Human deaths during and after the drive.

Date of death.	House number.	Date of drive in block in which death occurred.	Remarks.
21st December 1911	... T.S.-1-8-8	... 13-12-1911.	Infected since the drive.
30th December 1911	... T.S.-1-16-24 *	... 23-12-1911.	
3rd January 1912	... T.S.-1-15-7	... 15-12-1911	

* Infection was found in this block during the drive but this house was not driven as a search revealed no dead rats.

No plague has occurred since.

Tabular Statement of Human Plague, drives, and redrives by blocks for all blocks in which either human plague occurred or dead rats were found on driving or redriving (1911-12).

Block Number.	Number of houses in block.	Dates of drives and deaths.	Result of drive.		
			Number of houses.	Rats.	
				Alive.	Dead.
T.S. 1-8	25	(1) Death 6-12-1911. Drive 8-12-1911 to 13-12-1911. (2) Death 21-12-1911, no redrive.	25	104	57
Bazaar	Whole	Drive 14-12-1911.	Whole	1201	5
T.S. 1-9	8	Drive 15-12-1911.	8	45	33
T.S. 1-11	22	Drive 15 and 16-12-1911. Death 3-1-1912 no redrive.	21	140	19
T.S. 1-7	23	Drive 15-12-1911 to 16-12-1911.	23	105	7
T.S. 1-6	15	Drive 19-12-1911.	15	201	10
T.S. 1-4	34	Drive 20-12-1911 to 21-12-1911.	34	194	6
T.S. 1-16	27	Drive 22-12-1911 to 23-12-1911. Death 30-12-1911, no redrive.	15	82	1

Average number of rats obtained by driving and trapping per 100 houses of the area driven and trapped.

	1910-11.	1911-12.
Number of houses driven	275	266
Number of houses trapped	404	404

Average number of human plague deaths per 100 houses in the area trapped.

Seasons.	Human Plague.	Live rats.		Dead rats.	
		Trapping.	Drive.	Trapping.	Drive.
1910-11	1'49	2189'85	688	...	44'73
1911-12	0'99	777'48	682'33	...	54'14

Human Plague and Rat destruction statement.

—	Human plague.	Dwelling house.			Markets.			Stores and godowns.			Period.
		Rats.			Rats.			Rats.			
		Number of houses.	Alive.	Dead.	Number of Markets.	Alive.	Dead.	Number of Stores, etc.	Alive.	Dead.	
					1909-10.						
Human Plague	1	...	...	...	...	...	...	...	...	...	} 366 days, 1st May 1909 to 30th April 1911.
Drive	...	10	18	1	...	...	...	...	...	...	
Trapping	...	373	2,837	...	1	...	...	30	...	...	
			dwelling houses	stores, etc.,	not different	lated.					
					1910-11.						
Trapping	...	373	7,351	...	1	...	...	30	...	...	} 1st May 1910 to 31st Dec. 1910, 245 days.
.....	...	...	...	...	...	not different	lated.	...	...	...	
					1911-12.						
Human Plague	6	...	...	...	...	...	...	...	...	...	} 1st Jan'y, 1911 to 30th April 1911, 120 days.
Drive	...	274	1,438	114	1	288	9	...	...	...	
Redrive	...	34	166	...	...	...	...	...	...	...	
Trapping	...	373	1,496	...	...	...	...	30	...	...	
					...	not different	lated.				
					1911-12.						
Trapping	...	375	2,273	...	...	...	...	...	...	...	} 1st May 1911 to 30th Nov. 1911, 214 days.
Drive	...	11	81	6	1	33	...	...	...	...	
					1911-12.						
Human Plague	3	...	...	...	...	...	...	...	...	...	} 1st Dec. 1911 to 31st Dec. 1911, 31 days.
Drive	...	254	1,497	133	1	204	5	30	...	...	
Trapping	...	373	202	...	1	5	...	...	...	...	
					1912-13.						
Human Plague	1	...	...	...	...	...	...	...	...	...	} 1st Jan'y, 1912 to 30th April 1912, 121 days.
Trapping	...	373	592	...	1	46	...	30	...	23	

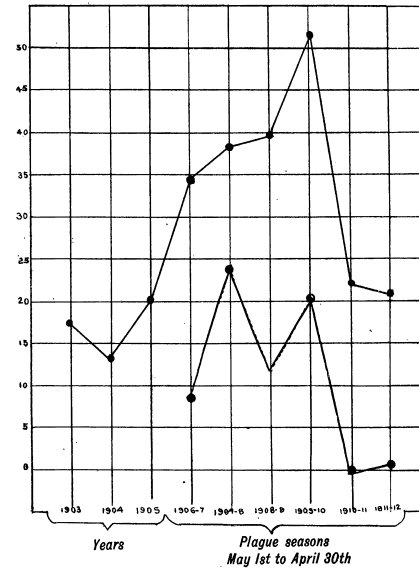
Statement of rats caught by Trapping from 1909 to 1912.

Number of traps employed 200.

Months.	Number of rats caught.		
	1909-10.	1910-11.	1911-12.
May ... ..	.....	882	167
June ... ..	.....	1,021	378
July ... ..	.....	870	485
August ... ..	.....	959	307
September ... ..	.....	1,024	396
October ... ..	.....	1,147 ^a	315
November ... ..	.....	730	225
December ... ..	.....	718	207
January	567	539	98
February	636	463	119
March	788	311	189
April	846	183	255
Total	2,837	8,847	3,141

CHART No. 8

MINHLA



Black line —●— Total Deaths from all causes minus Reported Cholera and Small-pox per mille.
 Red line —●— Reported Plague per mille

To face Page 50.

OTHEGON.

Census, 1901 1,939.

In July 1910 Othegon was infected with Plague. A drive was done as described on pages 57, 58, 59 of the Annual Report of Plague driving in the Pegu Division, 1909-10. Since this no Plague has occurred and no work has been done.

MINH LA.

Census, 1901 3,564.
Census, 1911 3,589.

The area dealt with in Minhla contains 500 houses, 27 Godowns and, 1 Market.

It is divided into 2 Trapping Squares.

There are only 6 huts in the town outside this area.

PLAGUE SEASON—1910-11.*Diary of the work done.*

25th January 1911.—Rat plague reported.

DRIVE.

From 25th January 1911 to 16th February 1911.

Area driven.—T. S.-I whole, except blocks 10 and 11 and 8 (granaries).

T. S.-II whole, except blocks 1, 10, and 13.

Number of coolies employed—100.

Result.

	Number driven.	Rats.	
		Alive.	Dead.
Houses 	430	2,593	47
Godowns 	1	...	...
Market 	1	189	14

No human plague occurred during the season.

PLAGUE SEASON—1911-12.

21st May 1911.—Rat plague reported in the market and *bacillus pestis* found.

DRIVE.

21st May 1911 to 13th June 1911.

Area driven.—Market T. S.-II, block 2, and T. S.-I blocks 1, 4, 5, 6, and 9.

Number of coolies employed, 100.

MINHUA—contd.

(60)

Result.

	Number driven.	Rats.	
		Alive.	Dead.
Houses	86	797	19
Market	1	148	33

The market was closed from 21st May 1911 for 20 days.

10th August 1911.—One human plague death in T. S.-I 6-17.

12th August 1911.—Search party found in houses round the case in T. S.-I 6.

Live rats—52—Dead rat—1.

DRIVE.

17th and 18th August 1911.

Area driven.—T. S.-I blocks 6 and 4.

Number of coolies employed—45.

Result.

Houses.	Number driven.	Rats.	
		Alive.	Dead.
Houses	13	62	19

DRIVE.

From 20th August 1911 to 8th September 1911.

Area driven.—T. S.-II blocks 2, 4, 8 and 9, and the whole of T. S.-I, except 12 godowns and 2 houses in block 8, 3 houses in block 3, and blocks 10 and 11.

Number of coolies employed 300 for 6 days and 100 for the rest of the time.

Result.

	Number.	Rats.	
		Alive.	Dead.
Houses	296	1,916	93
Market	1	80	11
Godowns	1	215	2

Two human plague deaths in T. S.-I 4-18 occurred during this drive.

Out of 14 blocks driven, dead rats were found in 4 blocks.

The infection was most severe in block 4 which consists of 42 houses. In this block 64 recently dead rats were found in 11 houses.

In the whole block 434 live rats were obtained.

No plague rat or human has occurred since.

In January 1910 a cement floor and cement stalls were put into the market. The work however was so badly done that in May 1911 the so-called cement was found to be riddled with rat holes, and a large part of both floor and stalls were dug up to destroy the rats.

Statement of Human Plague drives and re-drives, by blocks, for all blocks in which either Human Plague occurred or dead rats were found on driving or re-driving.

Block Number.	Number of houses.	Dates of drives and deaths.	Results.		
			Number of houses driven.	Rats.	
				Alive.	Dead.
T. S. 1 Block 1	26	Drive, 30th and 31st May 1911 Drive, 24th and 25th August 1911.	3 26	23 203	2 0
T. S. 1 Block 6	49	25th May 1911 and 1st to 5th June 1911. Death, 16th August 1911 ... Drive, 17th August 1911 to 18th August 1911 and remaining houses 28 to 37th August 1911.	15 13 36	137 62 145	1 19 0
T. S. 1 Block 4	42	Drive, 31st May 1911 to 1st June 1911. Death, 18th August 1911 ... Drive, 19th August 1911 to 26th August 1911. Death, 25th August 1911 ...	14 42	174 434	1 66
T. S. 1 Block 5	39	Drive, 24th to 30th May 1911 ... Drive, 26th August 1911 to 30th August 1911.	21 39	167 288	1 8
T. S. 2 Block 2	38	Drive, and to 13th June 1911 ...	34	176	14
Market	Whole	25th May 1911 ... 17th August 1911 ...	Whole Whole	148 80	33 17

Number of Rats caught each month by trapping in 300 traps in Minhla Town.

Month.	Number of rats.	Remarks.
1910.		
January	894	Trapping commenced at Minhla on 7th January 1910.
February	255	
March	68	
April	84	
May	240	
June	448	
July	810	
August	809	
September	677	
October	819	
November	704	
December	792	
1911.		
January	628	
February	499	
March	624	
April	604	
May	592	
June	562	
July	510	
August	542	
September	490	
October	479	
November	440	
December	313	
1912.		
January	439	
February	425	
March	558	
April	473	

Human Plague and Rat Destruction Statement for the seasons 1909-10, 1910-11 and 1911-12.

Description.	Human plague	Dwelling-houses.				Markets.				Stores and godwin.				Period and remarks.
		Rats		No.	Rats		No.	Rats		No.	Rats			
		No.	Alive.		Dead.	Alive.		Dead.	Alive.		Dead.	Alive.	Dead.	
1909-10.														
Plague ...	2	...	...	...	...	...	...	...	...	...	...	...	...	1st May 1909 to 31st December 1909, 245 days before our work began.
Plague ...	72	...	...	...	...	...	...	...	...	...	...	...	...	1st January 1910 to 30th April 1910, 120.
Drive ...	...	236	284	131	1	12	154	1	1	...	...	...	...	
Trapping ...	...	500	1,256	...	1	37	...	27	8	...	...	...	...	
1910-11.														
Plague ...	...	...	...	...	...	...	...	...	...	...	...	...	...	1st May 1910 to 30th April 1911.
Drive ...	...	430	2,593	47	1	189	14	1	...	...	...	...	...	Rat Plague reported.
Trapping ...	...	500	6,805	...	1	552	...	27	47	...	...	...	...	
1911-12.														
Plague ...	...	...	...	...	...	...	...	...	...	...	...	...	...	1st May to 30th June 1911, 61 days.
Drive ...	...	86	797	19	1	148	33	...	...	...	...	...	...	
Trapping ...	...	500	998	...	1	62	...	27	4	...	...	...	...	
Plague ...	3	...	...	...	...	...	...	...	...	...	...	...	...	1st July 1911 to 30th April 1912, 305 days.
Drive ...	...	309	2,030	113	1	80	11	1	215	2	...	...	...	The 86 houses driven in May and June, were driven again in this drive.
Trapping ...	...	500	3,994	...	1	535	...	27	81	...	...	...	...	

Average number of rats obtained by driving and trapping per 100 houses of the area driven and trapped.

	1909-10.	1910-11.	1911-12.
Number of houses driven	...	238	432
Number of houses trapped—528.	...	...	311
Average number of human plague deaths per 100 houses in the area trapped.			

Seasons.	Human plague.	Live rats		Dead rats	
		Trapping.	Drive.	Trapping.	Drive.
1909-10	14'02	246'40	124'79	0	119'75
1910-11	...	1462'27	643'98	0	14'12
1911-12	6'57	873'10	1051'45	0	57'23

SITKWIN.

Census, 1911 ... 2,190.

Sitkwin is a small town in the Promé to Thônze Plague area situated on the Railway in Tharrawaddy District.

PLAGUE SEASON, 1910-11.

Rat Plague having been reported a drive was done from 3rd February 1911 to 18th February 1911.

Number of coolies employed, 30.

Area driven.

The Market and surrounding area.

Result.

	Number driven.	Rats.	
		Live.	Dead.
Houses	67	791	16
Market	1	230	4

No Human Plague occurred.

*Statement of rats caught by Trapping from 1909 to 1911 when Trapping was stopped.
Number of traps employed—100.*

Months.	Number of rats caught.	
	1909-10.	1910-11.
May	...	618
June	...	638
July	...	605
August	...	685
September	...	627
October	...	662
November	...	760
December	...	766
January	...	764
February	516	585
March	404	694
April	456	250
Total	1,376	7,654

LETPADAN.

(64)

LETPADAN.

Census, 1901 ... 9,107.

Census, 1911 ... 9,247.

The area dealt with in Letpadan contains 1,401 dwelling houses, one market and 44 godowns.

It is divided into five Trapping Squares.

There are only 23 houses remaining in the town which are not included in this area.

PLAGUE SEASON—1910-11.

Diary of work done.

1st June 1910.—Human plague death T.S. I. 8-33.
16th June 1910.—" " " T.S. I. 5-1.
20th June 1910.—" " " T.S. II. 4-9.
20th October 1910.—" " " T.S. IV. 9-14.

DRIVE.

From 24th to 29th October, 1910.
Number of coolies employed, 80.

Area driven.

T.S. IV blocks 9, 10, 11, 12, 13, and 14.
T.S. V blocks 1, 2, 17, 19, and 20.

Result.

Houses.	Number driven.	Rats.	
		Dead.	Alive.
Houses ...	199	6	703
Godowns ...	6	1	44

6th and 7th November 1910. Human Plague. Two deaths in (1) T. S. V-15-19; (2). T.S. V. 3-27.

DRIVE.

7th to 15th November 1910.
Number of coolies employed, 80.

Area driven.

T.S. V blocks 3, 6, 15, 16, 18.
T.S. IV blocks 1, 4, 5, 6, 8, 15.
T.S. I block 12.

Result.

—	Number driven.	Rats.	
		Dead.	Alive.
Houses ...	215	28	1,392

(65)

LETPADAN—*contd.*

DRIVE.

21st November to 14th December 1910.

Number of coolies employed, 80.

Area driven.

T.S. I Blocks 2, 10 and 11.

T.S. II Blocks 11 and 12.

T.S. V Blocks 4, 5, 7, 8, 9, 10, 11, 12, 13 and 14.

Result.

—	Number driven.	Rats.	
		Alive.	Dead.
Houses ...	237	1,284	13
Godowns ...	3	12	0
Market ...	1	294	3

During this drive 3 Human Plague Deaths occurred.

- (1) On 26th November 1910 in T.S. I-11-1
- (2) On 29th November 1910 in T.S. I-11-6
- (3) On 12th December 1910 in T.S. V-2-5.

The third death in T.S. V-2-5 occurred in a block driven on 29th October 1910.

After this drive—

6 Human Plague Deaths.

- (1) On 16th December 1912 T.S. I-12-16.
This block was previously driven on 7th November 1910.
- (2) On 21st December 1910 in T.S. II-8-12.
This block being isolated was not driven.
- (3) On 29th December 1910 in hospital.
- (4) On 4th January 1911 in T.S. V-3-3.
This block was previously driven on 8th November 1910.
- (5) On 23rd February 1911 in T.S. III-8-24.
This block was first driven after the case occurred.
- (6) On 23rd February 1911 in T.S. II-5-2.
This block was first driven after this case occurred.

DRIVE.

28th February 1911 to 6th March 1911.

Number of coolies employed, 83.

Area driven.

T.S. II-3, 4, 5, 6, 7, 8, 13, 14, 15 and 16.

Result.

Houses driven.	o	Rats.	
		Alive.	Dead.
150	1	747	57

A

1 Human death during the drive 6th March 1911 in T.S. II-8-5.

LETPADAN—*contd.*

(66)

DRIVE.

7th March 1911 to 18th March 1911.

Number of coolies employed, 100.

Area.

T.S. I, 2, 3, 4, 5, 12, 13, 14

T.S. II, 2, 8 and 10

T.S. IV, all except Blocks 3 and 11

Result.

Houses.	Number driven.	Rats.	
		Alive.	Dead.
Houses	446	1,070	23
Godowns	19	32	...

No more human deaths occurred after this.

PLAGUE SEASON, 1911-12.

11th June 1911.—One human plague case occurred in T.S. I-11-9 (imported from Rangoon) and died on 19-6-11.

DRIVE.

From 15th June 1911 to 30th June 1911.

Number of coolies employed, 50.

Area driven.

T.S. I Blocks 10, 11, 12, 13 and a portion of the market.

Result.

—	Number driven.	Rats.	
		Alive.	Dead.
Houses	48	417	25
Market	Part only	98	2

30th June 1911.—One human plague death in T.S. I-10-20 in the area driven.

The date of driving the block in which the case of plague occurred was 23rd and 24th June 1911.

30th June 1911.—Redrive of 11 houses in T.S. I-10; and Railway station on 6th July 1911.

Number of coolies employed, 50.

Result.

Houses,	Number driven.	Rats.	
		Alive.	Dead.
Houses	11	44	2
Railway station ...	1	10	0

N.B.—26 rats in one charcoal stack, not driven the first time, in T.S. I-10.

11th July 1911.—One human plague death in T.S. IV-10-1. The area had not been previously driven.

Dead rats were found in the house by a search party previous to the death.

DRIVE.

From 16th July 1911 to 21st July 1911.

Number of coolies employed, 50.

Area driven.

T.S. IV Blocks 9, 10 and 14.

Result.

—	Number driven.	Rats.	
		Alive.	Dead.
Houses	49	158	3

21st July 1911.—Two human plague deaths in the area previously not driven.

(1) T.S. I-2-30. (The infection was traced to the market. T.S. II Block 11.)

(2) T.S. II-8-5.

DRIVE.

22nd July 1911.

Number of coolies employed, 80.

Area driven.

The whole market.

Result.

Rats.	
Alive.	Dead.
77	31

Owing to the heavy infection found in the bazaar a drive of the whole centre of the town was then done.

DRIVE.

From 23rd July 1911 to 20th August 1911.

Number of coolies employed, 200.

Area driven.

T.S. I Blocks 2, 3, 4, 5 and 14.
 T.S. II Blocks 2, 3, 4, 5, 6, 8, 10, 12, 13, 14, 15 and 16.
 T.S. III Blocks 7, 8 and 9.
 T.S. IV Blocks 4, 5, 6 and 16.
 T.S. V Block 1.

Result.

	Number driven.	Rats.	
		Alive.	Dead.
Houses	392	3,534	75
Market	Whole redriven	20	6
Godowns	13	477	6

The 20 live rats in the bazaar were all found in one shed adjacent to some temporary Railway huts which were not driven the first time the market was driven and had been demolished since. So these rats had obviously moved into the market from these huts. Dead rats were found in the following blocks:—

T.S. I, Blocks 2, 3, 4, 5, 10, 11.

T.S. II, Blocks 3, 8, 11, 12, 15.

T.S. III, Blocks 7, 8.

T.S. IV, Blocks 4, 5, 16.

T.S. V, Block 1.

During the drive 6 human plague deaths occurred as follows:—

Serial No.	Houses.	Date of death.	Date of drive of block in which death occurred.
1	T.S. I-12-1	25th July 1911 ...	27th to 29th June 1911.
2	T.S. II-12-4	2nd August 1911 ...	4th and 5th August 1911.
3	T.S. II-2-4	9th August 1911 ...	7th August 1911.
4	T.S. I-5-5	10th August 1911 ...	10th August 1911.
5	T.S. II-5-14	13th August 1911 ...	10th and 11th August 1911.
6	T.S. I-2-29	20th August 1911 ...	27th July to 3rd August 1911.

Of these deaths two [numbers (2) and (4)] died before the drive in the block in which they occurred.

Two, numbers (3) and (5), were infected before the drive of the block in which they occurred.

Two, numbers (1) and (6), were infected after the drive of the block in which they occurred.

From 20th August to 6th September 1911.

Three human plague deaths as follows.

All of these were infected after the drive.

Serial No.	House.	Date of death.	Date of drive of block in which the death occurred.
1	T.S. I-2-26	27th August 1911 ...	27th July to 3rd August 1911.
2	T.S. IV-5-1	31st August 1911 ...	12th to 15th August 1911.
3	T.S. IV-1-4	2nd September 1911 ...	6th July 1911.

DRIVE.

6th September to 30th September 1911.

Number of coolies employed, 100.

Area driven—

T. S. I.—4 houses in Block 13 and 3 houses in Block 12.

T. S. II.—Block 2.

T. S. IV.—Blocks 2, 5, 7, 8, 11, 15 and 17.

T. S. V.—Blocks 1, 2, 3, 4, 5, 6, 15, 16, 17, 18, 19 and 20.

Result—

					Number driven.	Rats.	
						Alive.	Dead.
Houses	...	...	...	...	328	2,681	37
Godown	...	...	...	...	3	66	0

Dead rats were found in the following blocks :—

T.S. I.—Block 13.

T.S. IV.—Blocks 5, 11, 17.

T.S. V.—Blocks 1, 2, 5, 16, 20.

One human death occurred during this drive.

House.	Date of death.	Date of driving block in which death occurred.
T.S. I—13, 9	12th September 1911	14th September 1911.

10th October 1911.—One human death in the driven area, infected since the drive.

House.	Date of death.	Date of driving block in which death occurred.
T.S. I—2, 26	10th October 1911	27th July to 3rd August 1911.

13th to 17th October 1911.

Redrive of the area in which the death on 10th October 1911 occurred.

Number of coolies employed, 50.

Area driven—

T.S.I-2 whole, i.e. (31 houses).

Result—

					Number driven.	Rats.	
						Alive.	Dead.
Houses	...	...	...	...	31	89	10

17th January 1912.—One human Plague death in T.S.I-2, 33. This area was previously driven on 27th July to 3rd August 1911 and redriven 13th to 17th October 1911.

A search party found no rat infection subsequent to this death.

4th February 1912.—Report of rat mortality in T.S.IV-7 in the court-house having been received, a search party was sent and found 11 dead rats. *Bacillus Pestis* was found in the dead rats.

DRIVE.

5th to 22nd February 1912.

Number of coolies employed:—

5th to 8th February 1912—100.

9th to 11th February 1912—200.

12th to 13th February 1912—300.

14th February 1912—200.

15th to 22nd February 1912—100.

Area driven—

T.S. IV Blocks 3 to 15.

T.S. V Blocks 1, 2, 3, 4, 16, 17, 18, 19, 20.

Result—

	Number driven.	Rats.	
		Alive.	Dead.
Houses	360	2,134	80
Bazaar	Whole	66	1
Godowns	4	55	4

One human death occurred during this drive.

House Number.	Date of death.	Date of driving back in which death occurred.
T.S.V-3, 9	16th February 1912	19th February 1912.

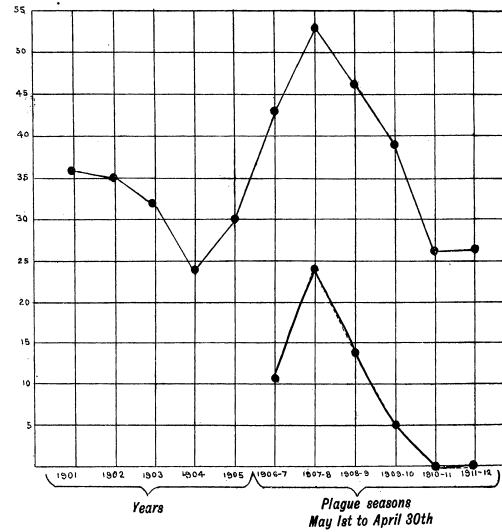
No plague has occurred since.

HUMAN PLAGUE AND RAT DESTRUCTION STATEMENT, 1909-10
AND 1910-11.

Description.	Human plague.	Dwelling-houses.				Markets.				Stores and Godowns.				Period.
		Rats		No.	Rats		No.	Rats		No.	Rats			
		Alive.	Dead.		Alive.	Dead.		Alive.	Dead.					
1909-10.														
Plague ...	30	...	...	...	...	...	...	...	...	...	...	...	...	100 days (before our work began) from 1st. June 1909 to 7th December 1909.
Drive ...	...	1,208	2,150	69	1	59	12	26	18	...	...	...	...	71 days 8th December 1909 to 17th February 1910.
Redrive ...	...	993	167	21	1	27	37	4	2	...	...	...	...	
2nd redrive ...	...	65	10	...	...	...	...	...	...	...	...	...	...	
Plague ...	53	...	...	...	...	...	...	...	...	...	...	...	...	
Trapping ...	...	1,401	401	...	1	8	...	44	6	...	...	...	...	
Plague ...	20	...	...	...	...	...	...	...	...	...	...	...	...	18th February 1910 to 30th April 1910, 72 days.
Trapping ...	...	1,401	953	...	1	42	...	44	20	...	...	...	...	

CHART No. 10

THONZE



Black line ●—● Total Deaths from all causes minus Reported Cholera and Small-pox per mille.

Red line ●—● Reported Plague per mille

To face Page 73.

This area is divided into four Trapping Squares.

The number of houses not included in the Trapping Squares is 12.

PLAGUE SEASON, 1910-11.

Diary of work done.

21. 7th May 1910.—A human plague death occurred in T. S. II, Block 5, house

This was the last case of the previous season's plague.

The house has been previously driven on 29th April 1910 and rat infection found.

16th November 1910.—Rat plague was discovered in T. S. I, Block 6, Bacillus Pestis being found in a dead rat.

DRIVE.

17th to 20th November 1910.

Number of coolies employed 80.

Area driven.—

T. S. I.—Block 6—17 houses.

" 7—27 "

" 8—5 "

Result.

	Number driven.	Rats	
		Alive.	Dead.
Houses	49	207	2

7th January 1911.—Bacillus Pestis was found in a dead rat.

DRIVE.

9th to 16th January 1911.

Number of coolies employed—80.

Area driven.—

T. S. I, Blocks 2, 3 houses.

T. S. I, Blocks 3, Bazaar.

T. S. I, Blocks 4, 8 Houses.

T. S. I, Blocks 5, 1 House.

Result.

	Number driven.	Rats	
		Alive.	Dead.
Houses	12	171	4
Bazaar	1	118	0

THONZE—*contd.*

(74)

17th February 1911 } Two human plague deaths occurred in a village
28th February 1911 } called Sanesu which is 2 miles from Thônze.

DRIVE.

20th March to 3rd April 1911.

Number of coolies employed—80.

Area driven.—Sanesu and Ywama another village close by.

Result.

	Houses driven.	Rats	
		Alive.	Dead.
Sanesu	161	660	11
Ywama	101	443	4

No further plague occurred in the 1910-11 season.

PLAGUE SEASON, 1911-12.

Diary of work done.

4th June 1911.—Human plague death in T.S.-3, Block 1, house 6-7.

5th June 1911.—The house was searched for dead rats and none found.

26th July 1911.—Human plague death in T.S.-3, Block 1, house 22 and 23

DRIVE.

27th to 31st July 1911.

Number of coolies employed—30.

Area driven.—T.S. III, Block 1.

Result.

	Number driven.	Rats	
		Alive.	Dead.
Houses	15	104	0

Owing to the fact that in previous years plague generally occurred in the month of March, a drive was conducted in the central area of the town from 11th to 30th March 1912.

Area driven.—

T.S. I, Blocks 1, 2, 3, 4, 5 and 9.

T.S. II „ 9, 10 and 14 and 1 house in Block 8.

Number of coolies employed—100.

Result.

—	Number driven.	Rats.	
		Alive.	Dead.
Houses	170	1,694	50
Godowns	3	6	...
Markets	Whole	422	5

No human cases have occurred.

HUMAN PLAGUE AND RAT DESTRUCTION STATEMENTS.

[illegible]

Average number of rats obtained by driving and trapping per 100 houses of the area driven and trapped :—

Number of Houses driven	...	1909-10. 198	1910-11. 62	1911-12. 189
Number of Houses trapped—	...	1,007	1,007	1,007

Average number of human plague deaths per 100 houses in the area trapped.

Seasons.	Human plague.	Live rats.		Dead Rats.	
		Trapping.	Drive.	Trapping.	Drive.
1909-10	3'57	647'96	238'29	0	52'02
1910-11	0'1	797'12	800	0	9'68
1911-12	0'2	1171'9	1178'31	0	29'10

An area in the centre of Thônzè was delimited as was done previously in Paungdè, and the people living in the area agreed to make their houses sanitary either by re-building or by repairs. Owing however to the fact that no engineering supervision could be obtained for the work, the scheme had to be abandoned, and those people who had already pulled down their houses rebuilt them with pukka plinths, but whether the work is good or bad is not known.

The bazaar in Thônzè was completely repaired in May 1910.

In March 1911 the whole of the floor of the Pot bazaar had to be dug up to get at the rats which were burrowing in the floor.

The cement floor was found to consist of rubble and rubbish and 400 rats were caught under the floor.

The floors of the other bazaars are beginning to break up and will probably have to be dug up next year.

STATEMENT OF RATS CAUGHT BY TRAPPING FROM 1909 TO 1912.

Number of Traps employed—400.

Months.	Number of Rats caught.		
	1909-10.	1910-11.	1911-12.
May	...	566	832
June	...	674	1,161
July	...	449	1,148
August	...	1,043	1,539
September	...	924	1,314
October	1,195	866	1,230
November	1,086	830	942
December	1,210	686	723
January	1,012	585	822
February	783	486	824
March	753	538	725
April	486	380	541
Total	6,525	8,027	11,801

MÓNYO.

Is a small riverine town on the Irrawaddy in Tharrawaddy District, containing about 500 houses, 1 market and 6 paddy godowns.

PLAGUE SEASON, 1910-11.

Diary of work done.

	Human	Plague	Death.	Reported.
4th May 1910 ...	..	..	..	..
6th May 1910 ...	..	..	..	..
5th June 1910 ...	..	..	..	..
10th June 1910 ...	..	..	..	..
10th August 1910 ...	..	..	..	..
22nd September 1910 ...	..	..	..	..

DRIVE.

2nd to 15th October 1910.

Results.

—	Number driven.	Rats	
		Live.	Dead.
Houses	15	57	27
Market	1	0	4

	A Human	Plague	Death.
3rd October 1910 ...	..	..	..
4th October 1910 ...	..	..	..
5th October 1910 ...	..	..	..

These cases were infected before the drive.

Human plague deaths in the area driven.—If infected in the houses they died in, these cases must have been infected by fleas from rats which died since the drive.

24th October 1910 ...	..	..	1 death.
3rd November 1910 ...	..	..	1 ..

In January 1911 Plague broke out again and Human Plague Deaths occurred on the following dates:—

12th January 1911.
19th January 1911.
21st January 1911.
24th January 1911.
26th January 1911 to 31st January 1911.

DRIVE.

Result.

—	Number driven.	Rats	
		Live.	Dead.
Houses	115	248	20
Market	1	3	0

The following Human deaths occurred either during or after the drive, the infection of the cases occurring during the drive:—

- (1) 26th January 1911. (2) 29th January 1911.
(3) 4th February 1911.

The following death occurred after the drive and the infection in this case was caused by fleas from rats which died after the drive:—

(1) 24th February 1911.

PLAGUE SEASON, 1911-12.

10th June 1911—One human death.

19th June 1911 to 1st July 1911.

DRIVEN.

Result.

	Number driven.	Rats.	
		Live.	Dead.
Houses	86	227	...
Market	1	9	...

No subsequent human cases have occurred.

Number of Rats caught each month by Trapping in 50 traps in Mònyo.

Months.	Rats.	Remarks.
1910		
May	80	
June	163	
July	263	
August	327	
September	433	
October	244	
November	287	
December	302	
1911		
January	236	
February	152	
March	102	Trapping discontinued.
Total	2,664	

POGAUNG AND OTHER VILLAGES IN THARRAWADDY TOWNSHIP.

Pogaung is a small village of 205 houses situated on the river. It is 6 miles distant from Thônzè. A Public Works Department road connects Pogaung with Thônzè, and as Pogaung is a large *ngapi*-producing centre and this *ngapi* is sent to Thônzè for sale and export, the danger of plague infection spreading from Pogaung to Thônzè was considerable.

Plague was reported in Pogaung in February 1911 and a drive was done from 21st February 1911 to 10th March 1911 and the following rats obtained:—

Number of houses driven.	Rats.	
	Alive.	Dead.
205	163	35

13. Plague deaths were reported in all between 22nd February 1911 and 19th March 1911, but the state of the rat population at the time of the drive shows that plague must have been going on for some time before it was reported.

The plague was principally pneumonic. So segregation and disinfection was also carried out.

Sanywe, another village 50 yards away across the river, was then infected and a drive was done from 1st to 7th March 1911 :—

Houses driven.	Rats.	
	Alive.	Dead.
50	12	6

Six human plague deaths occurred in Sanywe. In order to prevent this plague from spreading to Thônzè the villages along the road between Pogaung and Thônzè were then driven with the following result :—

Name of village.	Number of houses driven.	Rats		Date of Drive.
		Alive.	Dead.	
Ywathit 	30	62	...	7th to 11th March 1911.
Layatekyi 	42	209	...	15th to 18th March 1911.
Letpangôn 	54	70	...	18th to 22nd March 1911.
Naungingôn 	46	265	...	22nd to 25th March 1911.
Yele 	40	95	...	25th to 29th March 1911.
Youngni 	28	75	...	29th and 30th March 1911.

The plague was stopped and infection of Thônzè was prevented.

The plague infection was of an extremely virulent type. In one house all the inmates numbering 5 died in 13 days, and most of the contacts also died.

A finger blood smear which was examined showed hundreds of plague bacilli in every field.

TAIKKYI.

Census, 1911—1,406.

Taikkyi is a Railway town between Rangoon and Thônzè.

Plague season, 1910-11. No plague occurred in the town.

PLAGUE SEASON, 1911-12.

Diary of the work done.

5th August 1911.—One human plague death.

26th December 1911.—One human plague death reported, a Search Party under Sub-Assistant Surgeon T. David, found no dead rats, so no action was taken.

4th January 1912.—One human plague death.

30th January 1912.—Rat mortality reported in Railway employees' quarters, Search Party sent, 8 recently dead rats found. Bacillus pestis found in spleen smears from the dead rats.

5th to 14th February 1912.

Drive.—Number of coolies employed, 100.

Area driven.—Railway premises, market and "Shan village" covering a wide area.

TAIKKIYI—ÖKKAN.

(80)

Result of Drive—

Houses, etc.					Number of houses driven.	Rats.	
						Alive.	Dead.
Houses	...	...	...	...	89	557	33
Market	...	...	...	...	1	472	18

The dead rats were found mostly in the Railway servants' quarters, market, and in the Forest Rangers and Forest Guards' quarters which are near the Railway station in that part of Taikiyi called the "Shan village."

Bacillus pestis was found in the spleen smears from the dead rats.

No plague has occurred since.

ÖKKAN.

Census, 1911—2,323.

Ökkan is a Railway town between Rangoon and Thônzà.

No plague occurred during the plague season, 1910-11.

PLAGUE SEASON, 1911-12.

29th July 1911.—Four dead rats were found in the market.

5th to 8th August 1911.

Drive.—Number of coolies employed, 63.

Area driven.—Market (whole).

T. S. I, Block 15 (14 houses).

Result :—

					Number driven.	Rats.	
						Alive.	Dead.
Houses	...	...	...	...	14	5	Nil
Market	...	...	...	...	Whole	224	5

Bacillus pestis was not found in any of the rats.

No plague has occurred since.

NUMBER OF RATS OBTAINED BY TRAPPING MONTHLY.

Number of Traps employed 100.

Month.	Total rats caught, 1910-11.	Total rats caught, 1911-12.
April	238	459
May	253	414
June	204	555
July	451	499
August	409	377
September	540	310
October	553	289
November	598	261
December	599	268
January	449	310
February	365	304
March	445	198
Total	5,184	4,401

Trapping was stopped on 18th March 1912.

WANETCHAUNG.

Wanetchaung is a small town on the Railway line in Hanthawaddy District between Rangoon and Thônzè containing about 250 houses.

Plague was reported in February, and a drive was done from 8th to 18th March 1911.

Area driven.—Practically the whole village except a small isolated area.

Result—

	Number driven.	Rats.	
		Live.	Dead.
Houses	230	404	40
Market	1	2	18

From the number of dead rats obtained it is clear that plague had been going on for some time before the drive.

Only one death from plague was reported but a study of the death registers shews that some 9 or 10 plague deaths were probably concealed in January and February. No plague occurred after the drive.

INSEIN.

PLAGUE SEASONS, 1910-11 AND 1911-12.

Population, 1911—11,147.

Insein is a Railway town between Rangoon and Thônzè.

DIARY OF WORKS.

28th April 1911 and 1st May 1911.—Two human plague deaths in T. S. I, Block 8, house 5.

8th July 1911.—One dead rat was found in T. S. II, Block 12, house 13. A spleen smear was examined and bacillus pestis was found.

19th July 1911.—Two dead rats were found in T. S. II, Block 11, house 3. Spleen smears were examined and bacillus pestis found.

28th July 1911.—One human plague death in T. S. I, Block 6, house 8.

DRIVE.

28th July 1911 to 4th August 1911.

Number of coolies employed 76.

Area driven.—Market.

T. S. I, Blocks 4, 5, 6, 7.

T. S. II, Blocks 11 and 12.

Result—

	Number driven.	Rats.	
		Live.	Dead.
Houses	65	279	14
Market	Whole.	43	10

14th August 1911.—One human plague death in T. S. I, Block 14, house 17. The house was searched and no rats were found.

Six houses, three on either side, were also searched and 21 live rats obtained.

Spleen smears from the live rats were examined but bacillus pestis was not found.

31st October 1911.—One dead rat was found in the market and bacillus pestis was found in spleen smears.

The market was searched and 2 live rats only obtained.

Spleen smears of these live rats were examined but no bacillus pestis was found.

17th December 1911.—One human death in T. S. III, Block 8, house 4 (Hindu temple). The temple was searched but no rats were found.

T. S. III, Block 12, house 30, in which the deceased's brother lived was searched and 9 live rats obtained.

Spleen smears were examined and no bacillus pestis was found.

4th December 1911.—A dead rat was found in the Police lines and bacillus pestis was found in spleen smears.

The house was searched and 2 live and 1 dead rat found, but bacillus pestis was not found in spleen smears.

8th January 1912.—One human plague death. The deceased took ill at Insein in T. S. III, Block 18, house 11, and died in Rangoon.

The house was searched and two live rats obtained.

Bacillus pestis was not found in spleen smears from the two rats.

Three human plague deaths occurred in T. S. IV, Block 14, house 3, on the 13th, 17th and 18th January 1912.

The house was searched and no rats found.

31st January 1912.—One human plague death in T. S. IV, Block 17, house 5.

The house was searched but no rats found.

2nd February 1912.—One human plague death in T. S. III, Block 13, house 6.

The house was searched and 17 live rats found.

Spleen smears were examined but no bacillus pestis found.

3rd February 1912.—A dead rat was found in T. S. II, Block 12, house 3, and bacillus pestis was found in it.

The house was searched and one live rat and two dead rats obtained. Bacillus pestis was found in these rats.

8th February 1912.—One human plague death in T. S. IV, Block 14, house 4.

The house was searched and 6 live rats obtained.

DRIVE.

15th February 1912 to 1st March 1912.

Number of coolies employed—

15th February	...	...	...	...	96
16th to 19th February	...	...	...	...	260
20th and 21st February	...	...	...	...	133
22nd February to 1st March	...	...	...	...	96

Area driven.—

Market.—whole.

T. S. I, Block 6 to Block 12	...	...	...	Houses.
T. S. II, Block 11 to Block 13	...	...	...	68
T. S. III, (Railway quarters) and Native lines	...	...	...	40
				406

Result.

	Number driven.	Rats.	
		• Alive.	Dead.
Houses	514	2,509	148
Market	Whole.	118	12

Bacillus pestis was found in rats in the following houses :—

T. S. I, Block 10, house 10.
T. S. III, Block 8, house 12.
T. S. III, Block 9, house 9.
T. S. III, Block 15, house 18.
T. S. II, Block 12, house 15.

Human plague deaths during the drive—

- (1) 19th February 1912 in T. S. III, Block 10, house 7.
(2) 20th February 1912 in T. S. III, Block 19, house 2.

After the drive—

- (1) 11th March 1912 in T. S. III, Block 14, house 4.

Statement of human plague, drives and redrives, by blocks for all blocks in which either human plague occurred or dead rats were found on driving or redriving.

Block Number.	Number of houses in block.	Human deaths and infection.	Date of drive.	Rats.		
				Alive.	Old dead.	Fresh dead.
Market ...	Whole.	.....	4th August 1911 15th February 1912.	43 118	... 10	... 2
T. S. I, Block 6 ...	13	28th July 1911	1st August 1911 16th and 17th February 1912.	95 55	4 1	... ...
T. S. I, Block 7 ...	6	.....	16th and 17th February 1912.	21	...	...
T. S. I, Block 8 ...	9	28th April 1911 and 1st May 1911.	16th and 17th February 1912.	101	...	...
T. S. I, Block 10 ...	13	.....	16th and 17th February 1912.	239	2	1
T. S. II, Block 11 ...	10	Rat infection, 19th July 1911.	3rd August 1911 26th and 29th February 1912 and 1st March 1912.	12 64	...	...
T. S. II, Block 12 ...	19	Rat infection 8th July 1911 and 3rd February 1912.	28th to 31st July 1911. 28th and 29th February 1912 and 1st March 1912.	108 122	10 7	... 1
T. S. III, Block 8 ...	14	17th February 1911.	19th February 1912.	66	19	4
T. S. III, Block 9 ...	31	.....	21st February 1912.	146	17	...
T. S. III, Block 10 ...	33	19th February 1912.	Do.	82	2	...
T. S. III, Block 12 ...	54	.....	22nd February 1912.	75	10	...
T. S. III, Block 13 ...	27	2nd February 1912.	26th February 1912.	85	2	...
T. S. III, Block 14 ...	17	11th March 1912	Do.	41	6	...
T. S. III, Block 15 ...	34	.....	27th February 1912.	96	33	2
T. S. III, Block 18 ...	37	8th January 1912.	24th February 1912.	43	6	...
T. S. III, Block 19 ...	14	20th February 1912.	23rd February 1912.	57	1	...
T. S. IV, Block 14 ...	...	13th, 17th and 18th January 1912. 8th February 1912.	No drive	...	...	...

TRAPPING FIGURES FOR INSEIN TOWN.

Number of Traps 400.

Months.	1909-10.	1910-11.	1911-12.	Remarks.
	Total Rats caught.	Total Rats caught.	Total Rats caught.	
May	...	570	458	
June	...	760	462	
July	...	789	437	
August	...	941	449	
September	...	969	419	
October	...	831	352	
November	...	784	308	
December	549	917	393	
January	541	872	383	
February	408	622	205	
March	398	651	135	Trapping ceased on 18th March 1912.
April	339	588	...	
Total	2,752	9,300	4,052	

ANALYSIS OF INFECTED BLOCKS.

I. Blocks found infected at first drive, infection stopped.

T. S. I, Block 5 (Market), 10.

T. S. II, Block 11.

T. S. III, Blocks 8, 9, 15.

Total 6.

II. Blocks found infected at first drive, infection was found after the first drive during the following subsequent month :—

1st month.	2nd month.	3rd month.	4th month.	5th month.	6th month.	7th month.
T. S. II, Block 12	...	...	...	...	...	T. S. II Block 12
T. S. III, Block 14	...	...	...	...	...	...

Total 2.

III. Blocks not infected at first drive and no subsequent infection found :—

T. S. I,—6, 7, 8, 9, 11 and 12.

T. S. II,—13.

T. S. III,—1, 2, 3, 4, 5, 6, 7, 10, 11, 12, 13, 16, 17, 18, 19 and 20. Total 23.

IV. Blocks not infected at first drive but became subsequently infected.

Nil.

V. Blocks not driven not infected :—

T. S. I,—1, 2, 3, 4.

T. S. II,—1, 2, 3, 4, 5, 6, 7, 8, 9 and 10.

Total 14.

VI. Blocks infected not driven :—

T. S. IV,—14 and 17.

Total 2.

KYAUKTAN.

PLAGUE SEASON, 1910-11.

Kyauktan is a delta town in Hanthawaddy.

Census 1911—2,534.

Diary of the work done in Kyauktan.

5th March 1911.—One human plague death reported in house No. 21, Block 7.

10th March 1911.—Second death in house No. 16, Block 7.

12th March 1911.—Third death in house No. 3, Block 7.

DRIVE.

14th to 31st March 1911.—Number of coolies employed, 100.

Area driven.—All the houses in the blocks on the foreshore and the market.

Result of drive:—

—	Number of houses driven.	Rats.	
		Alive.	Dead.
Houses	292	459	190
Market	1	22	32

Dead rats were found in 10 blocks out of a total of 12 driven.

Redrive from 1st April 1911 to 3rd April 1911.

Area driven:—

Blocks 12 and 16.

Result:—

Number of houses driven.	Rats.	
	Alive.	Dead.
27	6	0

Human Flague deaths and dates of the drives of the blocks in which they occurred.

Serial Number of death.	Block Number.	Date of Death.	Date of Drive of the block.
6	2	21st March 1911	25th March 1911.
7	Nil.	21st March 1911	Not ratted.
9 & 10	3	27th March 1911 27th March 1911	27th March 1911.
...	7	5th March 1911	14th and 15th March 1911.
...	...	10th March 1911	
...	...	12th March 1911	
4	...	16th March 1911	
5	11	18th March 1911	20th March 1911.
8	12	25th March 1911	17th to 20th March 1911. 1st to 3rd April 1911.
11	12	28th March 1911	
15	15	31st March 1911	21st March 1911.
12	16	29th March 1911	16th to 22nd March 1911. 1st to 3rd April 1911.
14	18	31st March 1911	22nd to 24th March 1911.
13	Landing wharf 16.	31st March 1911	22nd to 24th March 1911.

SYRIAM—PYAWBWE. (86)
KYANA.

Two deaths occurred on 27th March 1911 in a Pagoda which was not driven.
The total number of plague deaths was 15.
No plague has occurred since.
Rats caught by trapping from 1st April 1910 up to 31st March 1911 when Trapping was stopped, 3,228.

SYRIAM.

Syriam is in the Delta in Hanthawaddy.
Between 9th January and 21st January 1911, 9 cases of Human Plague were reported in Syriam.

A drive was carried out from 18th to 31st January 1911, 143 houses and 47 rows of Coringhi mat and mud huts were driven, and the following rats obtained:—

Recently dead.	Old, dead.	Live.
3	73	1,368

Total 1,444.

No more Human Plague has occurred.

PYAWBWE.

PLAGUE SEASON, 1910-11.

Pyawbwe is a small town of 3,793 inhabitants situated in the Delta on the Kamaoung Creek.

Eleven deaths from plague occurred between May and October 1910.
Seven cases of Plague were reported in March and one in April 1911. So a drive was done from 7th April to 27th April 1911.

The following was the result:—

Number of Houses driven.	Rats.	
	Alive.	Dead.
319	990	13

KAYAN.

PLAGUE SEASON, 1910-11.

Kayan is a village of 3,850 inhabitants situated in the Delta on the banks of the Kayan Creek.

Human Plague was reported from Kayan in April 1911, and a drive was done from 17th April 1911 to 25th April 1911 with the following result :—

	Number driven.	Rats.	
		Alive.	Dead.
Houses	12	20 50	57 41
Markets	1		

The death rate per mille from all causes minus reported cholera and small-pox in the season 1910-11 was 40·77.

The proportion of dead to live rats obtained in the drive indicates that plague had been going on for some time. The drive was stopped as the hot weather was coming on, and previous experience has shown that when plague has been allowed to go on as long as this before a drive begins it is useless to attempt to stop it by driving.

PEGU TOWN.

For an account of the work in Pegu Town up to October 1910 see the Annual Report for 1909-10 pages 33 to 36.

In November 1910. Two cases of Plague occurred and localised drives were done round the infected houses.

A Plague epidemic began in March 1911 and 84 Plague deaths occurred. No drive was done as owing to the condition of the market an efficient drive was impossible.

No Plague operations were carried out in Pegu Town during the Plague season, 1911-12. During this season, a plague epidemic of 94 deaths occurred in Pegu Town, but as no report was made to either the Special Plague Medical Officer or the Assistant Plague Medical Officer we were not aware that any plague had occurred until the end of the season.

Pegu Market is now being rebuilt on sound lines.

DEIKU.

Census, 1901	1,138
Census, 1911	3,290
Houses	568

Deiku is 34 miles from Pegu by rail.

PLAGUE SEASON, 1910-1911.

Market.—The Market is very unsound and not rattable, the stalls being mostly low wooden platforms over a kutchia floor. These wooden stalls were made into sections to facilitate ridding; but until pukka floors and stalls are put in, this Market will be a continual source of danger.

Paddy Trade.—The paddy trade is considerable there being 29 paddy godowns and 3 paddy mills.

Plague.—The first case of Plague occurred on 5th January 1911 and 36 cases had occurred before the commencement of the drive on 10th April 1911.

The total number of Plague deaths reported between 5th January 1911 and 30th April 1911 was 39.

DRIVE.

The Drive began on 10th April 1911 and the central portion only of the town was driven, the drive only lasting 5 days with the following result :—

—	Number driven.	Rats.	
		Alive.	Dead.
Dwelling Houses	58	236	8
Paddy Godowns	1		2
Market	1	49	10
Total	60	285	26

This drive was not undertaken with a view of stopping the plague epidemic which was practically over, but in order to prepare the centre of the town for future drives and to start the work of building improvement.

PLAGUE SEASON, 1911-12.

Serial No.					
1	14-1-1912	One plague death in	...	...	T. S. 1-7-5.
2	17-1-1912	" " " "	...	...	T. S. 1-9-59.
3	18-1-1912	" " " "	...	...	T. S. 1-7-5.
4	19-1-1912	" " " "	...	...	T. S. 11-10-36.
5	20-1-1912	" " " "	...	...	T. S. 1-9-51.

When these deaths occurred there was no Assistant Plague Medical Officer in Pegu District, and nothing was done. On 22nd January 1912 the Assistant Plague Medical Officer returned to Pegu District, and a drive began on 27th January 1912 and continued till 16th February 1912.

Number of coolies employed—

27th January 1912 to 31st January 1912	...	...	144
1st February 1912 to 15th February 1912	...	...	198
16th February 1912 to 16th February 1912	...	...	90

The total rats obtained and houses driven were :—

—	Number driven.	Rats.		
		Alive.	Fresh dead.	Old dead.
Houses	523	2,049	310	243
Godowns	36	82	1	5
Market	1	900	43	14
Mills	1	.....	.....	.....

No trapping was done in the town.

Infected Blocks Statement.

		Total.
No. 1	Blocks infected at drive ... T.S. 1-10 & 6. Infection ceased. ... T.S. 11-24, 10 and 8.	5
No. 2	Blocks infected at drive ... T.S. 1-7, 3, 4, 12, 9. Infection did not cease. ... T.S. 11-5.	6
No. 3	Blocks non-infected at drive infected since.	
No. 4	Blocks non-infected at drive remained non-infected. T.S. 1-14, 13, 11, 8, 5, 2, 1, 15, 16 and 17. T.S. 11-1, 3, 4, 7, 9 and 6.	16

DRIVE STATEMENT.

TRAPPING SQUARE I.

Block No.	Rats.			Date of block driven.	Plague.
	Alive.	Old dead.	Recently dead.		
Block 1	25	1	...	9th February 1912	Nil.
Block 2	33	...	...	9th February 1912	Nil.
Block 3	573	106	119	2nd to 5th February 1912	9th case, 31st January 1912. 13th case, 9th February 1912. 18th case, 14th February 1912. 20th case, 20th February 1912. 22nd case, 24th February 1912.
Block 4	290	3	1	5th to 6th February 1912	19th case, 15th February 1912. 29th case, 8th March 1912. 32nd case, 14th March 1912.
Block 5	2	...	...	9th February 1912	Nil.
Block 6	200	14	43	29th to 30th January 1912	(Market) nil.
Block 7	157	22	90	27th to 29th January 1912	1st case, 14th January 1912. 3rd case, 18th January 1912. 11th case, 9th February 1912. 17th case, 13th February 1912. 23rd case, 25th February 1912.
Block 8	43	...	...	9th February 1912	Nil.
Block 9	715	52	85	30th January 1912 to 2nd February 1912	2nd case, 17th January 1912. 3th case, 20th January 1912. 6th case, 30th January 1912. 15th case, 17th February 1912. 30th case, 9th March 1912. 33rd case, 16th March 1912. 34th case, 21st March 1912.
Block 10	117	13	3	6th to 7th February 1912	12th case, 7th February 1912.
Block 11	82	...	...	8th February 1912	Nil.
Block 12	194	1	...	7th to 8th February 1912	7th case, 30th January 1912.
Temporary Hut.	...	...	...	Not driven	28th case, 2nd March 1912. 10th case, 3rd February 1912.
Block 13	28	...	...	8th February 1912	Nil.
Block 14	58	1	...	8th February 1912	Nil.
Block 15	46	...	...	10th February 1912	Nil.
Block 16	93	...	...	10th February 1912	Nil.
Block 17	82	...	...	10th February 1912 to 12th February 1912	Nil.
TRAPPING SQUARE II.					
Block 1	148	...	...	12th February 1912	Nil.
Block 2	95	8	...	12th to 13th February 1912	12th case, 21st February 1912.
Block 3	11	...	...	14th February 1912	13th case, 9th February 1912. Plague staff cooly living in Tarpaulin tent got infected while ratting 4 wh. He recovered.
Block 4	91	...	...	14th February 1912	31st case, 13th March 1912, a cart man, several cart men have taken up their shodds temporarily on the out skirts of the town and have built temporary shodds which were not ratting.
Block 5	52	2	13	13th February 1912 and 16th February 1912	16th case, 12th February 1912. 14th case, 23rd February 1912. 25th case, 25th February 1912. 26th case, 26th February 1912. 27th case, 26th February 1912.
Block 6	14	1	Nil	16th February 1912	Nil.
Block 7	78	3	...	14th February 1912	Nil.
Block 8	26	8	...	15th to 16th February 1912	8th case, 31st January 1912.
Block 9	54	16	...	15th to 16th February 1912	Nil.
Block 10	73	7	...	14th to 15th February 1912	4th case, 19th January 1912.

PYUNTAZA—NYAUNGLEBIN. (90)

This drive was begun too late for it to be possible to avert the epidemic altogether. The infection had spread over all the centre of the town before the drive began, and a reference to the detailed Table will shew that in several blocks the rat infection was very severe. The drive however stopped the spread of the disease as is seen from the infected Blocks Statement, and in 6 out of the 11 infected blocks the infection was stamped out. In 5 blocks infection still persisted after the drive.

Average number of rats obtained by drive per 100 houses driven.

Average number of Human Plague deaths per 100 houses in the town.

			1910-11.	1911-12.
Number of houses in town	...	...	558	559
Number of houses driven	...	...	60	547

DRIVE.

Plague Seasons.	Human Plague.	Rats.	
		Alive.	Dead.
1910-11	8.9	475.0	433
1911-12	6.8	625.41	217.01

The Total Human Plague was 34 attacks, 33 deaths.

No Trapping has been done in Daiku.

PYUNTAZA.

Census, 1901	...	...	...	...	1,358
Census, 1911	...	...	...	...	3,895

Pyuntaza is 41 miles distant by rail from Pegu.

Number of houses	...	...	...	...	515
Number of paddy godowns	...	...	...	...	28

PLAGUE SEASON, 1910-11.

The Market was extremely unsound and unratifiable. The low plank floors were demolished, the plank floors of the Green goods Market were raised to 3 feet, and the floors of all the remaining stalls were made into sections to facilitate ratting operations. A pukka floor and pukka stalls are required in this Market.

PLAGUE SEASON, 1910-11.

The first case of plague occurred on 25th January 1911 being imported from Rangoon. The low mortality figures for this month indicate that no previous plague had been concealed. Before the drive commenced 21 cases of plague had been reported and the low non-epidemic death rate indicates that practically none can have been concealed.

The drive began on 20th March 1911 and the central portion of the town was driven with the following result:—

—	Number driven.	Rats.	
		Alive.	Dead.
Dwelling houses	384	1,135	67
Market	1	15	18
Paddy godowns	97	172	17

This drive was commenced too late to prevent the epidemic. The real object of the drive was by driving the centre of the town and removing low floors, opening corners, etc., to facilitate future work.

Average number of rats obtained by drive per 100 houses driven.
Average number of Human Plague deaths per 100 houses in the town.

Number of houses in town		...	...	1910-11.	1911-12.
Number of houses driven		...	...	915	515
		...	...	412	...

Plague Seasons.	Human Plague.	Rats.	
		Alive.	Dead.
1910-11	621	32087	2476
1911-12	.....	.....	.....

PLAGUE SEASON, 1911-12.

Two plague deaths were reported, one in May and one in July, but no infection occurred and no plague measures were necessary during the season.

NYAUNGLEBIN.

Census, 1901	...	...	...	...	2,791
Census, 1911	...	...	...	...	6,643

The town is divided into 4 trapping squares containing—

Houses	...	...	...	...	915
Market	...	...	...	...	1
Paddy Mills	...	...	...	...	1
Paddy Godowns	...	...	...	...	108
					1,025

PLAGUE SEASON, 1910-11.

4th January 1911.—Human plague death in T. S. II-1-65.

This was not reported as plague.

10th January 1911.—Human plague death in T. S. II-1-65.

DRIVE.

From 17th January to 16th March 1911.

Number of coolies employed 100.

Area driven.

The whole of the town except outlying houses.

Result.

	Number driven.	Rats.		
		Alive.	Fresh dead.	Old dead.
Houses	915	3,692	258	193
Market	1	175	5	.....
Mills	1	9	.....	.....
Godowns	108	244	7	14
Total	1,025	4,120	270	207

Twenty-three human plague deaths occurred during and subsequent to the drive.

Two cases of plague which occurred were not reported as plague.

Statement of Human Plague and drives in all blocks in which Human Plague occurred. Nyaunglèbin, 1910-11.

Trapping Square and Block number.	Dates of deaths.	Dates of drives.	Dates of redrives.	Number of houses and paddy godowns driven.	Total number of houses and godowns in the block.	Results. Rats obtained.		
						Alive.	Recently dead.	Old dead.
T. S. I, Block 1A ...	18th January 1911 ... 2nd February 1911. 24th March 1911.	19th to 21st January 1911.	Nil.	19	19	56	1	1
T. S. I, Block 1 ...	30th January 1911 ...	21st January 1911 ... 1st February 1911. 2nd February 1911.	31st January 1911 ...	20 3	20	81 1	36 2	3 ...
T. S. I, Block 2 ...	20th April 1911 ... imported from Deiku.	28th February 1911 ... 1st March 1911.	Nil.	14	14	39	...	4
T. S. II, Block 1 ...	4th January 1911 ... 10th January 1911. 18th January 1911. 25th January 1911. 17th February 1911 ... 6th March 1911 ...	17th to 20th January 1911. ...	20th February 1911 ... 7th March 1911 ...	30 1 1	30	201	101 1 3	24
T. S. II, Block 2 ...	1st February 1911 ... 18th March 1911 ...	26th January 1911 to 2nd February 1911.	...	58	58	384	8	14
T. S. II, Block 6 ...	25th February 1911 ...	27th and 28th February 1911.	...	17	17	88	...	2
T. S. III, Block 2 ...	19th February 1911 ...	16th to 21st February 1911.	...	67	67	428	5	11
T. S. IV, Block 1 ...	6th February 1911 ... 6th March 1911 ...	6th and 7th February 1911. 6th March 1911.	...	16 16	33	25 31	4 0	2 2
T. S. IV, Block 3 ...	24th February 1911 ... 10th March 1911 ...	6th, 8th, February 1911 to 10th February 1911.	28th February 1911 ... 11th March 1911 ...	22 1 1	22	90	2	8 2 ...
T. S. IV, Block 4 ...	13th April 1911 ... 14th April 1911.	1st and 2nd March 1911.	...	28	28	109	1	4
T. S. IV, Block 9 ...	24th March 1911 ...	2nd March 1911 ... 3rd March 1911.	...	14	14	27	1	1
T. S. IV, Block 13 ...	2nd February 1911 ... 8th March 1911. 14th March 1911.	13th and 14th March 1911.	...	32	32	66	4	14

NYAUNGLEBIN—contd.

(92)

PLAGUE SEASON, 1911-12.

28th December 1911.—One human plague death in T. S. II-2.

28th December 1911.—The Assistant Plague Medical Officer was transferred, so no steps were taken to limit the disease until he returned on 19th February 1912.

Between 28th December 1911 and 19th February 1912 there were 13 plague deaths in the following blocks :—

Serial No.	Date.	Trapping Square Number.
1	28th December 1911	II-2
2	13th January 1912	I-1
3	26th January 1912	II-1
4	28th January 1912	II-1
5	29th January 1912	II-2
6	1st February 1912	II-2
7	3rd February 1912	II-2
8	3rd February 1912	II-2
9	4th February 1912	II-2
10	7th February 1912	II-2
11	9th February 1912	II-10
12	14th February 1912	II-1
13	18th February 1912	III-2

From 19th February 1912 to 30th March 1912 a drive was carried out.

Area driven :—The whole town.

Number of coolies employed—

19th February to 25th March 1912 ... 97

25th to 30th March 1912 ... 33

Result—

	Number driven.	Rats.		
		Live.	Fresh dead.	Old dead.
Houses	840	2,645	41	272
Markets	1	516	38	49
Mills and Godowns	94	181	8	61
Totals	935	3,342	87	382

The drive in Nyaunglebin was begun after the plague had been spreading for some time and it was impossible to stop the epidemic.

The work was considerably hampered by a small-pox epidemic which was in progress at the time, as it was impossible to drive the houses which had small-pox cases in them.

There were 27 plague deaths in Nyaunglebin during the season.

The high non-epidemic figure however indicates that some plague was concealed.

HUMAN PLAGUE AND RAT-DESTRUCTION STATEMENT.

Block.	Date of death.	Date of drive.	Date of re-drive.	Number of houses driven.	Total Number of houses in the block.	Rats caught.		
						Alive.	Old dead.	Fresh dead.
I	2nd case, 13th January 1912 ; 21st case, 12th March 1912.	Trapping Square No. I. 19th March 1912	...	11	14	5	1	
I	3rd case, 26th January 1912 ; 4th case, 28th January 1912 ; 12th case, 14th February 1912 ; 14th case, 21st February 1912 ; 15th case, 23th February 1912 ; 20th case, 11th March 1912.	Trapping Square No. II. 20th to 23rd February 1912.	...	32	32	68	73	4
II	1st case, 28th December 1911 ; 5th case, 29th January 1912 ; 6th case, 1st February 1912 ; 7th case, 3rd February 1912 ; 8th case, 3rd February 1912 ; 9th case, 4th February 1912 ; 10th case, 7th February 1912 ; 17th case, 1st March 1912.	23rd to 26th February 1912.	...	52	56	113	50	13
X	11th case, 9th February 1912	21st March 1912	...	22	26	96	2	...
II	13th case, 18th February 1912 ; 22nd case, 13th March 1912 ; 23rd case, 13th March 1912.	Trapping Square No. III. 26th to 28th February 1912.	...	56	67	194	35	18
IV	24th case, 3rd April 1912	Trapping Square No. IV. 9th to 11th March 1912	...	28	31	93	14	2
XIII	16th case, 29th February 1912 ; 18th case, 1st March 1912.	4th and 5th March 1912.	...	27	33	36	12	1
XIV	19th case, 4th March 1912	30th March 1912	...	8	11	35	...	...

Average number of rats obtained by driving and trapping per 100 houses driven and trapped.

Average number of human plague deaths per 100 houses trapped.

Number of houses driven—

1909-10. 1910-11. 1911-12.
Nil. 1,025 935

Number of houses trapped—1,021.

Season.	Human plague.	Live rats.		Dead rats.	
		Trapping.	Drive.	Trapping.	Drive.
1909-10	...	7'05	98'33	Nil.	Nil.
1910-11	...	2'45	68'75	400'95	46'54
1911-12	...	2'25	668'76	357'43	40'16

The following improvements to mills and godowns have been effected up-to-date:—

Paddy godown floors raised to three feet above the ground 64
Paddy godowns plinth curtain walls built as in Paungde ... 4
Paddy mills complete plinth curtain walls and other improvements as in Paungde. ... 1
Paddy mills plinth curtain walls only ... 1

(95) NYAUNGLEBIN—KYAUKTAGA.

STATEMENT OF RATS CAUGHT BY TRAPPING FROM 1909—12.

Number of traps employed—400.

Months.	Number of rats caught.		
	1909-10.	1910-11.	1911-12.
May	.....	327	429
June	.....	439	396
July	.....	690	612
August	.....	693	735
September	.....	855	964
October	.....	1,072	862
November	.....	1,100	1,051
December	.....	928	753
January	146	380	425
February	415	.....	349
March	295	.....	166
April	148	381	66
Total	1,004	6,865	6,818

KYAUKTAGA.

Estimated population—1,200.

Number of houses—202.

Kyauktaga is a small Railway town in the Pegu District Plague area.

PLAGUE SEASON, 1910-11.

9th October 1910.—A case of human plague was reported.

14th October to 4th November 1910.

DRIVE.

Number of coolies employed—30.

The market and surrounding area.

Statement of Human Plague Deaths and Drives.

Block or Quarter.	Dates of Deaths.	Dates of drives.	Dates of redrives.	No. of houses driven.	Rats obtained.				Remarks.
					Alive	Recently dead.	Old dead.	Total	
1st infected block, south side of town, East of Railway.	11th October 1910 26th October 1910	14th and 15th October 1910.	28th October 1910	5 5	45 8	14 ...	...	59 8	Bacillus Pestis found in one rat. Bacillus Pestis found in Bubo and in smear taken from case that died on 26th October 1910.
Market, east of Railway ...		14th October 1910	...	Market block	20	...		20	
Block adjacent to 1st infected block.		17th October 1910 20th to 22nd October 1910.	...	1 large paddy godown.	86	2		88	
and infected quarter, Block west of Railway.	23rd October 1910	24th October 1910 to 4th November 1910		27 houses, 1 paddy godown.	229	14	3	246	Bacillus Pestis found in Bubo smear of case that died on 23rd October 1910.

KYAIKTAOK—contd.

(96)

Peinzalók is a small Railway town in the Pegu District Plague area.
Estimated Population—1,000.
Number of houses—100.

PLAGUE SEASON, 1910-11.

Nine deaths from plague occurred in January 1911.
No systematic drive was carried out as no staff was available.
A few houses were cleaned by a search party and 56 recently dead rats obtained.
No mortality figures are available.

PENWEGON.

Estimated Population—1,400.
Penwégón is in the Pegu Plague area. It is a town on the Railway, 114 miles from Rangoon. It contains about 200 houses.

PLAGUE SEASON, 1911-12.

Twenty deaths from plague were reported in May and June 1911.

DRIVE.

3rd to 12th July 1911.

Number of coolies employed—30.

Result—

Houses driven.	Rats.		
	Live.	Fresh dead.	Old dead.
175 and 1 Market	276	6	137

During July and August 7 more plague deaths were reported making a total of 27 for the season.

It can be seen from the number of old dead rats obtained by the drive that the epidemic had been going on for some time before the drive began.

It is interesting to note that both the plague death figure and the total deaths from all causes *minus* reported cholera and small-pox are the highest which have been so far reported in the town. This tends to shew that the low mortality elsewhere cannot have been due to the plague season, 1911-12, having been a general "off" season.

CONCLUSIONS.

Before attempting to draw any conclusions from the mortality figures available, it is necessary to emphasize the following facts. During the seasons 1910-11 and 1911-12 the closest watch possible has been kept on mortality in all the towns in the area. Caretakers have been appointed to cemeteries where there was any danger of deaths not being reported; the graves have been counted, and constant inspections done to see that the number of graves tallied with the reported deaths. There has been during the whole period a staff of Assistant Surgeons and Sub-Assistant Surgeons working in the area who have been constantly on the look out to prevent concealment of deaths. In every town there are Inspectors or Burman Trappers who are also on the look out for

concealed deaths or Plague, as rewards are paid to any of them who give us information which leads to the discovery of concealed plague or deaths.

In my opinion it would be extremely difficult now for any one to conceal a death in the Prome to Thônz area. Prior to our work there was practically no supervision in the area, and the concealment of deaths would have been extremely easy, and inquiries lead me to believe that in several towns it occurred to a considerable extent.

It may be taken as certain that no deaths were reported which did not occur as there would be no motive for doing so.

While therefore during the seasons 1910-11 and 1911-12 all deaths were reported, it is probable that during the period 1905-06 to 1909-10 deaths were concealed.

All calculations of reduction in mortality based on a comparison between the figures for 1910-11 and 1911-12 with those for the period 1905-06 to 1909-10 will therefore tend to shew a smaller reduction in deaths than actually took place. The inaccuracy of the figures before 1910-11 therefore does not lessen in any way the value of calculations based on them, but the only effect it has on the results of these calculations is to make our work appear of less value than it really is.

The result of the work on the Rangoon to Prome line has been as follows:—

1910-11.

In this area 16½ miles in length a normal epidemic only occurred in one small town, Thègôn, and partial epidemics in two, Prome and Gyobingauk.

The number of towns in which Plague infection occurred was 14.

1911-12.

In the same area a normal epidemic only occurred in one small town, Thègôn while in all the other towns epidemics were prevented. Plague infection was found in 11 towns.

CALCULATION OF REDUCTION IN MORTALITY.

In the following table an attempt is made to estimate the reduction in mortality due to the work, in the larger towns in the Prome to Thônz area.

In considering these figures it must be borne in mind that this does not in any way represent the total reduction in mortality in the area. This is due to the fact that whenever a plague epidemic occurs in any of these Railway towns, infection is carried to many of the villages round which are in daily communication with the Railway town, and epidemics also occur in these villages. By preventing epidemics in the Railway towns we have therefore kept the villages round them clear of plague.

An attempt was made in 1911 to obtain village mortality figures with a view of estimating the difference of mortality. Owing, however, to lack of staff we have been unable to complete the work.

No calculation has been made for the other parts of the division, as during both seasons the work in the Pegu District plague area was begun too late to be of much value, and plague has never been severely epidemic in the other parts of the division.

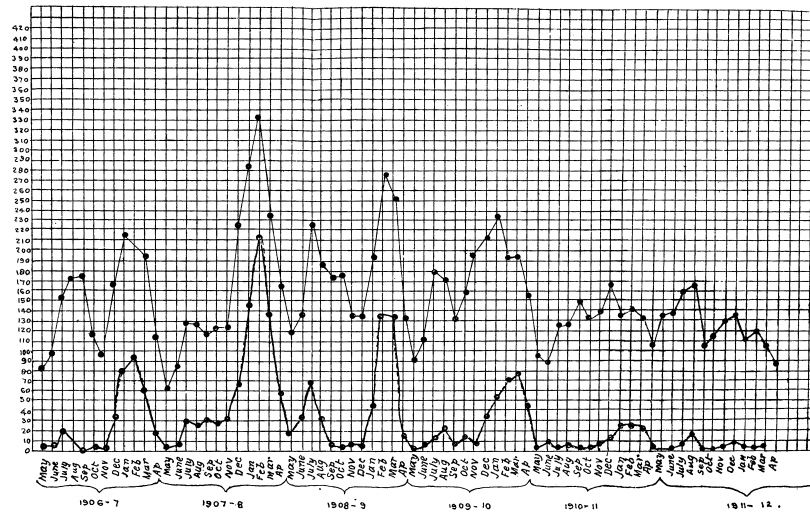
In order to gauge the result of the operations in their effect on human life, three possible methods are suggested:—

1. To compare the figures obtained of reported deaths from plague with those of previous years. See Table I.

2. But as the reporting of plague is from the nature of the case not absolutely reliable, there is an alternative method which is considered more accurate.

This is as follows:—It is assumed that though deaths from any cause may be concealed, no deaths are reported which have not occurred; also that though deaths from cholera and small-pox may be reported as due to other causes, no

CHART No. II.



Black —●— Total Deaths from all causes minus Reported Cholera and Small-pox in Paungde, Nattalin, Zigon Gyobingauk, Okpo, Minhla, Sitkuwin, Letpadan, Thonze.
Red —●— Reported Plague per mille in the same Towns

To face Page 99.

deaths reported as from cholera and small-pox are likely to have been due to other causes; also that as there is no reason to suppose a decrease in the death rate from other causes, any decrease in the death rate is probably due to the measures adopted. This third assumption is not of course conclusive, but may be considered justifiable under the circumstances. We may therefore compare the death rate after deducting cholera and small-pox with that of previous years. See Table II.

3. Dr. Guy has defined an epidemic as any outbreak causing one-tenth or more of the total deaths from all causes in any year. Using this definition of an epidemic, we may compare the number of epidemics that have occurred with those in previous years. See Table III.

TABLE I.

In the following table a calculation is made to shew the reduction in reported plague figures. While it must be remembered that owing to the amount of plague wrongly reported as due to other causes before our work began, these figures are not as accurate an estimate of the fall in mortality as the next Table, it is interesting to note that even in the official Reported Plague figures the reduction has been considerable.

Plague measures on present lines were commenced in 1909, but for the first season we were gaining experience and improving methods. It is fair to assume at least that no harm was done; if therefore we include 1909-10 with previous years for those towns in which epidemics occurred, we shall be on the safe side in comparing 1910-11 and 1911-12 with those years.

Reported Plague deaths per mille for the period since plague began until severe plague stopped.			Similar death rate for the seasons since severe plague stopped.		Total reduction in Reported Plague deaths.
Towns.	Seasons.	Death rate.	Seasons.	Death rate.	—
1		3	4	5	6
Prome ...	1906-07 to 1909-10 ...	16'39	1910-11 to 1911-12 ...	8'68	414
Thègân ...	1906-07 to 1909-10 ...	1'61	1910-11 to 1911-12 ...	9'15	No reduction.
Paungdè ...	1906-07 to 1909-10 ...	4'98	1910-11 to 1911-12 ...	0'41	111
Zigôn ...	1906-07 to 1908-09 ...	11'50	1909-10 to 1911-12 ...	2'36	143
Gyobingauk ...	1907-08 to 1908-09 ...	18'44	1909-10 to 1911-12 ...	5'35	290
Ôkpo ...	1906-07 to 1908-09 ...	16'14	1909-10 to 1911-12 ...	1'20	136
Minhla ...	1906-07 to 1909-10 ...	16'19	1910-11 to 1911-12 ...	0'42	113
Letpadan ...	1905-06 to 1909-10 ...	8'47	1910-11 to 1911-12 ...	1'84	122
Thènzè ...	1906-07 to 1908-09 ...	16'76	1909-10 to 1911-12 ...	1'61	366
Total ...					1,695

N.B.—Nattalin has been omitted from this calculation as a number of the figures have been lost.

TABLE II.

Calculation of the reduction in mortality as shown by the figures for total deaths from all causes *minus* Reported Cholera and Small-pox in the larger towns in the Promé to Thônzè area.

Death rate per mille from all causes <i>minus</i> cholera and small-pox for the plague seasons since plague began in each town until severe plague stopped.			Similar death rate for the seasons since plague stopped.			Total reduction in actual deaths.	
Towns.	Seasons.	Death rate.					
1	2	3	4	5	6	7	8
			1909-10.	1910-11.	1911-12.	1909-10.	1910-11.
						1911-12.	
Promé	1906-07 to 1909-10	18.01	...	46.82	37.60	...	301 548
Thègôn	1906-07 to 1909-10	33.55	...	29.59	44.99	No	reduction.
Panngûb	1906-07 to 1909-10	34.14	...	27.26	24.42	...	83 118
Zigôn	1906-07 to 1908-09	40.99	34.71	28.12	23.09	32	67 95
Gyobingauk	1907-08 and 1908-09	46.91	36.69	36.94	29.30	74	73 132
Okpo	1906-07 to 1908-09	58.42	34.90	33.44	36.59	72	70 66
Minhla	1906-07 to 1909-10	40.97	...	22.01	21.16	...	68 71
Letpadan	1905-06 to 1909-10	37.58	...	25.74	26.66	...	109 101
Thônzè	1906-07 to 1908-09	47.16	39.13	26.56	27.40	55	177 170
Total	...	...	...	...	...	233	954 1,301
			GRAND TOTAL			...	2,488

N.B.—Nattalin has been omitted from this calculation as a number of the figures have been lost.

If the figures for these nine principal towns in the Promé to Thônzè area are considered, it will be seen that in 1909-10 there was a fall in death rate in four towns only, while in five towns the death rate remained the same. In 1910-11 there was a marked fall in death rate in all the towns in the area, though in two, Promé and Gyobingauk, a partial epidemic occurred. In 1911-12 there was a still more marked fall in death rate, and in only one small town (Thègôn) in the whole area did plague assume an epidemic character.

We have therefore an area 100 miles in length containing ten principal towns of which the following number experienced plague epidemics during the various plague seasons:

1905-06	1906-07	1907-08	1908-09	1909-10	1910-11	1911-12
1	8	10	6	7	2	1

The number of these towns in which definite plague infection occurred during the last three seasons has been

1909-10	1910-11	1911-12
9	9	7

TABLE III.

The following Table shows the epidemics in the area.

Towns.	1905-06.	1906-07.	1907-08.	1908-09.	1909-10.	1910-11.	1911-12.
1	2	3	4	5	6	7	8
Prome	...	Epidemic	Epidemic	...	Epidemic	Epidemic	...
Thàgôn	...	...	Epidemic	...	...	Epidemic	Epidemic
Faungdè	...	Epidemic	Epidemic	...	Epidemic	...	...
Nattalin	...	Epidemic	Epidemic	...	...	...	...
Zigôn	...	Epidemic	Epidemic	Epidemic	Epidemic	...	...
Gyobingauk	...	...	Epidemic	Epidemic	Epidemic	Epidemic	...
Ôkpo	...	Epidemic	Epidemic	Epidemic	...	...	...
Minhla	...	Epidemic	Epidemic	Epidemic	Epidemic	...	...
Letpadan	Epidemic	Epidemic	Epidemic	Epidemic	Epidemic	...	...
Thônzò	...	Epidemic	Epidemic	Epidemic	Epidemic	...	...

That the large reduction in human mortality in the area which has undoubtedly occurred has been due to the driving, and not to the fact that the last two seasons have been "off" seasons in the area, as a whole.

The following facts will shew :—

I. Every infected town or area in the division in which either no driving was done, or driving began too late, or was inefficiently done, experienced a plague epidemic.

The following are the towns and areas in which epidemics occurred during the two seasons :—

A PROME, SEASON, 1910-11.

In the northern part of Prome the plague deaths during the various plague seasons have been as follows :—

	1906-07	1907-08	1909-10	1910-11
T. S. IV	88	82	61	79
T. S. V	25	72	32	29
T. S. VI	52	85	52	23
T. S. VII	47	77	74	42

B GYOBINGAUK.

In spite of driving in 1910-11 the Reported Plague was as follows :—

1907-08	1908-09	1909-10	1910-11
124	137	47	72

and the total deaths per mille from all causes *minus* Reported Cholera and Small-pox were as follows :—

	1907-08	1908-09	1909-10	1910-11
	44'36	49'41	36'69	35'94

while the similar death rate for the period 1901 to 1905 was 25'92.

C PEGU DISTRICT

In Pegu District in the towns in the epidemic area which were infected, and in which owing to lack of staff we were unable to drive the towns in time to stop the epidemic, heavy plague occurred.

The following are the figures :—

Reported Plague.

	1906-07	1907-08	1908-09	1909-10	1910-11
Deiku ...	...	1	19	13	55
Fyuntaza ...	...	2	39	52	4
Total ...	...	3	58	65	59

	1906-07	1907-08	1908-09	1909-10	1910-11
Deaths per mille from all causes <i>minus</i> Reported Cholera and Small-pox					
Deiku ...	...	34'98	38'94	44'00	49'76
Fyuntaza ...	...	22'58	34'79	42'22	27'19

In these towns plague was practically over before drives could be done.

It can be seen from these figures that in Fyuntaza and Deiku which were not driven in time to stop the epidemic, the Reported Plague was the highest recorded, while the death rate from all causes *minus* Reported Cholera and Small-pox was high.

In Nyaunglebin where a drive was begun in good time in 1910-11 the figures have been as follows :—

Reported Plague.

	1906-07	1907-08	1908-09	1909-10	1910-11
Nyaunglebin ...	...	13	23	87	72

	1906-07	1907-08	1908-09	1909-10	1910-11
Deaths per mille from all causes <i>minus</i> Reported Cholera and Small-pox					
Nyaunglebin ...	...	40'41	36'50	46'27	47'80

From these figures it can be seen that in Nyaunglebin the death rate from all causes *minus* cholera and small-pox in 1910-11 was the lowest recorded.

In this small area therefore the two towns not driven experienced a severe plague epidemic, while the town which was driven escaped.

SEASON, 1911-12.

Towns which experienced epidemics.—

- | | |
|---------------|-----------------|
| (a) Thayetmyo | (e) Nyaunglebin |
| (b) Rangoon | (f) Penwegon |
| (c) Pegu | (g) Thègon |
| (d) Deiku | |

for figures see Appendices.

A THAYETMYO.

A note by the Civil Surgeon, Thayetmyo, on the Plague Epidemics there will be found in Appendix VIII on page 180.

B. RANGOON.

A study of the mortality figures for Rangoon town given on page 173 shows that both the Reported Plague figures and the total deaths minus Reported Cholera and Small-pox were the highest since 1907-08.

C. PEGU.

The mortality figures for Pegu town given on page 150 shew that in 1911-12 a plague epidemic occurred. No driving was done. The following are the Reported Plague figures for the various seasons:

1906-07	1907-08	1908-09	1909-10	1910-11	1911-12
3	117	226	138	52	94

The death rate per mille from all causes *minus* Reported Cholera and Small-pox has been as follows:—

1906-07	1907-08	1908-09	1909-10	1910-11	1911-12
48·38	47·31	50·76	49·03	39·52	48·53

It can be seen from these latter figures that during the five years in which there have been epidemics the mortality from all causes *minus* cholera and small-pox have been about the same, though plague reporting has varied in accuracy.

D. DEIKU.

There was a slight fall in the death rate from all causes *minus* cholera and small-pox in 1911-12. This was probably due to the drive, though work began too late to stop the epidemic.

The mortality figures since plague began have been as follows:—

	1907-08	1908-09	1909-10	1910-11	1911-12
Plague	...	19	13	55	46
Death rate per mille	38·94	44·06	49·76	40·12	37·66
from all causes <i>minus</i> cholera and small-pox.					

E. NYAUNGLEBIN.

In Nyaunglebin the drive began too late to be of any use.

The mortality figures have been as follows:—

	1906-07	1907-08	1908-09	1909-10	1910-11	1911-12
Reported Plague	13	23	87	72	25	27
Death rate per mille	40·41	36·50	46·27	47·80	35·83	47·65
from all causes <i>minus</i> cholera and small-pox.						

From these figures it can be seen that though fewer cases of plague were reported than during the other epidemic seasons, the epidemic in 1911-12 was as severe as any of the previous ones.

F. PENWEGON.

The mortality figures for Penwegon have been as follows since plague appeared:—

	1909-10	1910-11	1911-12
Reported Plague	...	14	27
Death rate per mille from all causes <i>minus</i> cholera and small-pox.	41·03	38·62	48·67

1911-12 has therefore been the severest plague season in Penwegôn.

G.

THEGON.

The mortality figures for Thègôn have been as follows since plague appeared:—

	1907-08	1908-09	1909-10	1910-11	1911-12
Reported Plague ...	12	0	1	15	29
Death rate per mille from all causes <i>minus</i> cholera and small-pox.	33'82	29'44	41'10	29'59	44'99

Plague was therefore more severe in Thègôn in 1911-12 than it has been previously.

II. Neighbouring towns in other divisions experienced plague epidemics.

SEASON, 1910-11.

Meiktila	Henzada
Magwe	Rangoon

For figures, *vide* Notes on the effect of plague driving in the Pegu Division on Human Mortality, pages 22 and 23.

SEASON, 1911-12.

It has not been possible to obtain figures for many of the towns outside the division, but the extreme severity of the plague in the Toungoo District which is similar as regards position, etc., to the Promé to Thônzé area, shews that the season 1911-12 was not a general off season.

In the following table—(I) The total deaths from all causes *minus* Reported Cholera and Small-pox and in Table (II) the Reported Plague figures, are given for all the towns on the Railway in Toungoo District for which figures are available for the last four seasons. In Tables (II) and (IV) similar figures are given for towns for which only two years figures are available.

Complete Tables for each town are given in Appendix III, pages 155 to 172.

TABLE I.

Total deaths from all causes *minus* Reported Cholera and Small-pox for all towns on the Railway in Toungoo District for which figures are available for the last four seasons.

Towns.	1908-09.	1909-10.	1910-11.	1911-12.
Pyu	149	184	190	248
Zeyawaddi	35	54	48	45
Nyaungchidauk	15	23	25	33
Kyaukse	30	25	33	50
Banwegôn	15	9	11	5
Okwin	73	37	48	88
Tsawngdainggôn	9	3	15	9
Toungoo	882	759	640	850
Kyungôn	7	12	15	10
Vedake	110	124	159	146
Swa	46	59	65	54
Thagaya	100	104	69	84
Myohia	53	71	62	60
Yeni	12	12	9	7
Total	1,536	1,467	1,359	1,675

TABLE II.

Total deaths from Reported Plague for all towns on the Railway in Toungoo District for which figures are available for the last four seasons.

Towns.	1908-09	1909-10	1910-11	1911-12
Pyu	1	17	8	23
Zeyawadi	...	...	1	1
Nyaungchidauk	...	...	...	...
Kyeabe	...	3	5	...
Banwezon	...	...	...	...
Oktwin	...	...	...	16
Tsaungdinggon	...	...	...	...
Toungoo	215	123	145	255
Kyungon	...	...	...	...
Yedashe	2	...	2	16
Swa	...	...	...	...
Thagaya	...	...	...	...
Myehla	...	...	...	...
Yen	...	...	...	...
Total	218	132	161	311

TABLE III.

Toungoo District.

Towns for which figures for the last two seasons only are available.

TOTALS *MINUS* CHOLERA AND SMALL-POX.

	1910-11.	1911-12.
Kanyutwin	192	294
Nyaungthintha	49	77
Kongyi	31	25
Kyedaaw	8	4
Total	276	400

TABLE IV.

Toungoo District.

Reported Plague in towns in which figures for the last two seasons only are available.

REPORTED PLAGUE.

	1910-11	1911-12.
Kanyutwin	4	41
Nyaungthintha	...	...
Kongyi	...	...
Kyedaaw	...	...
Total	4	41

A study of these figures shews that the season 1911-12 has been the most severe plague season since plague appeared in the country. A comparison of these figures, which represent a length of a Railway line similar in position to the Promé-Thônzè area, with the figures for the latter area, shew that the fall in mortality in the latter area must have been due to some cause which was not at work in the Toungoo District, and was not due to a general decline in plague mortality in the province. It must be remembered in this connection that Toungoo District is the only district which is subject to severe plague in which no plague measures were undertaken.

III. In nearly all the towns in the area rat infection, in some cases extremely severe, was found, and human plague had begun when the infection was cut short by the drive. If it were a general off season this severe infection would not have been found.

IV. That the fall in mortality is due to general decline in plague which is dying out in the province, the whole previous history of plague in the world shews to be improbable. In the 16th and 17th centuries plague continued in London for 130 years, and during this period one-fourth of the population of Europe died of plague. In India plague has been present 16 years and shews no sign of dying out, while in the Promé to Thônzè area it has only been present since 1906.

V. That the low mortality figures were not due to its being an off season in each particular town can also be demonstrated.

Promé.—1910-11 was not an off season as very severe plague occurred in one part of the town.

1911-12 was an off season in the part of the town in which severe plague occurred in 1910-11, but not in the other part.

Paungdè has had epidemics three years out of four previously. It has now had two free seasons. If 1910-11 was an "off" season due to a previous heavy season, 1911-12 certainly could not have been.

The same argument also applies to Zigôn, Ôkpo, Minhla, Letpadan and Thônzè.

Gyobingauk.—1910-11 cannot have been an off season as severe plague occurred, and considering the fact that during two seasons out of the first three since plague began a full plague epidemic occurred, it is unlikely that the partial epidemic of 1910-11 produced enough immunity to render 1911-12 an "off season."

PADDY HUSK FLOORS FOR GODOWNS.

The paddy husk floors for paddy mills and godowns described on page 40 of the Annual Report on Plague Driving in the Pegu Division for the season 1909-10 have proved to be a great success. In the mills and godowns in Promé and Paungdè, in which before the introduction of these floors Nesokia Bengalen-sis lived in thousands, but few can now be found.

The conclusions we have arrived at as regards these floors are as follows:—

1. If the curtain wall is well built and rats cannot get through the wall, the rats cannot gain access to the area under the godown from the outside, as they will not burrow under the wall.
2. It is not necessary to dig out 2 feet of earth inside the godown, 1 foot is sufficient, provided that the paddy husk is 2 feet in depth over the whole floor after the paddy has been put in; that is to say that 3 feet 6 inches of husk at least must be put in, as this sinks down to 2 feet under the weight of the paddy.
3. The husk must be clean, dry, fresh husk unburnt, and must be dug out and replaced by fresh husk every two years.
4. In mills careful inspections must be done to see that the rats do not get through the pukka passages or other pukka floors, and as soon as a hole is detected this must be smoked and filled up with cement.

ANALYSIS OF INFECTED BLOCKS IN THE PROMÉ TO THÓNZÉ
AREA.

In the following analysis a block is taken to be infected if :—

- (a) Fresh dead rats were found ;
- or (b) *Bacillus Pestis* was found in the live rats ;
- or (c) A human case of plague occurred ; unless on a re-drive of the block being done immediately after the case no rat infection was found, and no subsequent human plague has occurred, in which case the case is taken as having been imported into the block and not having been infected in the block and the block is classed as not infected.

In cases in which a single case of human plague occurred in a block and no re-drive was done, the block is classed as infected.

It will be seen that a number of blocks, classed as infected, were probably not infected, as in many cases in which single cases of plague occurred they were probably infected elsewhere.

The principle has been to class all blocks as infected which could not be proved to be non-infected.

PROMÉ, 1910-11.

Blocks found infected at first drive, infection stopped.

T. S. II-16.
T. S. VI-7, 13.
T. S. VII-8.
T. S. X-3.
T. S. XI-10.
T. S. XII-5
T. S. XIV-4, 9, 5, 10, 11, 13.

Total, 13.

Blocks found infected at first drive, infection was found after the first drive, during the following subsequent month:—

1st Month	T. S. II-2, 3. T. S. III-4. T. S. IV-2, 3, 5, 6, 11, 12, 13. T. S. V-4, 5, 12. T. S. VI-4, 8, 14. T. S. VII-5. T. S. IX-11. T. S. XII-9. T. S. XIII-1, 8, 11, 15. T. S. XIV-6.	T. S. II-18. T. S. IV-4. T. S. VI-9, 10, 5. T. S. XI-9.	T. S. III-8. T. S. VI-1. T. S. VII-2, 6, 7. T. S. IX-8, 10. T. S. X-4. T. S. XIII-10, 12.	T. S. VIII-1.	T. S. X-9.
2nd Month	T. S. II-2, 3. T. S. III-4. T. S. IV-2, 3, 5, 6, 11, 12, 13. T. S. V-4, 5, 12. T. S. VI-4, 8, 14. T. S. VII-5. T. S. IX-11. T. S. XII-9. T. S. XIII-1, 8, 11, 15. T. S. XIV-6.	.....	T. S. III-8. T. S. VI-1. T. S. VII-2, 6, 7. T. S. IX-8, 10. T. S. X-4. T. S. XIII-10, 12.	T. S. VIII-1.	.....
3rd Month	.....	.....	T. S. III-8. T. S. VI-1. T. S. VII-2, 6, 7. T. S. IX-8, 10. T. S. X-4. T. S. XIII-10, 12.	T. S. VIII-1.	T. S. X-9.
4th Month	.....	.....	.....	T. S. VIII-1.	.....
5th Month	.....	.....	.....	T. S. VIII-1.	.....

Total, 40.

Blocks not infected at first drive and no subsequent infection found.

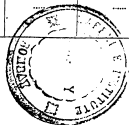
T. S. II-4, 7, 13, 17.
T. S. III-2.
T. S. IV-14.
T. S. VI-11.
T. S. VIII-3, 4, 5, 12.
T. S. IX-6, 7.
T. S. X-1, 2, 5, 6, 10, 11, 12.
T. S. XI-2, 4, 6, 14, 16, 19, 20, 21.
T. S. XII-1, 3, 3A, 4, 6, 7, 8, 10, 18.
T. S. XIII-4, 5.
T. S. XIV-2, 3, 7, 8, 14, 15, 16, 17, 18, 19.
T. S. XV-1, 2, 4, 5, 6, 7, 8, 9, 10A, 11, 12, 13, 14, 16, 17, 18, 19.

Total, 66.

Blocks not infected at the first drive. Infection was found after the first drive during the following month subsequent to the drive:—

1st Month.	T. S. II-9, 13, 14. T. S. III-3. T. S. IV-7, 8. T. S. VI-18. T. S. XII-9, 13, 14. T. S. XIV-3. •	T. S. II-1, 13. T. S. III-7, 9. T. S. V-1, 5, 11. T. S. XII-1, 10, 12. T. S. XV-13. T. S. IV-9. T. S. XIII-6.	T. S. III-5, 6. T. S. IV-1, 5, 10.	T. S. IX-1.	.....	.....	.....	.....	T. S. VIII-4.	.....	.....
2nd Month.	 T. S. II-1, 13. T. S. III-7, 9. T. S. V-1, 5, 11. T. S. XII-1, 13, 14. T. S. XV-13. T. S. IV-9. T. S. XIII-6.	T. S. II-1, 13. T. S. III-5, 6. T. S. IV-1, 5, 10.	T. S. IX-1.	T. S. II-9, 11, 13. T. S. III-13. T. S. VI-1, 11, 13. T. S. VII-1. T. S. VIII-11. T. S. X-11. T. S. XI-1, 3, 7, 9, 13, 15. T. S. XII-13. T. S. XIII-4, 7, 11. T. S. XIV-13. T. S. XV-13.	T. S. V-9. T. S. VI-9. T. S. IX-5.	T. S. VII-4. T. S. IX-5.	.....	.....	.....	T. S. XIII-6.	.....
3rd Month.	.....	.....	T. S. III-5, 6. T. S. IV-1, 5, 10.	T. S. IX-1.	.....	T. S. V-9. T. S. VI-9. T. S. VII-1. T. S. X-11. T. S. XIII-11, 14, 15.	T. S. VII-4. T. S. IX-4.	T. S. III-1. T. S. V-9, 10. T. S. VI-5. T. S. VII-7, 9, 13. T. S. IX-9. T. S. X-7. T. S. XI-5, 11, 13. T. S. XII-17. T. S. XV-8.	T. S. VI-4. T. S. VII-4. T. S. IX-4, 6.	.....	.....
4th Month.	.....	.....	.....	T. S. IX-1.	.....	.....	T. S. VII-4. T. S. IX-4.	.....	T. S. VI-4. T. S. VII-4. T. S. IX-4, 6.	T. S. VIII-4.	T. S. VIII-4.

Total 81.



Blocks not driven not infected.

T. S. II-5, 6.	IV-1(A)	} Total 9.
T. S. V-8, 9, 11.		
T. S. VIII-6.		
T. S. XI-17, 18.		

Blocks not driven infected.

T. S. II-10.	} Total 3.
T. S. IV-15.	
T. S. V-7.	

PROME, 1911-12.*Blocks infected at the first drive, no subsequent infection found.*

T. S. IV-2, 3, 4, 7, 8, 12, 15.	} Total 28.
T. S. V-2, 10.	
T. S. VI-2, 5, 7, 15.	
T. S. VII-5, 7.	
T. S. VIII-6, 7, 11.	
T. S. IX-8, 11.	
T. S. X-7, 8.	
T. S. XI-15, 16, 18, 20.	
T. S. XV-3, 18.	

Blocks infected at the first drive.

Infection was found after the first drive during the following month subsequent to the drive.

1st Month.	T. S. IV-13. T. S. VI-6. T. S. X-2. T. S. XI-2.	T. S. XI-8, 9, 10.						
2nd Month.		T. S. XI-8, 9, 10.	T. S. VIII-2, 12. T. S. XI-1.					
3rd Month.								
4th Month.				T. S. VII-3.				
5th Month.								
6th Month.					T. S. V-3 T. S. IX-1.	T. S. VI-1.		
7th Month.						T. S. VI-1.	T. S. V-1.	T. S. X-3.
8th Month.								T. S. X-3.

Total, 16.

Blocks not infected at first drive, no subsequent infection found.

T. S. III-1, 2, 5, 6, 7, 8, 9, 10.	} Total 61.
T. S. IV-1, 5, 6, 9, 10, 11, 14.	
T. S. V-1, 3, 12.	
T. S. VI-3, 4, 8, 11, 12, 13, 14, 16.	

(113)

T. S. VII-1, 2, 4, 6, 8.
T. S. VIII-2, 3, 4, 5, 8, 9, 10.
T. S. IX-2, 3, 7, 9, 10.
T. S. X-1, 3, 6, 9, 12.
T. S. XI-3, 4, 7, 11, 13, 14, 19, 21.
T. S. XV-1, 2, 16, 17, 19.

Total, 61.

Blocks not infected at the first drive.

Infection was found after the first drive during the following month subsequent to the drive.

1st Month.	T. S. VI-8 T. S. XI-12, 5	T. S. X-4	T. S. X-13		
2nd Month.		T. S. X-4		T. S. X-11 T. S. XI-6	
3rd Month.			T. S. X-13		
4th Month.					
5th Month.					
6th Month.				T. S. V-5, 7, 8 T. S. VI-10 T. S. IX-5, 6, 6 T. S. X-10	
7th Month.					T. S. V-13

Total, 16.

Blocks not driven, not infected.

T. S. II-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19.
T. S. III-3, 4.
T. S. IV-11A.
T. S. V-9, 11.
T. S. XI-17.
T. S. XII-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18.
T. S. XIII-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16.
T. S. XIV-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19.
T. S. XV-4, 5, 6, 7, 8, 9, 10, 10A, 11, 12, 13, 14, 15.

Total, 91.

Blocks not driven, infected—Nil.

PAUNGDE, 1910-11.

Blocks infected at the first drive, no subsequent infection found—Nil.

Blocks not infected at the first drive, no subsequent infection found.

T. S. I-1, 2, 3, 4, 5, 6, 7, 8.
T. S. II-1, 2, 3, 4, 5, 6, 7.
T. S. III-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13.

Total, 28.

PAUNGDE, 1911-12.

Blocks infected at the first drive, no subsequent infection found.

T. S. I-3, 7, 8.
T. S. II-2.
T. S. III-1, 5, 6, 8, 10.

Total, 9.

Blocks infected at the first drive.

Infection was found after the first drive during the following month subsequent to the drive :—

1st Month	...	T. S. I-2.
2nd Month.		
3rd Month.		
4th Month.		
5th Month	...	T. S. I-2

Total, 1.

Blocks not infected at the first drive, no subsequent infection found.

T. S. I-4, 5, 6.
T. S. II-1, 3.
T. S. III-2, 4, 7, 9, 11, 12.

Total, 11.

Blocks not infected at the first drive.

Infection was found after the first drive during the following month subsequent to the drive.

1st Month.				
2nd Month				
3rd Month.				
4th Month	...	T. S. I-1.	T. S. II-7.	
5th Month	...	...	T. S. II-7.	T. S. II-4, 5, 6.

Total, 5.

Blocks not driven, not infected.

T. S. III-3, 13.

Total, 2.

NATTALIN, 1910-11.*Blocks infected at the first drive, no subsequent infection found.*

T. S. II-6.

Total, 1.

Blocks infected at the first drive.

Infection was found after the first drive during the following month, subsequent to the drive.

2nd month—T. S. I-1, 2, 5, 6. T. S. II-5.		
3rd month	T. S. I-3 ...	Total, 6.

Blocks not infected at the first drive, no subsequent infection found.

T. S. I-4, 7, 8.

T. S. II-1, 2, 3, 4, 7.

Total, 8.

Blocks not infected at the first drive.

Infection was found after the first drive during the following month subsequent to the drive.

2nd month—T. S. I-9, 10.

Total, 2.

*Blocks not infected not driven.—Nil.**Blocks infected not driven.—Nil.***NATTALIN, 1911-12.***Blocks infected at the first drive, no subsequent infection found.*

T. S. I-1, 3, 6, 11.

T. S. II-4.

Total, 5.

Blocks infected at the first drive.

Infection was found after the first drive during the following month subsequent to the drive.

1st month.

2nd month.

3rd month—T. S. II-2.

T. S. I-5, 8.

4th month

T. S. II-11.

Total, 4.

Blocks not infected at the first drive, no subsequent infection found.

T. S. I-7, 9, 10.

T. S. II-3, 5, 6, 7.

Total, 7.

Blocks not infected at the first drive infection was found after the first drive during the following month subsequent to the drive.

1st month—Nil.

2nd month—Nil.

3rd month—T. S. I-2, 4.

Total, 2.

Blocks not infected not driven—Nil.

Blocks infected not driven—Nil.

ZIGON, 1910-11.

Blocks infected at the first drive, no subsequent infection found.

T. S. I-9, 8, 11, 12.

T. S. II-9, 18.

T. S. III-1.

Total, 7.

Blocks infected at the first drive.

Infection was found after the first drive during the following month subsequent to the drive.

1st month—T. S. I-16. T. S. III-8.		
2nd month—T. S. I-16 T. S. III-8.	T. S. III-12	Total 3.

Blocks not infected at the first drive, no subsequent infection found.

T. S. II-16, 17, 11.

T. S. I-2, 3, 4, 10, 13.

Total, 8.

Blocks not driven not infected.

T. S. I-5, 6, 7, 14, 15.

T. S. II-1, 2, 3, 4, 5, 6, 7, 8, 10, 12, 13, 14, 15, 19.

T. S. III-2, 3, 4, 5, 6, 7, 9, 10, 11, 13.

Total, 29.

Blocks not driven, infected.

T. S. III-14.

Total, 1.

ZIGON, 1911-12.

Blocks infected at the first drive, no subsequent infection found.

T. S. II-10.

Total, 1.

Blocks not infected at the first drive, no subsequent infection found.

T. S. I-1, 11, 12, 13.

T. S. II-10, 1.

T. S. III-16.

Total, 7.

Blocks not driven, not infected.

GYOBINGAUK, 1910-11.

Blocks infected at the first drive, no subsequent infection found.

T. S. I-9, 10.
 T. S. II-2, 5, 6, 7.
 T. S. III-2.
 T. S. IV-7, 9, 12.

Total 10

Blocks infected at the first drive.

Infection was found after the first drive during the following month subsequent to the drive.

1st month	...	T.S. III-4	T.S. I-7, 8	T.S. I-12 T.S. III-10	T.S. II-3			
2nd month	...		T.S. I-7, 8	T.S. I-12 T.S. III-10				
3rd month	...			T.S. I-12 T.S. III-10				
4th month	...						T.S. II-10	
5th month	...				T.S. II-3		T.S. II-10	
6th month	...				T.S. II-3			
7th month	...				T.S. II-3			T.S. I-18

Total 8

Blocks not infected at the first drive, no subsequent infection found.

T. S. I-5, 6.
 T. S. II-4, 8, 9.
 T. S. III-1, 3.
 T. S. IV-3, 5, 10, 11.

Total 11

Blocks not infected at the first drive.—Infection was found after the first drive during the following month subsequent to the drive.

1st month	...	T. S. I-11		T. S. I-2, 3	T. S. III-7			
2nd month	...		T. S. III-11	T. S. I-2, 3	T. S. III-7	T. S. IV-6, 13		
3rd month	...			T. S. I-2, 3		T. S. IV-6, 13	T. S. II-9 T. S. III-11	
4th month	...							
5th month	...							T. S. III-9
6th month	...							T. S. III-9
7th month	...							T. S. III-9

Total 9

Blocks not driven, not infected.—T. S. I-1, 4, 2, 4, 8. T. S. III-6, 8. T. S. IV-1,

Total 8

Blocks not driven, infected.—T. S. III-5, 12.

Total 2

1911-12.

Blocks infected at the first drive, no subsequent infection found.

Nil.

Blocks infected at the first drive, subsequent infection found.

Nil.

Blocks not infected at the first drive, no subsequent infection found.

T. S. II-2.

Total 1

Blocks not infected at the first drive, subsequent infection found.

Nil.

Blocks not driven, not infected.

The whole town except T. S. II-2, *i.e.*, 47 blocks.

Blocks infected, not driven.

Nil.

OKPO, 1910-11.

Blocks infected at the first drive, no subsequent infection found.

T. S. I-4, 5, 8, 3

Blocks infected at the first drive.

Total 4

Infection was found after the first drive, during the following month, subsequent to the drive.

First month T. S. I-12

Total 1

(119)

Blocks not infected at the first drive, no subsequent infection found.
T. S. 1-6, 7, 9, 11, 13, 19, 20 and 21. Total 8
Blocks not infected at the first drive.
Infection was found after the first drive during the following month subsequent to the drive.

Nil.

Blocks not driven, not infected.
T. S. 1-1, 2, 10, 14, 15, 16, 17, 18 Total 8

1911-12.

Blocks infected at first drive. Infection stopped.
Blocks 14, 12, 4, 6, 7, 8, 11, 16 Total 8.
Blocks infected at first drive.—Infection was found after the first drive during the following month, subsequent to the drive.
First month Block 9 Total 1
Blocks not infected at first drive, no subsequent infection.
Blocks 3, 5, 13, 15 Total 4
Blocks not infected at first drive.—Infection was found after the first drive during the following month subsequent to the drive.

Nil.

Blocks not driven, not infected.
Blocks 1, 2, 10, 17, 18, 19, 20, 21 Total 8

MINHLA, 1910-11.

Blocks infected at the first drive, no subsequent infection found.
T. S. 1-4, 5, 6.
T. S. 11-2, 3, 4, 6, 11. Total 8

Blocks infected at the first drive. Infection subsequently found.

Nil.

Blocks not infected at the first drive, no subsequent infection found.
T. S. 1-1, 2, 3, 7, 9.
T. S. 11-5, 7, 8, 9, 12. Total 10

Blocks not infected at the first drive. Infection subsequently found.

Nil.

Blocks not infected not driven.
T. S. 1-8, 10 and 11.
T. S. 11-1, 10 and 13. Total 6
Blocks infected not driven.

Nil.

(120)

1911-12.

Blocks infected at first drive. Infection stopped.

T. S. II-2.
T. S. I-1, 8.

Total 3

Blocks infected at first drive.

Infection was found after the first drive during the following month subsequent to the drive:

1st month

2nd month

3rd month T. S. I-4, 6.

4th month

T. S. I-5.

Total 3

Blocks not infected at first drive. No subsequent infection.

T. S. II-9, 4, 8, 12.

T. S. I-8, 9, 3, 7.

Total 8

Blocks not driven not infected.

T. S. I-10, 11.

T. S. II-1, 3, 5, 6, 7, 10, 11, 13.

Total 10

LETPADAN, 1910-11.

Infected at first drive. Infection stopped.

T. S. I-2, 4, 5, 11, 13.

T. S. II-4, 5, 6, 7, 8, 10, 11, 14, 15.

T. S. III-8.

T. S. IV-1, 11, 13.

T. S. V-1, 9, 13, 14, 15.

Total 23

Infected at first drive.—Rat infection was found after the first drive during the following month, subsequent to the drive.

1st month

T. S. I-12

2nd month

3rd month

4th month T. S. IV-4, 5

T. S. I-12

5th month

T. S. I-12

Total 3

Not infected at first drive, no subsequent infection.

T. S. I-3, 10, 14.

T. S. II-3, 12, 13, 15.

T. S. IV-2, 6, 7, 9, 10, 12, 14, 15, 16, 17.

T. S. V-4, 5, 6, 7, 8, 10, 11, 12, 16, 17, 18, 19, 20

Total 30

Blocks not infected at first drive.—Rat infection was found after the first drive during the following month, subsequent to the drive.

1st month

2nd month T. S. V-2, 3

3rd month

4th month

T. S. IV-8

Total 3

Blocks not driven, not infected.

T. S. I-1, 6, 7, 8, 9.

T. S. II-1, 2, 9.

T. S. III-1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 13, 14.

T. S. IV-3.

Total 22

(121)
LETPADAN, 1911-12.

Blocks infected at first drive. Inspection stopped.

T. S. I-3, 4, 5, 10, 11, 13.

T. S. II-2, 3, 5, 8, 12.

T. S. III-7.

T. S. IV-4, 10, 12.

T. S. V-16.

Total 16

Blocks infected at the first drive.—Infection was found after the first drive during the following month, subsequent to the drive.

1st month	T. S. IV-5	T. S. II-11	T. S. I-2
2nd month		T. S. II-11	T. S. I-2
3rd month			T. S. I-2
4th month			
5th month	T. S. V-2, 20		
			Total 5

Blocks not infected at first drive, no subsequent infection.

T. S. I-14.

T. S. II-4, 6, 10, 13, 14, 15, 16.

T. S. III-8.

T. S. IV-1, 2, 13, 15, 16, 17.

T. S. V-4, 5, 6, 15, 18.

Total 20

Blocks not infected at first drive.—Rat infection was found after the first drive, during the following month, subsequent to the drive.

1st month	T. S. I-12		
2nd month			
3rd month			
4th month			
5th month		T. S. IV-7, 11 T. S. V-1, 3, 17, 19.	
6th month		T. S. IV-6, 8	
7th month			T. S. IV-9, 14
			Total 11

Blocks not driven, not infected.

T. S. I-1, 6, 7, 8, 9.
 T. S. II-1, 7, 9.
 T. S. III-1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 13, 14.
 T. S. IV-3.
 T. S. V-7, 8, 9, 10, 11, 12, 13, 14.

Total 29

THÓNZE, 1910-11.

I.—Blocks found infected at first drive, infection stopped.

T. S. I Blocks 2, 4 and 6.

Total 3

II.—Blocks not infected at first drive and no subsequent infection found.

T. S. I Blocks 3, 5, 7, 8.

Total 4

III.—Blocks infected at first drive, infection was found after the first drive during the following subsequent month.

1st month.	2nd month.	3rd month.	4th month.	5th month.	6th month.	7th month.
T. S. II. 5						—

Total 1

IV.—Blocks not driven not infected.

T. S. I Blocks 1 and 9.
 T. S. II (13 blocks).
 T. S. III Whole square (12 blocks).
 T. S. IV Whole square (10 blocks).

Total 37

1911-12.

I.—Blocks found infected at first drive, infection stopped.

Nil

II.—Blocks not infected at first drive and no subsequent infection found.

T. S. I Blocks 1, 2, 3, 4, 5 and 9.
 T. S. II Blocks 14, 9 and 10.
 T. S. III Block 1.

Total 10

III.—Blocks not driven not infected.

T. S. I Blocks 6, 7 and 8.
 T. S. II Blocks 1 to 8, 11, 12 and 13.
 T. S. III 11 blocks.
 T. S. IV Whole (10 blocks).

Total 35

TOTALS OF INFECTED BLOCKS.
Analysis.

	Prome, 1910-11.	Prome, 1911-12.	Puangda, 1910-11.	Puangda, 1911-12.	Nattalin, 1910-11.	Nattalin, 1911-12.	Zigda, 1910-11.	Zigda, 1911-12.	Cyolingauk, 1910-11.	Cyolingauk, 1911-12.	Ópa, 1910-11.	Ópa, 1911-12.	Mihla, 1910-11.	Mihla, 1911-12.	Lepadua, 1910-11.	Lepadua, 1911-12.	Thana, 1910-11.	Thana, 1911-12.	Totals.
Blocks not infected. Remained so	66	61	28	11	8	7	8	7	11	1	8	4	10	8	30	20	4	10	302
Blocks not infected. Infected later	81	16	...	5	2	2	...	...	9	...	...	...	...	...	3	11	...	...	129
Blocks infected. Infection stopped	13	28	...	9	1	5	7	1	10	...	4	8	8	3	23	16	3	...	139
Blocks infected. Infection not stopped	46	16	...	1	6	4	3	...	8	...	1	1	...	3	3	5	1	...	92
Blocks infected, not driven	3	...	...	...	...	...	1	...	2	...	...	...	...	...	...	...	...	...	6
Blocks not infected, not driven	9	91	...	2	...	...	29	40	8	47	8	8	6	10	22	29	37	35	381
Total number of blocks infected	137	60	...	15	9	11	10	1	29	...	5	9	8	6	29	32	4	...	365
Total number of blocks in the town	...	212	...	26	...	17	...	48	...	48	...	21	...	24	...	81	...	45	1,048*

* Total blocks in the towns for two seasons.

A study of these figures shows that in one town only (Prome) 1910-11 was there extensive spread of infection after the drive. It is clear from these figures that the rat destruction in Prome in 1910-11 did not cause the rat population to fall below the Human epidemic line.

In all the other towns there was but slight spread of infection after the drive. The totals for all the other towns excluding Prome are—

Blocks not infected	} 175.
Remained so	
Blocks not infected	} 32.
Infected later	
Blocks infected	} 98.
Infection stopped	
Blocks infected	} 36.
Infection not stopped	
Blocks infected not driven	3.
Blocks not infected not driven	281.

It can thus be seen that of the blocks which were found infected, infection was stopped in 73 per cent.; and of the blocks which were found to be uninfected at the first drive subsequent infection only occurred in 15 per cent. A study of the detailed charts will show that this infection often occurred months after the drive.

During 1910-11 and 1911-12 in these towns a total of 168 blocks were infected out of a total number of blocks in the towns of 624, i.e., 27 per cent.

It is impossible to obtain in all the towns accurate information as to how many blocks would be infected in a normal epidemic which was allowed to run its course, as in many towns no full epidemic has occurred since the work began, and in Prome and Paungdè 1909-10 the concealment of half the cases of plague has rendered the figures valueless.

In Prome 1909-10 the drive was begun so late that in most blocks the plague was over and hardly any rats either dead or alive were found. In no part of the town was a normal rat population found and a study of the drive maps would make it appear that hardly a single block had escaped infection. The figures, however, are not sufficiently accurate for use.

In Paungdè 1909-10 half the cases of plague were concealed, but definite infection was found in 22 out of a total of 28 blocks in the town.

In Minhla 1909-10 14 blocks out of a total of 24 were infected, during the epidemic which occurred there that season; while in Letpadan 1909-10, 34 blocks were infected out of a total of 81.

That is to say, that during 1909-10 out of a total of 133 blocks in Paungdè, Minhla, and Letpadan 70 blocks were infected or 53 per cent.

In all the towns in the Prome to Thônzé area except Prome during 1910-11 and 1911-12 34 per cent. of the blocks were infected.

It is impossible, of course, with the meagre figures at our disposal to say that if driving had not been done 53 per cent. would have been infected, instead of the 34 per cent. which were infected but we are justified in claiming that the figure would have been much higher.

It will be seen from the figures that of the blocks which were found infected, failure to stop infection occurred in 27 per cent., while of the blocks which were uninfected when driven only 15 per cent. were subsequently found to be infected.

It would appear from this that it is more difficult to stamp out existing infection than it is to prevent the infection of previously uninfected blocks.

THE VALUE OF FRACTIONAL RAT DESTRUCTION AS A PLAGUE PREVENTIVE MEASURE.

Fractional rat destruction is the continuous destruction of small numbers of rats, whether by trapping or driving with a few coolies, as opposed to methods such as general drives which produce a crisis or sudden fall in the rat population

An instance of the rapidity with which a town loses its immunity after a drive when the drive is not followed by fractional rat destruction is seen in Pynnana 1911-12.

Here four months after a complete drive had been done through the town, epidemic plague began, and the number of rats, 9,000, destroyed in the second drive when plague began, when compared with the number, 11,000, destroyed in the first drive four months previously, shew that the rat population had almost completely recovered from the first drive.

If these figures are compared with those for the towns in the Pegu Division where fractional rat destruction is carried on continuously, it will be seen that in no case has such a quick recovery of rat population occurred.

A further value of trapping in actual work is that it gives us a very useful gauge of the level of rat population, and enables us to take measures in time before plague begins.

THE VALUE OF THE BACTERIOLOGICAL EXAMINATION OF RATS AS A MEANS OF DETERMINING THE PRESENCE OR ABSENCE OF PLAGUE INFECTION.

During the Plague Season 1910-11, on plague infection being discovered in a town, the infected area was driven, and the drive was continued round this area until a circle of uninfected blocks had been driven round the infected area. The presence or absence of infection was determined by the bacteriological examination of spleen smears from the rats caught. When this circle had been completed the drive was stopped.

In Gyobingauk in 1910-11 a number of these infected areas were driven, and the drive was stopped each time as soon as a circle of uninfected blocks had been driven, round the infected area. Eventually a plague epidemic started, and although a general drive was done the plague mortality was about half the previous average for the town.

The following statement shews the results of the bacteriological examination of the rats in several of these blocks:—

	Rats caught.		Rats examined.		Bacillus Pests found in	Human Plague.
	Live.	Dead.	Live.	Dead.		
T.S.II-3 ...	329	6	149	3	3	7
T.S.II-3, another drive ...	164	14	164	13	both noted as doubtful.	
T.S.II-9 ...	154	...	122	...		2

It will thus be seen that in T.S.II-3 in which heavy Human Plague occurred Bacillus Pests was only found in 4 rats out of 329 examined.

It was held by Assistant Surgeon Lyndale that this partial failure was due to too great reliance having been placed on the bacteriological results, and that if instead of driving only a small area the whole quarter of the town had been driven, this failure would not have occurred. With a view therefore of testing the value of the bacteriological examination of rats spleen smears from every rat obtained during the drive in Prome in 1911-12 were examined by Civil Assistant Surgeon Y. Subrahmanyam and Sub-Assistant Surgeon Joyce to whom great credit is due for their thorough and careful work.

A total number of 7,307 rats were examined and Bacillus Pests was found in 40.

Bacillus Pests was found in 27 blocks.

In 13 of these blocks 34 Human Plague attacks and 29 deaths occurred.

In these 13 blocks 816 live rats and 43 dead rats were examined, and Bacillus Pests was found in 8 live rats and 14 dead rats.

In these 13 blocks fresh dead rats were found in 10 blocks.

In 14 blocks in which Bacillus Pests was found in rats no Human Plague occurred.

In these 14 blocks 563 live rats and 27 dead rats were examined, and Bacillus Pestis was found in 12 live rats and 6 dead rats.

In these 14 blocks fresh dead rats were found in 8 blocks.

In 10 blocks no Bacillus Pestis was found in rats but 17 Human Plague cases occurred.

In these 10 blocks 1,034 live rats and 21 dead rats were examined.

In 8 of these blocks only a single human case occurred in each and no fresh dead rats were found on driving.

These 8 blocks therefore may be taken to have been uninfected.

In the remaining 2 blocks, the Human Plague cases and the rats obtained and examined bacteriologically were as follows :—

T. S. Number.	Human Plague Deaths.	Rats		
		Live.	Fresh dead.	Old dead.
T. S. X-5	6	110	0	5
T. S. XI-16	2	79	3	0

In these 2 blocks therefore bacteriological examination of all the rats failed to detect plague infection which was present.

The bacteriological examination of all these rats was very carefully done, and the possibility of Bacilli having been present in any numbers and having been missed may be excluded.

It must therefore be concluded that careful bacteriological examination of all rats caught may fail to reveal plague infection when present.

In Promé plague was detected in 27 blocks while it escaped detection in 2 blocks.

Another interesting fact brought out by this investigation is the fact that even when active plague was present in a block, Bacillus Pestis was only found in an extremely small proportion of the rats examined.

The following table shews the bacteriological results in the blocks in which Bacillus Pestis was found :—

Infected block.	Rats examined in each block.		Bacillus Pestis found in	Remarks.	Human Plague.
	Live.	Dead.			
T.S. XI-9	21	3	1 dead rat	Other dead rats decomposed.	4
T.S. XI-10	63	12	4 dead rats	Do.	5
T.S. XI-15	13	...	1 live rat	...	0
T.S. XI-2	51	1	1 dead rat	...	1
T.S. XI-1	27	3	1 dead rat	Other dead rats decomposed.	0
T.S. XI-20	19	...	1 live rat	...	0
T.S. XI-18	10	...	1 live rat	...	0
T.S. XI-8	17	1	1 dead rat	...	2
T.S. XI-12	21	...	1 live rat	...	1
T.S. X-4	6	...	1 live rat	...	1
T.S. X-13	30	...	1 live rat	...	1

Infected block.	Rats examined.		Bacillus Pestis found in	Human Plague.	Remarks.
	Live.	Dead.			
T.S. IV-12	115	...	1 live rat	Nil.	
T.S. IV-7	68	5	2 live rats	Nil.	
T.S. V-2	31	...	2 dead rats	Nil.	
T.S. V-5	55	1	3 live rats	Nil.	
T.S. V-4	79	1	1 live rat	1 case.	
T.S. VI-6	53	13	3 dead rats	3 attacks.	
T.S. VI-15	...	...	...	2 deaths.	
T.S. VI-10	...	...	1 dead rat	Nil.	
T.S. VI-1	...	...	1 live rat	Nil.	
T.S. VI-9	...	...	1 dead and	7 cases.	
T.S. VII-3	...	...	1 live rat	Nil.	
T.S. VII-12	54	3	1 dead rat	1 case.	
T.S. VIII-11	111	1	1 live rat.	1 case.	
T.S. VIII-12	112	1	1 dead and	1 case.	
T.S. VIII-1	...	...	2 live rats	2 cases.	
T.S. VIII-11	223	5	2 dead rats	Nil.	
T.S. VIII-7	13	9	1 dead rat	Nil.	
T.S. IX-6	88	...	1 live rat	Nil.	
T.S. IX-6	48	...	1 live rat	Nil.	

From this it can be seen that large numbers of rats were examined in infected blocks, and Bacillus Pestis was only found in very few.

The reasons for this are—

(1) The fact that when a rat dies of plague decomposition sets in very rapidly, and in a few hours after death every field is found to be full of saprophytic bacteria and Bacillus Pestis cannot be found.

Out of 117 freshly dead rats examined the great majority of which must have undoubtedly died of plague, Bacillus Pestis was only found in 20.

(2) Rats when infected with plague do not live long.

Hence there is not a very long period during which it is possible to find Plague Bacilli in the rat either alive or dead.

In 17 out of 28 cases of Human Plague in which the blood was examined Bacillus Pestis was found. In several cases in which the history of the cases and examination of the body had yielded no information pointing to Plague, Bacillus Pestis was found in the blood and later other cases of rat infection in the same area shewed that our diagnosis was correct.

The Rod-shaped Bacilli mentioned in my previous reports were found in 79 rats.

In 4 rats Rod-shaped bacillus and Bacillus Pestis was found mixed.

The fact that no laboratory is available has prevented any further investigation.

The practical conclusions to be drawn from this investigation are—

(1) Plague Bacilli are found in such a small proportion of live rats that unless every rat can be examined, it is useless to attempt to use this as a means of ascertaining whether plague infection is present or not.

As the examination of all live rats caught requires the whole time of a trained bacteriologist, it becomes a practical impossibility with our present staff in most cases.

(2) The examination of freshly dead rats known to have died of plague only revealed Plague Bacilli in 17 per cent. of the rats examined. This therefore is absolutely unreliable as a means of negative diagnosis, and except in exceptional circumstances it appears to be of little value as the means of obtaining a positive diagnosis.

(3) The examination of finger or other blood from the human cadaver appears to be an extremely valuable means of diagnosis and should be used wherever possible. The failure to find Bacillus Pestis does not however mean that the case is not plague.

As a result of these conclusions the following modifications will be introduced in our work in future.

(1) The bacteriological examination of live rats will not be done.
(2) Dead rats will only be examined in any town or area until the presence of plague infection is proved.

(3) Human blood will be examined whenever possible in all cases of death after short illness, or where from the appearance of the body it appears that the relatives are lying as to period of illness.

(4) When plague infection is proved to exist in a town, the whole quarter of the town will be driven. Freshly dead rats, will be taken to be plague rats, and if the old dead rats exceed the usual proportion of old dead to live found in uninfected towns, and if live rats are below the average found in other blocks in which few old dead rats only have been found, it will be taken that plague infection has been present shortly before the drive.

In this connection it is interesting to note that we find that under certain circumstances of ventilation and temperature a rat in 10 to 14 days after its death will become a dried skeleton indistinguishable on superficial examination from one which died a year before. In towns in which no plague has occurred we always find a certain number of old dead rats which died from causes other than plague. An increase in the number of these old dead rats indicates therefore Rod Bacilli or plague infection which has occurred since the last drive in the area.

INVESTIGATIONS CONCERNING PLAGUE.

In 1910-11, we started a number of investigations concerning plague, which we were obliged to abandon owing to lack of staff. The following is a rough description of the material which is available for research, and a few suggestions as to what lines might lead to useful results. This is merely a rough sketch of what lines might be worth while investigating; other lines would doubtless suggest themselves as the work proceeded.

INFORMATION WHICH IS AVAILABLE FOR RESEARCH CONCERNING THE WORK.

Trapping square maps were made for all towns when the work was commenced, *vide* a specimen in 1909-10 Report. On these maps each house in the town is represented by a space to which a number has been given. These numbers are also painted on the actual houses in the town.

These maps have been used for the recording of all information.

The following is a complete list of the maps which have been prepared for Promé town. Similar maps have also been prepared for all towns in the Promé to Thônzé area and for the larger towns in the rest of the Division with the exception of Maps 3, 11, 45, 46 which have been prepared for Promé only.

1. *Trapping Maps*, 1909-10.—For each Trapping Square II to XV the total rats caught by trapping from the time the work commenced up to 30th April 1910, have been marked in in each house on the Trapping Square Maps.

2. *Trapping Maps*, 1910-11.—Similar maps to (1) for the period 1st May 1910, to 30th April 1911.

In addition to these maps the original Trapping registers are available for the period since the work began up to present date. From these the following particulars are available concerning each rat caught by Trapping:

- (a) Date caught.
- (b) House in which caught.

RAT INFECTION MAPS (BACTERIOLOGICAL).

3. For the whole area driven in 1911-12, shewing the results of bacteriological examination of all the rats caught by the drive.

On these maps live rats are shewn in black ink, recently dead rats in red ink.

The following signs are used to indicate results—

P. B.	...	...	Plague Bacilli.
S.	...	...	Saprophytes
R. D. B.	...	...	Rod-shaped Bacilli.

N. B.—These rod-shaped bacilli are those mentioned in the 1909-10 Report.

DRIVE MAPS.

Drive maps have been prepared for every drive done since the work commenced up to date. In these maps the rats caught are marked in each house as follows for the whole period :—

- (a) Live rats are shewn in black ink.
- (b) Recently dead rats in red-ink.
- (c) Old dead rats in green ink.

The following particulars are also shewn in each house for each rat.

- (d) Species of rat. } These were not shewn for 1909-10, only 1910-
- (e) Adult or young. } 11 and 1911-12.
- (f) Date of driving.
- (g) By whom driven.

The following drive maps are available:—

- 4. Drive, 1909-10. Trapping Squares II to XII.
- 5. Redrive, 1909-10 at a later date of several squares.
- 6. Drive, 1910-11. Trapping Squares II to XV.
- 7. Redrive, 1910-11 most of the above.
- 8. Second, Redrive of several Trapping Squares, 1910-11.
- 9. Drive, 1911-12. Trapping Squares III to XV.
- 10. Redrive, 1911-12. Several Trapping Squares.

HUMAN PLAGUE MAPS.

11. Trapping Square maps for the whole town shewing the number of Plague deaths in each house during the seasons before our work began as follows:—

1906-07	...	...	Black ink.
1907-08	...	...	Red ink.
1909-10	...	...	Green ink.

12. Similar maps for the whole town for 1909-10 shewing in addition date of death and serial number.

13. Similar maps for 1910-11.

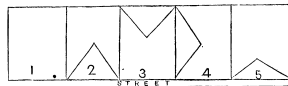
14. Similar maps for 1911-12 up to date.

In addition to these, detailed particulars are available for each plague death since 1909 shewing source of infection and other details.

BUILDINGS IMPROVEMENT MAPS.

These maps shew by means of the following shading of the houses on the maps what improvements have been effected.

- (1) House rebuilt.
- (2) Complete pukka, plinth, drain, cook-house, latrine, etc.
- (3) New roof.
- (4) General repairs rendering the house sanitary.
- (5) Partial pukka, plinth, etc.



By these, and combinations of these every improvement can be recorded. The houses are shaded in red if the work was done by the owner, in blue if it was done by the Government Grant.

The following Building Improvement Maps are available for each Trapping Square—

- (15) For the period from 1,09 to March 1, 1911.
- (16) 1909 to July 1, 1910.
- (17) July 1, 1910 to December 1, 1910.
- (18) December 1, 1910 to March 1, 1911.
- (19) March 1, 1911 to March 1, 1912.
- (20) 1909 to March 1, 1912.

INVESTIGATION MAPS.

The following maps have been made for all Trapping Squares to shew the condition of the houses and other circumstances connected with Plague and rat infestation. The houses were shaded different colours to indicate different conditions.

Three sets of all these maps have been prepared shewing the condition of the houses in 1909 when our began—
and in March 1910,
and in March 1911.

HOUSE MAPS.

- 21. 1909.—
- 22. 1910.—(a) All pukka houses shaded red.
- 23. 1911.—(b) Lower story pukka, upper wood, shaded blue.
- (c) All wood houses and bamboo, shaded black.
- (d) Burman mat and bamboo houses, shaded green.
- (e) Coringhi and other Indian huts, shaded yellow.
- (f) Mud Huts, Indian, white marked +

ROOF MAPS.

- 24. 1909.—
- 25. 1910.—(a) Corrugated iron, shaded red.
- 26. 1911.—(b) Mangalore, Marseilles or similar Tiles, shaded white.
- (c) Shingles, shaded white, marked S.
- (d) Pukka masonry, shaded yellow.
- (e) Flat country tiles, shaded blue.
- (f) Thatch, shaded green.
- (g) Semi-circular country tiles, shaded black.
- (h) If a ceiling house, shaded marked 

FLOOR MAPS.

- 27. 1909.—
- 28. 1910.—(a) Pukka floor, shaded red.
- 29. 1911.—(b) Wood floor raised 3 feet above ground, shaded blue.
- (c) Low wood floor, shaded yellow.
- (d) Low wood floor if laid in removable sections, shaded yellow, marked S.
- (e) Earth floor, shaded black.
- (f) Bamboo floor, shaded green.

PADDY AND RICE MAPS.

- 30. 1909.—
- 31. 1910.—
- 32. 1911.—(a) Paddy (rice) mills, shaded blue.
- (b) Paddy or rice godown, shaded black.
- (c) Dwelling-houses, storing large amounts of rice or paddy, shaded green.

OILSEED AND PEA MAPS.

- 33. 1909.—
- 34. 1910.—
- 35. 1911.—(a) Dwelling-houses, storing oil seed, shaded green.
- (b) Oil mills, shaded black.
- (c) Oil seed godown, shaded blue.
- (d) Gram or Pea godown, shaded yellow.
- (e) Gram or Pea Pachers, shaded red.

MISCELLANEOUS MAPS.

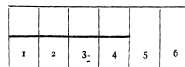
36. 1909
 37. 1910
 38. 1911 (a) Retail sellers of any form of rat food, shaded black.
 (b) Bakers, shaded blue.
 (c) Tobacco Merchants, shaded red.

RACE MAPS.

39. 1909
 40. 1910 (a) Indian coolies houses Shaded Black.
 41. 1911 (b) Better class Indians Blue.
 (c) Burman Red.
 (d) Rich Burman Red 
 (e) Chinese Green.
 (f) European and Eurasians White, marked E.

OVERCROWDING MAPS.

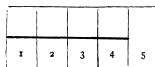
42. 1909.
 43. 1910. (a) *Continuous houses*, more than two houses actually touching.



I.e. Houses 1, 2, 3 and 4, are touching.

(b).—CONTIGUOUS HOUSES.

More than two houses within 1 foot, or separated only by a space across which a non-hunted rat would ordinarily jump.



45. Maps shewing number of persons inoculated each year in each house.
 46. Maps shewing Population living in each house.

LINES ON WHICH RESEARCH SUGGESTED.

- I. (1) The value of Fractional rat destruction as a plague preventive measure.

N. B.—We believe it will be conclusively shown that Trapping or other fractional rat destruction alone is absolutely valueless as a plague preventive measure, and that its only value is to prolong the period of immunity which has been produced by drives, or other method of producing a crisis in rat population.

II. (2) The long bacillus.

What we know about this is that—

(1) In areas in which we find the long bacillus in live rats a considerable mortality occurs amongst rats as shewn by the fact of our finding them dead when driving.

(2) In these areas *Bacillus Pestis* is generally not present in spleen smears from live rats.

(3) It has been noticed that while the long bacillus is numerous in rats during the non-plague season, it is seldom or never found when a Plague epidemic is in progress.

(4) At the beginning of an epidemic on several occasions long bacilli and *Bacillus Pestis* have been found in the same slide.

(5) We have thus been led to regard the long Bacillus as a favourable sign, and as indicating that the epidemic season has not yet begun. What relation, if any, it bears to Bacillus Pesticus we have been unable to work out.

III. The effect of rendering houses sanitary, and as far as possible reducing by the construction of the houses the breeding and hiding places of the rat on—

- (1) Human plague. (2) Rat infestation.
(3) Rat plague.

III.—The effect of the storing of large quantities of rice and other rat foods in houses on—

- (a) Human plague. (b) Rat plague.
(c) Rat infestation.

N.B.—In connection with (b) it has been repeatedly noticed that a very much larger number of fresh plague rats can be taken out of a house in which large quantities of kit and merchandise are stored without any human case occurring later than in an ordinary clean dwelling-house with no accumulations of kit at all. *I.e.*, in a clean Burmese dwelling-house one or two fresh dead plague rats are generally followed by human plague, 15 to 20 fresh plague rats have frequently been taken out of houses in which merchandise is stored and no human plague has followed.

IV.—An investigation into the theory of the maximum human epidemic line mentioned on page 125.

V.—It has been noticed that the number of towns in which endemic plague during the off season continues in the rat has been considerably reduced during the three years work.

During the off season of 1911 endemic plague only continued in two towns.

This it is believed is not due to better sanitation or rebuilding houses, etc., as several of the towns in which endemic plague previously persisted but has since ceased, are very insanitary towns in which nothing has been done to improve sanitation.

The only known circumstances which could have caused this are:—

- (1) Rat destruction. (2) Prevention of importation.

As regards (2) the prompt driving of all towns immediately they are infected, and the removal of large numbers of rats dead and live, must have reduced very considerably the supply of infected rat fleas available for export to other towns. Also in most cases when a town is infected by importation from another place, this importation is known often before or at any rate as soon as the first human case occurs. The prompt driving of this focus generally stamps out the disease.

The possible causes of the disappearance of endemic plague are therefore—

- (1) Rat destruction in the town itself,
(2) Prevention of importation from outside.

This appears to be worth investigating, as it appears to be possible that plague in one place if no new strain is introduced by importation may die out by itself. This is pure conjecture at present, but the fact appears to be worth noting in connection with the undoubted disappearance of endemic plague from towns where it had previously existed. It is interesting to note that one of these towns Thönzè is the town in the area in which least rat destruction has been done, and it is the most insanitary town in the area.

VI.—It has been noticed that the difficulty with which a plague epidemic is stopped, or in other words the number of rats which have to be removed in order to stop a plague epidemic, varies enormously in different towns, and in the same town in different seasons.

It has been noticed that if in the original focus of infection the proportion of dead rats to live is high, it is much more difficult to stop the epidemic in the other and as yet uninfected parts of the town; even though the whole town be driven in a few days, and infection is limited to a small area. It would appear that if plague continues uninterfered with in a fresh area for any length of time, its virulence is increased. The reason of this is unknown.

VII.—It has been noticed that it is very much easier to stop an epidemic now than it was in 1909. That this is not due to its being an off season in Burma is seen by the plague in neighbouring towns not driven.

APPENDICES

	PAGES
Appendix No. I contains full mortality Tables for all the larger towns in the Prome to Tada-U area from 1906-07 to 1911-12	138 to 149
Appendix No. II contains similar Tables for the towns in the Pegu District Plague Area ...	150 to 154
Appendix No. III contains similar Tables for all towns on the Railway line in Toungoo district and for Rangoon and Thayetmyo	155 to 174
Appendix No. IV contains a Table of deaths from Plague from 1906-07 to 1911-12 for the Towns in the Prome to Tada-U area	175
Appendix No. V contains a table of deaths from all causes <i>minus</i> cholera and small-pox for the same area and period as in No. IV	176
Appendix No. VI contains a table of deaths from all causes <i>minus</i> cholera and small-pox for the rest of Burma Plague towns from 1906-07 to 1911-12 similar to that in Notes on the effect of Driving on Human mortality published in 1911.	Omitted as figures are not available for 1911-12, for figures up to 1910-11, see Notes on Mortality 1911.
Appendix No. VII contains a table of deaths from Plague for the same towns and period as Appendix VI	178, 179
Appendix No. VIII is a note by the Civil Surgeon, Thayetmyo, on Plague in Thayetmyo town	180

APPENDIX I.

The Promé to Thônàè area, complete monthly tables of deaths for all the towns by Plague Seasons 1906-07 to 1911-12 for the towns for which figures are available. In Letpadan 1905-06 Plague Season is also given.

PROMÉ TOWN. POPULATION { 1901—27,375.
1911—26,981.

Month.	1906-07.				1907-08.				1908-09.				1909-10.				1910-11.				1911-12.				
	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	
May	...	...	1	52	...	1	...	42	...	103	...	186	3	...	...	67	...	...	...	68	1	3	6	52	
June	...	3	...	49	...	11	...	91	...	1	...	80	22	...	...	122	...	...	...	62	1	...	4	84	
July	...	51	5	262	...	9	...	117	1	3	...	118	158	3	...	295	...	...	...	91	5	...	3	87	
August	...	87	28	...	252	3	...	...	98	2	19	...	141	183	4	...	300	...	...	...	66	...	...	1	90
September	...	77	29	1	259	1	...	...	84	...	7	...	124	45	...	...	160	1	...	...	69	...	...	...	61
October	...	104	7	...	231	2	...	...	82	...	5	...	62	18	...	...	136	...	...	...	65	...	5	2	104
November	...	51	...	138	10	...	...	106	...	...	...	112	3	...	...	130	6	...	...	93	5	...	3	99	
December	...	78	...	176	77	...	...	192	...	...	...	67	2	...	...	159	67	...	...	163	7	8	8	114	
January	...	71	...	125	288	...	...	394	...	...	...	75	...	...	...	128	167	...	...	244	22	...	34	133	
February	...	47	23	...	133	288	1	...	358	2	...	...	87	2	80	...	166	173	...	...	175	7	...	95	171
March	...	13	5	...	61	58	1	...	139	9	1	...	98	1	42	...	114	47	2	...	98	4	...	80	161
April	...	1	2	...	57	9	101	...	211	...	...	...	60	...	...	...	76	4	26	3	97	...	1	24	92
Total	...	583	99	6	1,795	738	124	...	1,914	14	143	...	1,210	437	129	...	1,853	415	28	3	1,291	52	17	260	1,287

APPENDIX I.

The Prome to Thônzè area, complete monthly tables of deaths for all the towns by Plague Seasons 1906-07 to 1911-12 for the towns for which figures are available. In Letpadan 1905-06 Plague Season is also given—continued.

THEGÓN TOWN. POPULATION { 1901—1,576.
1911—2 366.

Month.	1906-07.				1907-08.				1908-09.				1909-10.				1910-11.				1911-12.			
	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.
May	...	...	...	2	...	...	...	3	...	...	...	3	...	...	...	7	...	...	...	1	...	...	...	8
June	...	...	...	5	...	...	...	1	...	...	...	8	...	...	...	4	...	...	...	6	...	...	1	13
July	...	...	...	9	...	7	...	23	...	1	...	3	...	...	...	13	5	...	...	9	...	...	...	11
August	...	...	...	6	1	7	...	19	...	3	...	11	...	...	...	10	1	...	...	7	...	...	2	7
September	...	...	...	2	3	...	...	9	...	2	...	8	1	...	...	14	...	...	...	4	...	...	...	9
October	...	...	...	5	...	...	...	4	...	...	...	4	...	...	...	7	2	...	...	8	...	...	...	4
November	...	...	...	6	2	1	...	10	...	...	...	5	...	...	...	10	2	...	...	7	...	...	...	6
December	...	...	...	3	5	...	...	14	...	...	...	12	...	...	...	9	...	...	...	8	3	...	...	8
January	1	...	...	7	1	...	...	4	...	...	...	2	...	...	...	9	...	...	...	3	10	...	...	13
February	...	...	...	4	...	...	...	2	...	...	...	1	...	...	...	6	5	...	...	10	14	...	1	22
March	...	...	...	9	...	...	...	4	...	...	...	7	...	...	...	2	...	...	...	4	2	...	1	10
April	...	...	...	2	...	...	...	1	...	...	...	7	...	...	...	3	...	...	...	3	...	...	2	6
Total	1	...	...	60	12	15	...	87	...	6	...	71	1	...	...	94	15	...	...	70	59	...	7	117

APPENDIX I.

The Prome to Thônzè area, complete monthly tables of deaths for all the towns by Plague Seasons 1906-07 to 1911-12 for the towns for which figures are available. In Letpadan 1905-06 Plague Season is also given—continued.

PADIGÓN TOWN. POPULATION { 1901—1,203.
1911—2,189.

Month.	1906-07.				1907-08.				1908-09.				1909-10.				1910-11.				1911-12.			
	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.
May	...	...	...	2	...	...	...	1	...	...	...	3	...	...	...	3	...	...	...	2	...	...	...	4
June	...	...	...	2	...	...	...	2	...	...	...	10	...	1	...	5	...	...	...	5	...	...	...	5
July	...	...	...	7	...	...	...	4	...	...	...	9	...	...	...	9	...	...	...	10	...	...	...	8
August	...	...	...	7	...	...	...	3	...	...	...	6	...	1	...	6	...	...	...	5	...	...	...	11
September	...	...	...	6	...	...	...	2	...	...	...	5	...	...	...	7	...	...	...	4	...	...	...	5
October	...	...	...	7	2	...	...	4	...	34	...	49	...	...	...	3	...	...	...	11	...	...	...	2
November	...	...	...	3	...	...	...	2	...	...	...	3	...	...	...	8	...	...	...	9	...	...	...	9
December	...	...	...	9	1	...	...	10	...	...	...	2	...	...	...	6	...	...	...	13	...	...	...	4
January	1	...	...	7	...	...	...	1	3	...	...	6	...	...	...	5	...	...	...	9	...	...	...	9
February	...	...	...	2	...	...	...	5	7	...	...	11	...	...	...	4	...	...	...	8	...	...	...	4
March	...	...	...	4	...	...	...	3	4	...	...	8	...	...	...	3	...	...	...	3	...	...	...	8
April	...	...	...	...	...	...	...	5	1	...	...	5	...	...	...	1	...	...	...	4	...	1	3	8
Total	1	...	...	56	3	...	...	42	15	34	...	117	...	2	...	60	...	...	...	83	...	1	6	77

APPENDIX I.

The Promé to Thônzé area, complete monthly tables of deaths for all the towns by Plague Seasons 1906-07 to 1911-12 for the towns for which figures are available. In Leipadan 1905-06 Plague Season is also given—continued.

PAUNGDE TOWN. POPULATION { 1901—11,105.
1911—12,104.

Month.	1906-07.				1907-08.				1908-09.				1909-10.				1910-11.				1911-12.			
	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.
May	...	...	...	14	...	...	...	9	...	...	...	20	...	...	...	21	...	...	...	14	...	...	1	23
June	...	...	...	11	...	...	...	15	...	...	...	21	...	...	...	28	...	...	3	24	...	...	3	30
July	...	...	...	28	...	...	...	24	...	3	...	69	...	...	...	52	...	...	...	38	...	...	2	41
August	...	...	...	47	...	...	...	32	...	...	...	45	...	4	...	53	...	...	...	34	...	...	...	27
September	...	...	...	32	...	...	...	23	...	6	...	50	...	3	...	36	...	...	...	36	...	...	...	22
October	...	...	...	30	...	...	...	22	...	230	...	167	...	...	...	26	...	...	1	41	...	...	...	25
November	1	...	...	21	...	...	...	31	...	7	...	37	...	3	...	43	...	...	...	25	...	...	...	20
December	17	...	...	48	...	14	...	43	...	...	...	20	...	11	...	51	...	...	...	31	...	...	1	24
January	13	...	...	52	...	52	...	77	...	1	...	31	...	20	...	80	...	...	...	27	...	3	9	38
February	6	...	...	25	...	53	...	70	...	...	...	18	...	9	...	41	...	...	...	25	...	2	...	18
March	5	...	...	26	...	10	...	26	...	...	...	19	...	5	...	48	...	...	1	25	...	4	...	57
April	5	...	...	18	...	1	...	23	...	...	...	25	...	1	...	21	...	...	2	17	...	1	23	38.
Total	47	...	...	352	136	...	...	395	4	143	...	522	49	7	...	500	1	...	7	337	9	1	114	413

APPENDICES.

APPENDIX I.

The Promé to Thônzé area, complete monthly tables of deaths for all the towns by Plague Seasons, 1906-07 to 1911-12 for the towns for which figures are available. In Leipadan 1905-06 Plague Season is also given—continued.

NATTALIN TOWN. POPULATION { 1901—4,445.
1911—3,428.

Month.	1906-07.				1907-08.				1908-09.				1909-10.				1910-11.				1911-12.			
	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.
May	...	...	17	24	...	...	...	5	...	...	...	2	...	...	5	...	...	...	7	...	3	...	25	
June	...	...	12	16	...	...	...	8	...	...	...	4	...	...	7	...	...	...	7	...	...	...	10	
July	...	...	2	12	...	...	...	1	...	...	...	6	...	...	7	...	...	...	11	...	4	...	15	
August	...	...	4	11	1	...	5	...	6	...	16	...	...	6	...	...	...	13	6	...	4	...	23	
September	...	...	3	1	...	9	...	28	...	38	...	...	...	6	...	...	...	12	...	...	1	...	1	
October	...	...	...	10	...	13	...	3	...	7	...	...	12	...	...	...	...	...	...	...	1	...	18	
November	...	...	2	13	...	17	...	4	...	13	...	...	16	...	...	...	13	2	...	...	...	...	18	
December	...	...	...	21	...	23	...	...	...	12	...	...	10	...	...	...	20	2	10	...	...	29		
January	3	...	18	5	...	...	...	5	...	...	...	5	...	...	12	...	...	14	...	4	2	...	15	
February	5	...	10	11	...	15	1	...	4	2	...	...	9	1	...	...	13	...	...	...	1	...	7	
March	2	...	3	4	...	9	...	...	9	...	...	...	7	2	...	5	...	...	...	...	1	...	10	
April	1	...	...	...	3	...	11	...	4	...	...	...	4	6	...	23	...	...	...	...	5	...	14	
Total	11	...	35	108	66	3	...	122	1	41	...	120	2	...	...	80	9	...	2	145	10	14	22	185

N.B.—The figures for $\frac{1}{2}$ of the Town have been lost previous to September 1909.
The figures therefore before September 1909 are for $\frac{1}{2}$ of the town and after September 1909 they are for the whole town.

APPENDIX I.

The Promé to Thônzé area, complete monthly tables of deaths for all the towns by Plague Seasons 1906-07 to 1911-12 for the towns for which figures are available. In Letpadan 1905-06 Plague Season is also given—continued.

ZIGON TOWN. POPULATION { 1901—4,229.
1911—5,228.

Month. •	1906-07.				1907-08.				1908-09.				1909-10.				1910-11.				1911-12.			
	Plague.	Cholera.	Small-pox.	Total causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.
May	...	...	1	5	...	...	7	11	...	...	20	...	...	6	...	...	6	15	...	...	1	17	...	...
June	...	...	1	12	...	...	4	22	...	...	30	1	...	10	...	...	1	10	...	...	2	15	...	...
July	...	1	1	14	4	1	...	12	32	1	...	45	4	...	...	22	...	...	...	16	...	...	10	...
August	...	1	1	...	21	2	...	11	12	...	...	22	8	...	...	23	...	...	...	14	...	...	9	...
September	...	...	...	10	3	...	...	15	1	31	...	52	4	...	...	17	...	...	...	7	...	...	8	...
October	...	...	...	11	5	...	...	8	...	35	...	48	2	1	...	20	...	...	...	13	...	...	6	...
November	...	...	...	16	5	...	...	10	...	1	...	19	3	2	...	23	1	...	...	16	1	...	15	...
December	...	...	...	22	6	...	...	12	1	...	...	18	2	...	...	18	1	...	...	13	1	1	17	...
January	24	...	...	44	1	...	...	18	6	...	...	20	...	...	...	13	5	...	...	16	...	1	4	11
February	...	7	...	18	4	...	...	18	6	...	...	21	...	...	9	10	2	...	...	15	...	...	4	15
March	...	3	1	16	3	...	...	9	3	...	...	27	2	...	6	14	2	...	...	14	...	...	9	17
April	...	1	...	7	5	...	...	13	1	...	...	17	...	...	...	20	...	...	1	6	...	...	9	14
Total	37	2	4	196	38	1	...	137	95	68	...	348	26	3	15	196	9	...	8	155	2	2	20	154

APPENDIX I.

The Promo to Thônà area, complete monthly tables of deaths for all the towns by Plague Seasons, 1906-07 to 1911-12 for the towns for which figures are available. In Letpadan 1905-06 Plague Season is also given—continued.

GYOBINGAUK TOWN. POPULATION { 1901—6,083.
1911—7,410.

Month.	1906-07.				1907-08.				1908-09.				1909-10.				1910-11.				1911-12.			
	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.
May	...	...	2	11	...	...	9	22	3	...	...	21	...	...	...	9	1	...	2	20	...	...	6	29
June	...	...	1	11	2	...	1	18	...	...	...	10	3	...	...	23	4	...	6	24	...	...	6	23
July	...	...	...	20	13	...	...	33	25	...	...	29	...	...	...	26	...	...	...	18	...	...	2	19
August	...	...	2	28	10	...	...	23	7	...	...	25	3	...	...	15	3	...	...	30	...	...	1	26
September	...	...	2	23	8	...	...	21	...	...	...	33	...	...	...	21	1	...	...	33	...	...	...	20
October	...	...	2	15	9	6	...	30	...	34	...	57	1	2	...	26	1	...	...	29	...	...	...	18
November	...	...	...	16	21	1	...	28	2	1	...	17	...	1	...	27	2	...	...	12	...	...	...	15
December	1	...	...	21	21	...	...	52	1	...	...	18	...	...	...	18	6	...	...	20	...	...	...	15
January	...	...	...	12	7	...	...	17	21	...	...	44	2	...	...	21	21	...	1	29	...	...	...	13
February	4	...	...	16	13	...	...	30	50	...	...	70	11	...	...	29	20	...	...	23	...	1	8	27
March	8	2	1	36	15	...	...	30	34	...	...	53	17	...	...	31	13	...	2	32	...	1	19	33
April	5	...	3	23	5	...	...	24	3	...	...	22	10	...	...	27	...	...	2	17	...	1	30	58
Total	18	2	13	229	124	7	10	328	137	46	...	399	47	6	...	273	72	...	13	287	...	3	72	296

APPENDIX I.

The Promé to Thônzé area, complete monthly tables of deaths for all towns by Plague Seasons, 1906-07 to 1911-12 for the towns for which figures are available. In Letpadan 1905-06 Plague Season is also given—continued.

ÖKPO TOWN. POPULATION—1901—3,210.
1911—3,050.

Month.	1906-07.				1907-08.				1908-09.				1909-10.				1910-11.				1911-12.				
	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	
May	...	...	...	8	...	...	...	5	1	...	...	2	...	...	...	4	...	...	...	7	...	1	5	10	
June	...	...	1	8	...	...	...	2	...	...	...	12	...	...	...	4	...	...	...	7	...	...	1	6	
July	...	...	1	8	...	...	...	8	...	...	...	17	...	...	...	7	...	...	...	6	...	...	...	12	
August	...	...	...	15	...	...	...	6	...	...	...	11	...	...	...	11	...	...	...	12	...	...	...	15	
September	...	...	...	10	...	...	...	5	...	...	...	32	...	...	...	12	...	...	...	3	...	...	...	10	
October	...	...	...	10	...	...	...	7	...	...	...	17	...	...	...	10	...	...	...	6	...	...	...	11	
November	...	...	...	14	...	...	...	10	...	...	...	10	...	...	...	9	...	...	...	15	...	...	...	10	
December	...	...	...	7	...	...	...	19	...	...	...	13	...	...	...	14	...	...	...	6	3	1	...	17	
January	15	...	...	33	...	...	...	15	...	...	...	45	...	...	...	14	...	...	...	14	1	...	1	12	
February	20	...	...	31	10	...	...	27	25	...	...	42	1	...	...	6	5	...	...	11	...	...	2	11	
March	3	...	1	16	36	...	...	49	33	...	...	15	...	...	...	4	1	...	...	8	...	...	...	4	8
April	1	...	...	2	1	...	...	9	6	...	...	7	...	...	...	12	...	...	...	3	10	...	...	2	5
Total	39	1	3	162	47	...	...	162	64	...	...	223	1	...	...	107	6	...	...	105	4	2	15	128	

APPENDIX I.

The Prome to Thônà area, complete monthly tables of deaths for all the towns by Plague Seasons 1906-07 to 1911-12 for the towns for which figures are available. In Letpadan 1905-06 Plague Season is also given—continued.

MINHLA TOWN POPULATION { 1903—3,564.
1911—3,589.

Month.	1906-07.				1907-08.				1908-09.				1909-10.				1910-11.				1911-12.				
	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	
May	...	...	...	4	9	1	...	6	...	...	...	5	...	...	...	10	...	...	...	5	...	...	9	13	
June	...	...	...	...	4	3	...	10	1	...	...	9	...	...	...	2	...	2	10	...	...	...	...	9	
July	...	4	...	...	13	13	...	18	1	...	...	14	1	...	...	16	...	...	...	2	...	1	1	14	
August	...	2	...	...	22	11	...	15	5	...	...	15	...	...	...	8	...	1	9	3	...	...	...	8	
September	...	...	...	...	10	13	...	14	4	...	...	13	...	...	...	6	...	4	9	...	...	...	...	5	
October	...	...	...	...	6	13	...	18	4	1	...	11	1	...	...	8	...	...	6	10	...	...	...	3	
November	...	...	...	...	4	3	...	3	5	...	...	10	...	...	...	4	...	1	14	...	...	...	...	5	
December	...	...	...	...	10	5	...	14	3	...	...	18	...	...	...	18	...	1	10	...	...	...	...	9	
January	...	...	...	...	13	14	...	15	8	...	...	18	5	...	...	23	...	6	10	...	...	...	...	7	
February	...	14	...	...	16	5	...	12	7	...	...	16	35	1	...	44	...	1	6	11	...	...	...	5	
March	...	9	4	...	15	4	...	10	3	...	...	8	30	...	...	37	...	6	15	...	...	...	...	7	
April	...	2	...	...	9	1	1	...	4	...	...	6	2	...	...	9	...	4	12	...	...	...	...	3	
Total	...	31	4	4	131	86	2	...	139	41	1	...	143	74	1	...	185	...	1	37	117	3	1	11	88

APPENDIX I.

The Promé to Thénaké area, complete monthly tables of deaths for all the towns by Plague Seasons 1906-07 to 1911-12 for the towns for which figures are available. In Letpadan 1905-06 Plague Season is also given—continued.

SITKWIN TOWN POPULATION { 1901—3,610.
1911—2,190.

Month.	1906-07.				1907-08.				1908-09.				1909-10.				1910-11.				1911-12.			
	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.
May	...	...	...	6	...	...	...	7	...	...	11	...	...	...	5	...	...	...	2	...	...	1	5	
June	...	...	1	3	...	...	...	1	13	...	...	17	...	...	...	2	...	...	...	6	...	...	...	8
July	...	...	1	3	...	...	...	2	6	...	...	11	...	...	...	4	...	...	...	8	...	...	...	7
August	...	...	1	10	...	...	...	1	...	...	5	...	...	...	5	...	...	...	11	...	...	...	...	7
September	...	...	...	8	...	...	...	5	...	...	5	...	...	...	5	...	...	...	9	...	...	...	...	3
October	...	...	...	6	...	...	...	1	...	...	3	...	...	...	8	...	...	...	11	...	...	...	...	7
November	...	...	...	3	...	...	...	8	...	...	4	...	...	...	9	...	...	...	6	...	...	...	...	6
December	...	...	...	2	...	...	...	2	...	...	5	...	...	...	7	...	...	...	3	...	...	...	...	7
January	...	...	1	1	...	...	...	8	...	...	2	...	...	...	13	...	...	...	7	...	...	...	...	3
February	...	...	...	...	...	...	...	...	...	...	7	4	...	...	11	...	...	...	4	...	...	...	...	4
March	...	23	...	29	...	...	...	...	...	...	3	5	...	...	8	...	...	1	5	...	...	1	6	
April	...	...	...	3	...	...	...	6	...	...	2	...	...	...	2	...	...	1	6	...	...	...	...	4
Total	...	24	2	77	...	...	...	33	27	...	...	75	9	...	...	79	...	...	2	78	...	...	2	68

ATTACHED.

APPENDIX I.

The Prome to Thônzé area, complete monthly tables of deaths for all the towns by Plague Seasons 1906-07 to 1911-12 up to date for the towns for which figures are available. In Letpadan 1905-06 Plague Season is also given—continued.

LETPADAN TOWN. POPULATION { 1901—9,107.
1911—9,247.

Month.	1905-06.			1906-07.			1907-08.			1908-09.			1909-10.			1910-11.			1911-12.		
	Plague.	Cholera.	Total all causes.	Plague.	Cholera.	Total all causes.	Plague.	Cholera.	Total all causes.	Plague.	Cholera.	Total all causes.	Plague.	Cholera.	Total all causes.	Plague.	Cholera.	Total all causes.	Plague.	Cholera.	Total all causes.
May	...	...	13	...	...	17	...	...	6	...	...	19	...	...	7	...	...	10	...	10	33
June	...	4	35	...	...	17	...	...	10	...	...	16	...	1	19	...	...	2	...	5	20
July	...	23	58	...	...	31	...	...	11	...	...	13	...	20	45	...	...	19	4	1	29
August	...	7	35	...	...	16	...	...	24	...	...	27	...	2	35	...	...	8	7	...	34
September	...	5	31	...	...	46	...	...	11	...	...	20	3	29	53	...	...	17	2	...	22
October	...	2	7	...	...	21	...	...	16	...	...	26	5	1	31	...	...	14	1	...	13
November	...	45	89	...	...	13	...	...	23	...	...	23	2	...	40	...	...	33	...	...	19
December	...	2	27	...	...	36	4	2	25	...	...	11	22	...	56	...	...	31	...	...	16
January	...	...	16	30	...	55	12	...	45	3	...	32	24	...	51	...	...	28	1	...	21
February	...	5	43	20	...	36	67	...	87	7	...	37	14	...	74	2	...	13	42	1	19
March	...	3	27	4	55	78	54	1	82	14	...	28	5	...	15	1	36	61	...	5	23
April	...	...	12	...	...	6	2	...	21	5	...	19	11	...	1	30	...	13	...	...	23
Total	49	54	472	70	55	372	139	3	371	29	...	271	103	50	410	16	2	303	18	1	271

APPENDIX I.

The Promé to Thônzè area, complete monthly table of deaths for all the towns by Plague Seasons 1906-07 to 1911-12 up to date for the towns for which figures are available. In Letpadan 1905-06 Plague Season is also given—concluded.

THÔNZÈ TOWN, POPULATION { 1901—6,641.
1911—6,929 PLUS 1,693 THARRAWADDY AIDED IN 1910.

Month.	1906-07.				1907-08.				1908-09.				1909-10.				1910-11.				1911-12.			
	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.
May	...	...	6	23	...	...	...	13	2	...	...	11	...	6	...	29	1	...	...	28	...	...	28	46
June	...	5	...	26	...	...	...	18	4	...	...	18	...	...	15	...	...	...	...	22	1	...	7	34
July	...	15	...	2	32	...	...	...	24	4	...	24	2	...	25	...	...	...	...	21	1	...	3	27
August	...	7	...	...	25	...	...	...	11	...	...	20	4	...	23	...	...	...	...	16	...	...	21	...
September	...	...	...	...	24	4	2	24	...	1	...	25	1	...	13	...	...	...	...	29	...	...	...	17
October	...	2	...	...	14	1	...	17	...	...	...	17	...	...	23	...	...	...	...	12	...	...	...	17
November	...	...	...	...	10	...	...	8	...	...	...	14	...	...	27	...	...	...	...	16	...	...	...	22
December	...	...	...	...	13	16	...	37	...	...	...	22	...	...	23	...	...	3	28	...	...	...	...	13
January	...	12	...	...	28	41	...	65	5	...	...	23	...	...	21	...	...	...	...	14	...	...	...	12
February	...	25	...	...	40	69	...	87	41	...	...	63	1	...	17	...	...	3	18	...	...	2	30	
March	...	10	27	...	69	31	...	39	45	...	1	65	13	...	30	...	...	12	28	...	...	...	...	19
April	...	...	4	...	28	5	...	20	...	...	...	16	15	...	1	31	...	...	36	51	...	3	...	23
Total	...	76	31	10	332	167	2	363	101	1	1	318	36	6	1	277	1	...	54	283	2	3	40	280

APPENDICES.

APPENDIX II.

Pegu District.—Complete monthly tables of deaths for the towns dealt with, by Seasons, 1906-07 to 1911-12.

PEGU TOWN. POPULATION { 1901—14,132.
1911—17,104. }

Month.	1906-07.				1907-08.				1908-09.				1909-10.				1910-11.				1911-12.				
	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	
May	...	...	7	...	65	...	9	...	53	44	3	...	89	10	3	1	47	14	...	5	60	29	...	1	70
June	...	...	3	...	66	...	1	...	60	47	...	...	112	7	...	2	88	8	1	3	59	15	...	1	80
July	...	...	2	...	84	13	1	5	103	48	...	...	94	7	...	2	80	...	...	...	61	6	...	...	88
August	...	...	...	...	66	31	...	...	85	9	...	...	76	4	32	2	105	...	...	...	63	3	...	...	74
September	...	...	...	...	51	12	...	...	59	3	...	...	63	4	7	2	53	...	...	...	58	3	...	...	50
October	...	...	1	...	50	3	...	...	45	1	...	...	46	1	49	6	123	...	...	...	52	...	4	...	54
November	...	...	...	...	48	5	...	...	49	3	...	...	54	...	7	1	66	2	...	...	47	...	40	...	116
December	...	...	...	...	78	3	...	...	71	1	7	...	59	1	4	2	65	...	...	...	32	...	15	...	92
January	...	...	...	...	62	5	...	...	51	4	...	...	51	4	1	7	65	...	...	...	63	...	4	...	75
February	...	...	5	...	66	8	6	...	75	12	...	1	65	24	1	5	74	...	...	...	42	7	5	1	62
March	...	1	1	...	52	17	18	...	98	34	1	2	71	51	3	15	128	9	...	4	71	15	...	1	61
April	...	2	113	...	215	20	2	...	60	20	...	2	74	25	...	18	90	19	...	2	83	16	...	...	71
Total	...	3	122	1	903	117	37	5	809	226	11	5	854	138	107	63	994	52	1	14	691	94	68	4	902

APPENDIX II.

Pegu District.—Complete monthly tables of deaths for the towns dealt with, by Plague Seasons, 1906-07 to 1911-12.

DEIKU. POPULATION { 1901—1,130.
1911—3,290.

Month.	1906-07.				1907-08.				1908-09.				1909-10.				1910-11.				1911-12.			
	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.
May	...	...	...	5	...	2	...	4	3	...	...	14	...	...	1	9	2	1	...	7	2	...	...	9
June	...	...	...	9	...	...	...	6	...	...	...	11	...	...	...	4	3	...	...	8	...	...	...	8
July	...	1	...	9	...	...	...	6	...	...	...	5	1	...	1	10	2	...	...	5	...	...	1	4
August	...	...	...	3	6	...	...	8	...	...	...	5	...	1	1	10	...	...	...	5	...	...	...	5
September	...	...	...	7	2	...	...	7	...	...	...	10	...	1	...	10	...	...	...	13	...	...	...	11
October	...	...	...	2	2	...	...	10	...	...	...	6	...	17	...	25	...	...	...	6	...	...	...	5
November	...	...	...	7	...	...	...	7	...	...	1	7	...	24	...	37	...	...	...	3	...	...	...	10
December	...	...	1	6	...	...	...	8	...	...	...	15	1	5	...	14	...	...	...	9	...	1	...	8
January	...	...	...	1	5	...	...	10	...	...	1	20	1	...	...	22	4	...	...	19	7	...	...	18
February	...	...	...	11	...	...	...	10	7	...	2	18	11	...	...	17	10	...	...	24	16	...	1	33
March	...	...	...	11	4	1	...	17	2	...	6	17	28	...	...	34	19	...	...	21	6	...	9	26
April	...	...	11	2	25	5	1	14	1	...	4	12	13	...	...	22	6	...	...	13	...	...	13	20
Total	1	11	4	100	19	4	...	107	13	...	14	140	55	48	3	204	46	1	...	133	31	1	24	157

DEIKU.

157

APPENDIX II.

Pegu District, complete monthly tables of deaths for the towns dealt with, by Plague Seasons, 1906-07 to 1911-12.

PYUNTAZA. POPULATION { 1901—1,358.
 { 1911—3,895.

Month.	1905-06.			1906-07.			1907-08.			1908-09.			1909-10.			1910-11.			1911-12.		
	Plague.	Cholera.	Small-pox.	Plague.	Cholera.	Small-pox.	Plague.	Cholera.	Small-pox.	Plague.	Cholera.	Small-pox.	Plague.	Cholera.	Small-pox.	Plague.	Cholera.	Small-pox.	Plague.	Cholera.	Small-pox.
May ...	...	...	5	...	...	1	2	...	6	4	...	9	...	1	7	6	...	2	17	1	2
June ...	...	...	4	...	1	3	3	1	9	3	...	7	...	1	11	1	...	7	...	1	4
July ...	...	...	4	1	...	6	7	...	18	...	...	6	2	...	8	3	...	1	14	...	1
August ...	...	...	4	...	...	4	3	...	9	...	...	9	...	1	6	...	...	8	...	...	11
September ...	...	...	1	...	...	2	2	...	5	...	...	8	...	5	...	...	4	...	...	...	2
October ...	...	...	4	...	...	3	...	...	3	...	...	10	...	5	15	...	7	...	...	...	5
November ...	...	...	5	...	...	9	...	...	3	...	...	12	...	8	25	...	12	...	23	...	30
December ...	...	...	1	...	...	6	1	...	14	...	...	5	...	5	13	...	10	...	24	...	33
January ...	...	...	4	1	...	9	2	...	8	4	...	12	1	1	13	1	...	9	...	2	7
February ...	...	...	2	...	...	4	2	1	10	25	...	38	...	6	14	...	9	30	...	...	11
March ...	...	...	5	1	...	7	10	1	15	13	...	18	1	...	9	4	23	37	...	1	9
April ...	...	...	1	1	...	14	7	2	14	3	...	9	...	3	3	5	21	...	1	15	...
Total ...	...	...	40	2	3	65	39	4	114	52	...	143	4	19	3	121	32	...	176	2	49

APPENDIX III.

Toungoo District.—Complete monthly tables of deaths for all towns on the Railway line, by Plague Seasons 1906-07 to 1911-12.

BANBWEGON (ÔKTWIN TOWNSHIP).

Month.	1906-07.				1907-08.				1908-09.				1909-10.				1910-11.				1911-12.			
	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.
April	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	
May	...	...	...	...	...	...	1	...	...	...	3	...	...	...	...	...	...	...	3	...	...	...	1	
June	...	...	...	...	...	...	1	...	...	...	3	...	...	...	1	...	...	...	2	...	...	...	1	
July	...	...	3	...	...	...	1	1	...	...	3	...	1	...	2	...	...	...	...	...	...	...	...	
August	...	...	2	...	...	...	2	...	...	...	2	...	...	1	...	...	...	...	...	...	...	...	...	
September	...	...	1	2	...	...	...	...	...	...	1	...	...	1	...	...	...	2	...	...	...	...	...	
October	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	
November	...	...	...	...	...	...	...	...	...	...	1	...	...	...	3	...	...	...	...	...	...	...	...	
December	...	...	3	...	...	...	2	...	...	...	2	...	...	2	...	...	...	...	...	...	...	...	1	
January	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	
February	...	...	2	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	2	
March	...	...	2	...	...	...	3	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	
Total	...	...	1	15	...	...	10	...	1	...	16	...	1	...	10	...	...	...	11	...	...	...	5	

APPENDIX III.

Toungoo District :—Complete monthly tables of deaths for all towns on the Railway line, by Plague Seasons 1906-07 to 1911-12.

THAUNGDAINGGON (OKTWIN TOWNSHIP).

Month.	1906-07.				1907-08.				1908-09.				1909-10.				1910-11.				1911-12.			
	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.
April	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	5	5
May	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	3
June	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2
July	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
August	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
September	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...	...	...	3	3
October	...	...	...	...	...	...	...	...	...	...	3	5	...	...	...	...	...	...	...	...	...	...	1	1
November	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...
December	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	1
January	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
February	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	3
March	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total	...	...	...	...	...	...	...	...	5	...	12	...	...	...	3	...	...	...	15	...	...	8	17	

APPENDIX III.

Toungoo District :—Complete monthly tables of deaths for all towns on the Railway line, by Plague Seasons 1906-07 to 1911-12.

OKTWIN (OKTWIN TOWNSHIP).

Month.	1906-07.				1907-08.				1908-09.			1909-10.				1910-11.				1911-12.					
	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	
April	...	...	...	4	...	...	...	...	...	...	...	11	...	...	...	3	...	...	...	...	...	...	5	11	
May	...	...	...	1	...	...	...	...	...	...	...	5	...	...	...	1	...	...	...	...	12	...	...	3	3
June	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	13	...	...	...	...	...	...	6	13	
July	...	...	...	9	...	...	...	...	...	...	...	8	...	...	...	...	...	...	...	...	...	...	2	5	
August	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	13	...	...	...	...	4	...	...	12	
September	...	...	...	10	...	...	...	...	...	...	...	16	...	...	...	...	...	...	...	...	5	...	...	...	
October	...	...	...	...	...	...	...	...	...	...	...	25	...	...	...	33	...	...	...	...	1	...	...	...	
November	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6	
December	...	...	...	...	...	...	...	...	...	...	...	8	...	...	...	13	...	...	...	...	4	...	...	3	
January	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
February	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...	14	3	...	25	
March	...	...	...	...	...	...	1	8	...	...	...	3	...	...	...	...	...	...	...	...	8	...	...	16	
Total	...	...	...	25	...	...	1	8	...	...	...	49	...	...	...	122	...	...	...	...	37	...	...	104	

APPENDIX III.

Toungoo District :—Complete monthly tables of deaths for all towns on the Railway line, by Plague Seasons, 1906-07 to 1911-12.

KANYUTKWIN (PYU TOWNSHIP).

Month.	1906-07.				1907-08.				1908-09.				1909-10.				1910-11.				1911-12.			
	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.
April	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	36	...	...	5	34
May	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8	9	...	...	...	...	...	25
June	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	25	7	...	...	...	...	...	394
July	...	Monthly	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7	3	...	...	...	...	...	24
August	...	figure not	...	...	...	Not	...	...	...	Not	...	...	...	Not	...	...	16	...	...	...	...	...	...	16
September	...	available.	...	...	...	available.	...	...	...	available.	...	...	...	available.	...	...	8	...	...	...	...	...	...	9
October	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	10	...	...	...	...	...	18
November	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	8
December	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	23	...	...	...	...	...	19
January	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	9	3	1	2	...	...	40
February	...	...	...	...	...	...	...	...	...	...	...	...	7	...	33	...	16	48	9	10	1	...	...	56
March	...	...	...	...	...	...	...	...	...	...	...	...	16	...	...	27	...	...	8	28	10	...	...	28
Total	...	...	...	...	...	...	...	...	...	...	...	...	23	...	...	91	4	...	27	259	41	11	11	316

APPENDIX III.

Toungoo District.—Complete monthly tables of deaths for all towns on the Railway line, by Plague Seasons 1906-07 to 1911-12.

PYU (PYU TOWNSHIP).

Month.	1906-07.				1907-08.				1908-09.				1909-10.				1910-11.				1911-12.			
	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.
April	...	...	4	28	...	...	...	...	...	...	4	...	1	13	8	...	30	1	...	4	20	...	...	...
May	...	...	15	32	...	...	...	...	...	...	4	...	2	6	...	...	16	3	...	6	34	...	...	...
June	...	...	...	...	...	...	...	...	...	...	10	...	...	8	...	...	19	12	...	2	43	...	...	...
July	...	...	...	...	...	...	...	...	...	...	19	...	...	...	11	...	...	20	4	...	25	...	...	...
August	...	...	...	...	...	...	...	...	1	...	16	...	...	10	...	...	16	1	...	...	20	...	...	...
September	...	...	...	...	...	...	...	...	...	...	16	...	...	...	...	...	11	...	...	...	15	...	...	...
October	...	...	...	...	...	...	...	...	1	...	8	...	...	...	19	...	16	...	...	...	13	...	...	...
November	...	...	...	...	...	...	5	...	...	...	9	...	...	18	...	...	15	...	...	1	14	...	...	...
December	...	...	...	...	...	...	6	...	1	...	19	...	...	15	...	...	17	...	...	...	16	...	...	...
January	...	...	...	...	...	...	...	...	12	...	18	...	...	...	...	...	11	...	...	...	19	...	...	...
February	...	...	...	...	...	...	7	...	...	...	15	...	...	21	...	...	13	2	...	...	20	...	...	...
March	...	...	...	...	...	...	17	...	...	...	13	17	...	1	35	...	3	9	...	...	26	...	...	...
Total	...	...	19	60	...	...	41	1	2	...	131	17	...	4	188	8	3	193	23	...	16	264	...	...

APPENDIX III.

Toungoo District :—Complete monthly tables of deaths for all towns on the Railway line, by Plague Seasons 1906-07 to 1911-12.

NYAUNGBINTHA, (PYU TOWNSHIP).

Month.	1906-07.				1907-08.				1908-09.				1909-10.				1910-11.				1911-12.			
	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.
April	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	9
May	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	12	...	...	18
June	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	14
July	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	9
August	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8	...	...	5
September	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	5
October	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	1
November	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	5
December	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6	...	...	4
January	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6	...	...	12
February	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	7
March	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	4
Total	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	50	...	...	16	...	...	93

APPENDIX III.

Toungoo District.—Complete monthly tables of deaths for all towns on the Railway line, by Plague Seasons, 1906-07 to 1911-12.

KONGYI (YEDASHĒ TOWNSHIP).

Month.	1906-07.				1907-08.				1908-09.				1909-10.				1910-11.				1911-12.			
	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.				
April	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...				
May	...	Not available.			...	Not available.			...	Not available.			...	...	...	...	...	...	...	2				
June	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1				
July	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	...	...	...	4				
August	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	...	...	...	8				
September	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	2				
October	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	2				
November	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	2				
December	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...				
January	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	5				
February	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...				
March	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	2				
Total	...	...	...	...	...	...	...	...	...	...	...	6	...	...	...	31	...	...	3	28				

SEASONAL

1912

APPROXIMATE

591

APPENDIX III.

Toungoo District.—Complete monthly tables of deaths for all towns on the Railway line, by Plague Seasons 1906-07 to 1911-12.

YENI (VEDASHE TOWNSHIP.)

Month.	1906-07.				1907-08.				1908-09.				1909-10.				1910-11.				1911-12.			
	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.
April	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	1	1	...	...	...
May	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...
June	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	2	...	...	...
July	...	...	...	5	...	...	...	3	...	1	...	6	...	...	...	3	...	...	...	...	...	...	...	...
August	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...
September	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...
October	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	2	...	...	...	...	...	...	...	1
November	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	2	...	...	...	...	...	...	...	...
December	...	...	...	1	...	...	...	1	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...
January	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...
February	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3
March	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	1
Total	...	1	...	10	...	...	...	4	...	1	...	13	...	...	...	12	...	...	...	9	...	...	2	9

APPENDIX III.

Toungoo District.—Complete monthly tables of deaths for all towns on the Railway line, by Plague Seasons, 1906-07 to 1911-12.

MYOHLA (YEDASHĒ TOWNSHIP).

Month.	1906-07				1907-08.				1908-09.				1909-10.				1910-11.				1911-12.			
	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.
April	...	...	1	6	...	...	...	3	...	...	...	5	...	...	...	3	...	...	...	2	...	...	1	5
May	...	...	...	6	...	...	1	4	...	...	...	3	...	...	...	5	...	...	1	7	...	...	...	3
June	...	...	4	...	...	...	...	2	...	...	...	7	...	...	...	3	...	...	1	9	...	...	...	3
July	...	...	...	6	...	...	...	10	...	7	...	19	...	...	...	10	...	...	1	1	...	...	...	9
August	...	...	...	6	...	...	...	5	...	...	...	6	...	...	...	5	...	...	1	6	...	...	...	6
September	...	...	...	6	...	...	...	3	...	...	...	4	...	4	...	12	...	...	...	5	...	...	...	3
October	...	...	...	11	...	...	...	5	...	2	...	7	...	...	...	5	...	...	...	5	...	...	...	5
November	...	...	...	8	...	...	...	2	...	1	...	5	...	...	...	9	...	...	...	3	...	...	...	7
December	...	...	...	10	...	...	...	9	...	...	...	3	...	...	...	4	...	...	...	12	...	...	...	5
January	...	...	...	12	...	...	...	3	...	...	...	1	...	...	...	10	...	...	...	8	...	...	...	9
February	...	...	...	5	...	...	...	6	...	...	...	2	...	...	...	5	...	...	...	6	...	...	...	4
March	...	...	...	6	...	...	...	6	...	...	...	1	...	...	...	4	...	...	...	2	...	...	...	2
Total	...	...	1	86	...	...	1	58	...	10	...	63	...	4	...	75	...	...	4	66	...	...	1	61

REFERENCES

191

APPENDIX III.

Toungoo District :—Complete monthly tables of deaths for all towns on the Railway line, by Plague Seasons 1906-07 to 1911-12.
YEDASHE (YEDASHE TOWNSHIP).

Months.	1906-07.				1907-08.				1908-09.				1909-10.				1910-11.				1911-12.			
	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.
April	...	...	...	8	...	...	...	3	...	...	...	7	...	...	...	5	...	...	1	6	...	...	...	8
May	...	...	...	5	...	...	...	6	...	...	...	6	...	...	...	5	...	...	1	10	...	...	...	14
June	...	...	...	6	...	...	...	6	...	...	...	9	...	...	...	8	...	...	...	12	...	...	...	20
July	...	...	...	16	...	...	...	7	...	...	...	13	...	...	...	14	...	...	...	13	...	3	...	15
August	...	...	...	11	...	...	...	4	...	1	...	15	...	...	...	11	...	...	...	15	...	2	...	18
September	...	...	...	7	...	...	...	5	...	...	...	14	...	...	...	10	...	...	...	8	...	...	...	10
October	...	...	...	10	...	...	...	2	...	1	...	11	...	...	...	15	...	...	...	9	...	...	1	7
November	...	...	...	9	...	...	...	7	...	...	...	5	...	...	...	16	...	...	...	8	...	...	...	7
December	...	...	...	12	...	...	...	5	...	...	...	16	...	...	...	12	...	...	...	13	3	...	1	17
January	...	...	...	11	...	...	...	8	...	...	...	2	...	...	...	12	...	...	...	16	5	...	3	11
February	...	...	...	6	...	...	...	1	...	...	...	6	...	...	...	7	...	...	...	9	7	...	1	16
March	...	...	...	8	...	...	...	2	2	...	...	8	...	...	...	9	2	...	...	12	1	...	1	6
Total	...	...	...	103	...	...	...	56	2	2	...	112	...	...	...	124	2	...	2	131	16	5	8	139

APPENDIX III.

Toungoo District. Complete monthly tables of deaths for all towns on the Railway line, by Plague Seasons, 1906-07 to 1911-12.

KYUNGÖN (TOUNGGOO TOWNSHIP).

Month.	1906-07.				1907-08.				1908-09.				1909-10.				1910-11.				1911-12.			
	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.
April	...	...	...	1	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
May	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...
June	...	...	...	...	...	...	...	2	...	...	...	...	...	...	2	...	...	...	1	...	...	...	1	...
July	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	2	...	...	1	3	...
August	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	1	3	...
September	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...
October	...	...	...	1	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
November	...	...	...	...	...	...	...	1	...	...	...	2	...	...	1	...	...	...	3	...	...	...	...	...
December	...	...	...	2	...	...	...	...	...	...	...	2	...	...	3	...	...	...	3	...	...	...	1	...
January	...	...	...	2	...	...	...	1	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...
February	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	2	...	...	2	2	...
March	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	2	...	...	2	5	...
Total	...	...	...	8	...	...	...	10	...	...	...	7	...	...	...	12	...	...	15	...	...	6	16	...

APPENDICES.

APPENDIX III.

Toungoo District.—Complete monthly tables of deaths for all towns on the Railway line, by Plague, Seasons 1906-07 to 1911-12.

TOUNGGOO TOWN.

Month.	1906-07.				1907-08.				1908-09.				1909-10.				1910-11.				1911-12.			
	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.
May ...	2	...	1	42	6	...	1	31	1	...	...	26	..	...	3	44	5	1	6	49	3	...	18	60
June ...	1	...	3	43	2	...	...	41	...	...	...	49	2	...	2	48	2	1	...	44	2	...	2	44
July ...	13	...	1	74	15	...	...	60	...	36	...	114	...	...	...	60	15	...	...	58	...	1	...	55
August ...	29	11	...	103	12	...	1	61	...	70	...	154	1	6	...	70	4	...	...	50	1	...	...	51
September ...	10	88	...	161	13	...	...	80	...	52	...	118	...	12	...	81	3	1	...	39	2	...	...	52
October ...	4	32	...	95	8	...	...	40	...	82	...	141	...	22	...	84	3	...	...	36	2	...	...	65
November ...	4	1	...	50	16	...	...	55	...	6	...	55	...	3	...	52	1	...	...	36	8	...	...	67
December ...	13	...	...	72	23	...	1	90	...	1	...	57	1	6	...	62	8	...	1	60	29	...	...	84
January ...	38	...	...	86	76	...	1	149	16	...	...	74	4	...	...	61	8	...	4	65	81	...	...	141
February ...	53	...	...	89	82	...	1	125	87	...	...	132	14	...	1	48	42	...	19	90	91	...	...	142
March ...	53	...	...	83	53	...	3	95	102	...	...	152	66	...	...	111	43	...	39	129	30	...	...	76
April ...	18	...	...	44	5	...	3	45	9	...	3	60	35	...	1	94	11	...	14	64	3	...	...	43
Total ...	238	132	5	942	311	...	11	872	215	247	3	1,132	123	49	7	815	145	3	83	726	255	3	20	879

afflicted.

0

APPENDIX III.
RANGOON. POPULATION { 1901—252,155.
 { 1911—293,316.

Month.	1906-07.				1907-08.				1908-09.				1909-10.				1910-11.				1911-12.			
	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.
May ...	239	7	83	915	177	23	...	877	148	29	...	932	58	3	18	656	118	6	35	783	267	15	107	1,083
June ...	396	8	25	1,056	249	7	1	920	162	23	...	958	116	6	10	834	168	7	8	797	291	11	45	1,165
July ...	650	1	5	1,346	268	8	...	993	174	10	...	1,080	89	27	9	959	134	2	5	836	331	...	9	1,123
August ...	416	3	3	1,100	123	8	...	821	116	2	1	894	104	18	4	922	62	1	2	718	125	...	4	863
September ...	181	23	...	816	110	14	2	809	33	7	3	816	25	13	1	803	27	3	...	663	69	...	6	701
October ...	125	8	...	755	70	7	1	730	17	2	4	816	11	11	5	824	18	1	2	680	27	1	6	725
November ...	90	31	...	747	33	31	...	745	7	9	1	687	7	28	3	818	15	...	5	684	12	4	3	703
December ...	79	156	...	930	19	48	...	925	7	2	2	733	8	27	7	842	10	...	5	701	11	49	8	811
January ...	106	47	3	983	43	17	...	874	52	7	8	729	12	6	28	809	18	3	16	784	24	88	10	826
February ...	242	37	1	1,088	104	12	1	865	60	25	20	855	38	10	92	786	53	2	72	889	84	16	28	878
March ...	330	67	3	1,273	132	18	1	969	80	11	37	873	91	4	141	911	101	10	231	1,120	63	38	66	869
April ...	403	37	1	1,183	108	27	1	869	99	20	36	830	154	6	91	914	217	52	193	1,209	46	24	57	791
Total ...	3,237	400	124	12,222	144	220	8	10,387	995	167	112	10,207	713	159	416	10,118	911	87	574	9,870	1,350	176	49	10,605

APPENDICES.

APPENDIX III.
THAYETMYO. POPULATION 1901—15,824.

Month.	1906-07.				1907-08.				1908-09.				1909-10.				1910-11.				1911-12.			
	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.	Plague.	Cholera.	Small-pox.	Total all causes.
May	...	...	...	37	...	...	...	73	...	5	...	41	...	...	...	32	3	...	...	21	...	...	1	39
June	...	...	5	70	...	...	...	37	...	...	...	41	...	...	...	23	...	...	...	28	...	...	...	28
July	...	...	2	69	...	...	...	36	...	1	...	39	...	6	...	82	...	...	...	39	...	...	...	32
August	...	...	...	73	...	1	...	36	...	...	...	50	...	...	...	65	...	...	...	42	...	...	...	29
September	...	...	...	64	...	...	...	33	...	2	...	48	...	...	...	59	...	...	...	40	...	...	...	27
October	...	...	...	51	...	...	...	29	...	...	...	41	...	...	...	43	...	...	...	33	...	1	...	38
November	...	...	2	61	...	...	...	36	...	...	...	25	...	1	...	69	...	...	...	44	...	6	...	37
December	...	...	10	90	...	8	...	45	...	...	...	40	24	...	...	94	...	...	...	47	6	22	...	79
January	...	...	39	99	...	...	...	70	...	...	...	30	55	1	...	134	...	...	...	38	47	...	...	75
February	...	22	...	60	...	...	...	43	...	...	...	26	55	1	...	89	...	...	...	35	34	...	...	65
March	...	1	...	23	...	...	...	43	...	...	...	24	5	...	...	40	...	...	...	21	4	...	...	24
April	...	...	...	31	...	...	...	47	...	...	...	20	...	...	...	22	...	...	1	33	...	...	9	36
Total	...	81	...	728	...	9	...	437	...	8	...	425	139	9	...	762	3	...	1	421	91	29	10	509

APPENDIX

Rest of Burma Plague Towns. Reported

	1906-07.			1907-08.			1908-09.		
	Popu- lation.	Plague deaths.	Ratio per mille.	Popu- lation.	Plague deaths.	Ratio per mille.	Popu- lation.	Plague deaths.	Ratio per mille.
Ma-ubin ...	6,862	3	'44	6,902	2	'29	6,942	33	4'75
Vandon ...	12,612	37	2'93	12,584	88	6'99	12,556	17	1'35
Danabyu ...	7,071	...	...	7,227	19	2'49	7,383	9	1'22
Pyapôn ...	6,226	71	11'40	6,436	67	10'41	6,616	9	1'35
Kyaiklat ...	8,254	...	...	8,300	1	'12	8,346	...	...
Bassein ...	34,093	420	12'00	35,515	434	12'22	36,037	305	8'46
Ngathaingyaung ...	7,182	1	'14	7,182	44	6'13	7,182	4	'56
Kyônyaw ...	5,381	...	...	5,393	...	...	5,405	...	...
Henzada ...	24,932	286	11'47	24,962	131	5'25	24,992	233	9'32
Myanaung ...	7,539	4	'53	7,737	159	20'55	7,935	118	14'88
Kyangin ...	7,906	102	12'89	8,026	20	2'49	8,146	122	14'98
Zalun ...	6,351	...	...	6,302	36	5'71	6,233	7	1'12
Myaungmya ...	5,821	34	9'28	6,006	73	12'15	6,191	5	'81
Wakhma ...	6,831	...	...	6,881	...	...	6,931	15	2'16
Moulmein ...	57,006	1,021	17'63	57,840	531	9'18	57,754	600	10'39
Kyaikto ...	6,331	...	...	6,280	...	...	6,229	14	2'25
Toungoo ...	17,586	238	13'53	17,226	311	17'45	16,666	217	13'01
Shwegyin ...	7,869	...	...	7,911	...	...	7,953	8	1'01
Mandalay ...	156,507	2,934	18'75	151,955	827	5'44	147,493	2,782	18'87
Maymyo ...	11,594	66	5'69	11,689	2	'17	11,784	7	'59
Shwebo ...	10,293	5	'49	10,377	69	6'65	10,461	1	'10
Sagaing ...	10,541	47	4'46	10,640	1	'09	10,739	12	1'12
Mônywa ...	8,324	...	...	8,400	...	...	8,476	...	...
Minbu ...	5,613	61	10'87	5,585	...	...	5,557	...	...
Magwe ...	5,471	...	...	5,345	...	...	5,219	...	...
Meiktila ...	7,128	26	3'65	7,115	2	'28	7,102	57	8'03
Yamethin ...	8,373	17	2'04	8,263	150	18'15	8,203	85	10'36
Pyinmana ...	14,198	220	16'13	14,167	73	5'15	14,136	291	20'59
Kyaukse ...	5,693	122	21'43	5,739	...	...	5,785	6	1'04
Myingyan ...	16,311	2	'12	16,328	...	...	16,345	2	'12
Katha ...	2,803	...	...	2,782	...	...	2,761	...	...
Total ...	500,472	5,746	1'48	497,695	3,040	6'11	494,918	4,959	10'02

N.B.—In 1911-12 the following towns only were situated in Divisions in which similar Anti Plague work

No. VII.

Plague by Plague Seasons, 1906-07 to 1911-12.

1906-07.			1907-08.			1908-09.		
Population.	Plague deaths.	Ratio per mille.	Population.	Plague deaths.	Ratio per mille.	Population.	Plague deaths.	Ratio per mille.
6,982	69	9.88	7,022	...	...	7,062	84	11.89
12,528	76	6.07	12,500	1	.08	12,472	58	4.65
7,539	7	.93	7,695	68	8.84	7,851	48	6.11
6,856	12	1.75	7,066	95	3.54	7,276	11	1.51
8,392	27	3.22	8,438	3	.38	8,484	2	.24
36,559	400	10.94	37,081	145	3.91	37,603	202	5.37
7,182	99	13.78	7,182	6	.84	7,182	75	10.44
5,417	72	13.29	5,429	27	4.97	5,441	31	5.70
25,012	222	8.87	25,052	270	10.78	25,082	18	.72
8,133	9	1.11	8,331	60	7.20	8,529	2	.23
8,266	...	...	8,386	1	.12	8,506	...	...
6,204	6	.97	6,155	12	1.95	6,106	...	...
6,376	26	4.08	6,561	36	5.49	6,746	5	.74
6,981	69	9.88	7,031	3	.43	7,081	3	.42
57,668	739	12.81	57,582	487	8.46	57,496	339	5.74
6,178	11	1.77	6,127	39	6.37	6,076	44	7.24
18,306	125	6.83	18,546	143	7.71	18,786	255	13.57
7,995	...	...	8,037	12	1.49	8,079	...	...
142,851	672	4.70	138,299	1,886	13.64	133,747	111	.83
11,879	111	9.34	11,974	1	.09	12,069	12	.99
10,545	64	6.07	10,629	6	.56	10,713	43	4.01
10,838	127	11.72	10,937	2	.18	11,036	2	.18
8,552	49	5.73	8,628	1	.12	8,704	...	...
5,529	3	.54	5,501	15	2.73	5,473	26	4.75
5,093	...	...	4,967	52	10.47	4,841	...	...
7,089	3	.42	7,076	144	20.35	7,063	8	1.13
8,143	141	17.32	8,083	1	.12	8,023	5	.62
14,105	190	13.47	14,074	27	1.91	14,043	152	10.82
5,831	4	.69	5,877	75	12.78	5,923	1	...
16,362	9	.55	16,379	103	6.29	16,396	...	...
2,740	32	11.68	2,719	54	19.86	2,698	...	...
492,141	3,374	6.65	489,364	3,705	7.57	486,587	1,528	3.14

to that in the Pegu Division was not carried on. Moulmein, Kyaukse, Toungoo, Shwegyin, Minbu Magwe,

APPENDIX No. VIII.

PLAGUE IN THAYETMYO MUNICIPALITY.

The following short note is written at the request of Captain Brayne, I.M.S., who desires to compare the behaviour of plague in areas where it has been dealt with by extensive rat driving with its behaviour in a place (like Thayetmyo), where this measure has not been adopted except on a very small and insignificant scale.

The mortality figures for Thayetmyo Town will be found on page 174. It will seem that we have had two epidemics of plague, the first in 1909-10 and the second in 1911-12, whilst during the plague season 1910-11 we were entirely free from plague.

Each epidemic commenced in December and ended in March.

During the 1909-10 epidemic there were 142 attacks and 139 deaths from plague recorded, whilst during the epidemic of 1911-12 there were 104 attacks and 91 deaths.

It will thus be seen that the second epidemic was lighter than the first. A careful study of the mortality for the town emphasizes this still more.

For instance during the first epidemic the non-epidemic mortality (that is all causes except plague, cholera and small-pox) during the four months was 216 (average 54 per month) whilst during the four months of the second epidemic the non-epidemic mortality was only 130 (average 32.5 per month).

The average non-epidemic mortality for the whole of the three years 1909-11 was 39 per month. It thus appears that in all probability many cases of plague were missed during the first epidemic, and I have no hesitation in saying from my own experience that this was so, as there was no properly organised plague staff to deal with the epidemic.

I have been in intimate touch with things, having worked through both epidemics, and I can say with certainty that our first epidemic was very much more severe than the second one. Many victims do not appear in the mortality figures at all, as they fled to villages in the district and died there.

This was not so to any large extent during the second epidemic. I believe that the comparative lightness of the second epidemic was due to some extent to the fact the evacuation was resorted to very much earlier and much more extensively than during the first epidemic. The people were encouraged to leave their houses long before the epidemic had spread to their neighbourhood. Further I believe that a good deal of good was done by closing the bazaar. It was rat-ridden and a very high percentage of the rats were plague infected and many cases of plague occurred amongst bazaar sellers.

I am not prepared to go any further than this in explaining the difference between the two epidemics, as I consider that deductions drawn from variations in plague in different years are very misleading.

It is well known that in the absence of all preventive measures, the severity of successive plague epidemics in the same place varies enormously.

R. KELSALL, CAPT., I.M.S.,
Civil Surgeon, Thayetmyo.

THAYETMYO, the 3rd May 1912.