

## **Report of the Medical Officer of Health, Cairo City.**

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MINISTRY OF THE INTERIOR, EGYPT.

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DEPARTMENT OF PUBLIC HEALTH.—CAIRO CITY HEALTH INSPECTORATE.

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REPORT  
OF THE  
MEDICAL OFFICER OF HEALTH,  
CAIRO CITY,  
FOR THE  
YEARS 1915 AND 1916.

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CAIRO.  
GOVERNMENT PRESS.

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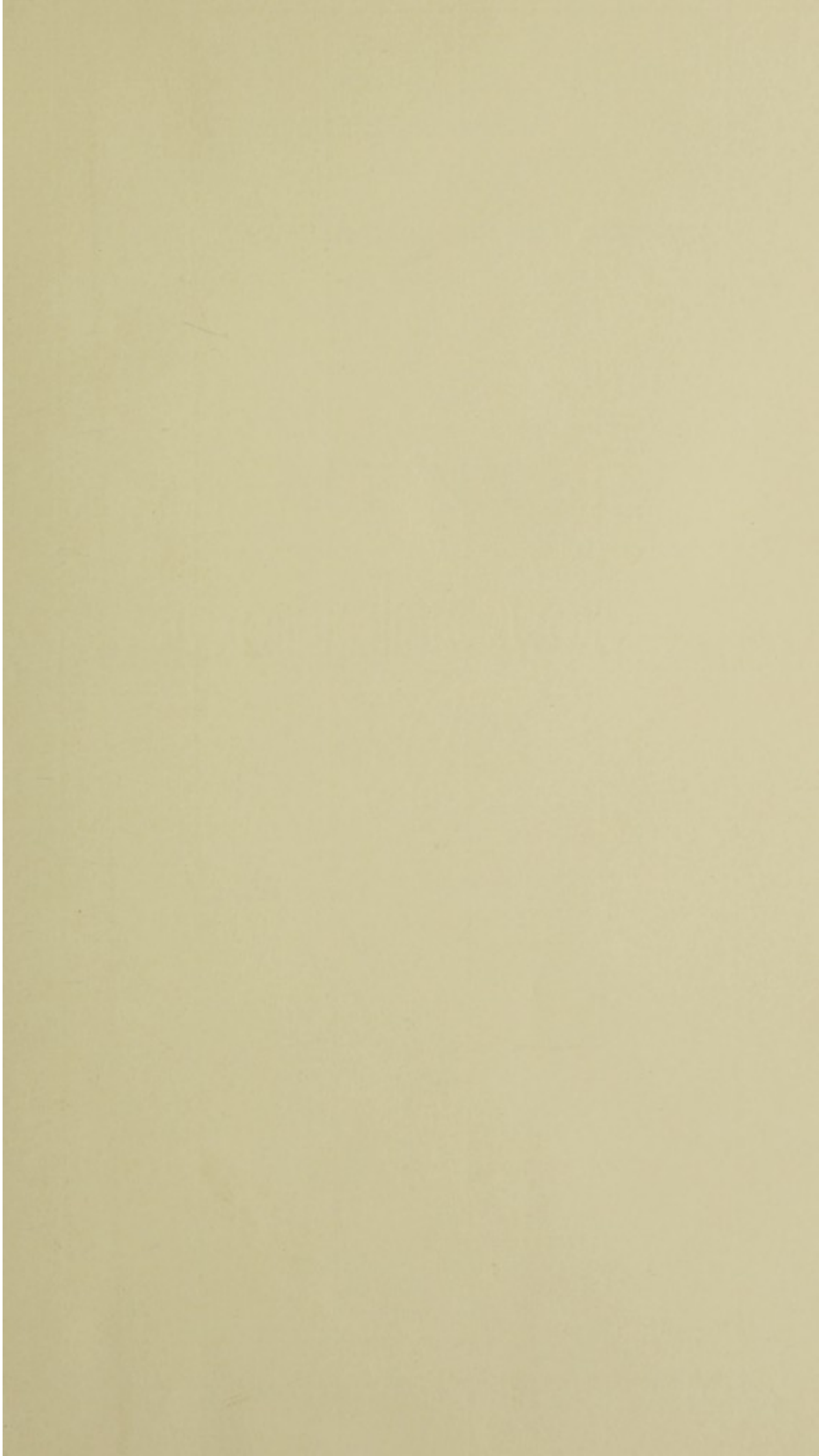
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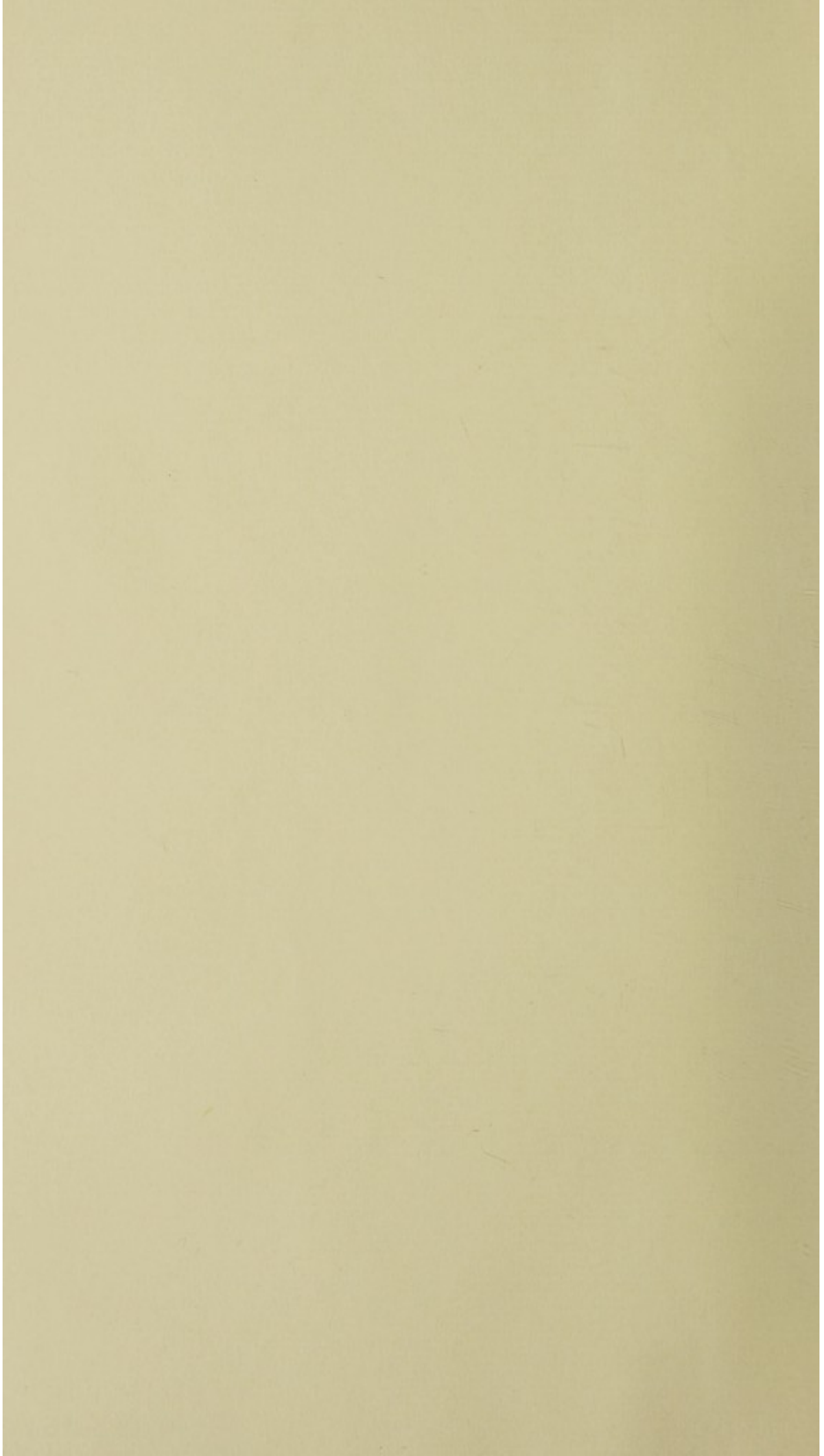
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MINISTRY OF THE INTERIOR

DEPARTMENT OF PUBLIC HEALTH - CAIRO CITY HEALTH INSPECTORATE

# REPORT

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YEARS 1915 AND 1916

CAIRO

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# REPORT

## OF THE MEDICAL OFFICER OF HEALTH, CAIRO CITY,

### FOR 1915 AND 1916.

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#### I.—INTRODUCTION.

The circumstances which have led to the unusual arrangement adopted in this report of dealing with two years conjointly call for some explanation.

Following on the outbreak of the European War in 1914, there ensued, for the Inspectorate, a period of considerable strain, when additional duties had to be undertaken by a staff weakened by the departure of certain of its European members, called up for the military services of their respective countries.

Throughout 1915, and, to a less extent, subsequently, the continued arrivals of fresh military units, ignorant of the country, its resources and capabilities, and consequently requiring local advice and information in the most diverse directions, resulted in the Inspectorate accidentally drifting into the position of a general information bureau, which, more especially in 1915, threw a considerable strain on this office.

The assistance called for was naturally mostly in connection with matters of public health, and consisted chiefly in supplying the medical personnel of the various units with local information bearing on sanitary work, and with advice on difficulties emerging from their lack of local experience, though the appeals were far from being entirely confined to this.

The amount of work thus involved in direct dealings with individual units, eventually, in the aggregate, became so onerous as to call for alleviation by the substitution of some more satisfactory arrangement, and an attempt was made to have individual applications for assistance diverted through the usual official channels, though, for a long time, with but little result.

During this period, at the request of the Military Authorities, the general supervision of the sanitary arrangements, and the medical inspection of the prisoners of war camps then being established were, in addition, taken over by us, and this with the necessity of arranging for the hospitalization of the infectious sick of the army, of supplementing the existing military facilities for disinfection by undertaking part of such work, and of providing for the conveyance of wounded prisoners of war from the hospital trains to Qasr el 'Aini and the Red Crescent hospitals, still further added to the calls made on the Inspectorate at that time over and above its usual civil duties.

Superimposed on this, an exceptionally extensive prevalence of infectious disease amongst the civil population, particularly in 1915, contributed to a position which rendered impossible any close adherence to those routine measures here so essential to administrative control, and thus tended to wreck the whole working organization of the office. Under such circumstances it became necessary to concentrate on essentials, and, for the time being, to quit such duties as had the least vital and direct bearing on the general public health.

In 1916 the position improved. The demands for assistance by the Military Authorities gradually diminished, and this, with a lessened prevalence of infectious disease amongst the civil population, resulted in a considerable easing of the conditions.

Questions, however, which had been shelved from the previous year then came up for consideration, and a certain amount of additional work, resulting from postponed inspections and inquiries, had to be dealt with.

It was therefore considered inopportune to attempt, at the time, to draw up any note on the public health conditions of the previous year, and it was decided in consequence to postpone the issue of any report for the year 1915, and to include this subsequently with that of the following year.

In consequence of this a combined report for the two years 1915 and 1916 is now issued.



## II.—VITAL STATISTICS.

### (a) POPULATION.

The estimated mid-year population of Cairo in 1915 was 733,423, consisting of 660,471 Egyptians and 72,952 foreigners. The district distribution of the population has been calculated as follows:—

'Abdīn district, 59,792; Bâb el Sha'riya, 63,296; Bûlâq, 100,422; Darb el Ahmar, 75,230; Ezbekiya, 52,166; Gamâliya, 66,178; Helwân, 8,568; Khalifa, 60,386; Mûski, 24,688; Old Cairo, 35,252; Sayeda Zeinab, 72,840; Shubra, 54,765; Wâyli, 59,840.

For 1916 the population was estimated at 740,000, consisting of 665,000 Egyptians and 75,000 foreigners, and distributed as follows:—

'Abdīn, 60,328; Bab el Sha'riya, 63,864; Bûlâq, 101,323; Darb el Ahmar, 75,905; Ezbekiya, 52,634; Gamâliya, 66,771; Helwân, 8,645; Khalifa, 60,927; Mûski, 24,909; Old Cairo, 35,568; Sayeda Zeinab, 73,493; Shubra, 55,256; Wâyli, 60,377.

As in former years and for the same reason, the estimates of the populations of the individual districts of Cairo have, in 1915 and 1916, been based on the supposition that the estimated general increase in the total city population has been evenly distributed over the whole area. This method of calculation is obviously liable to an increasing margin of error in each year, especially as regards those outlying districts embracing rapidly-growing suburban areas. Until, however, figures are available upon which to estimate the probable individual variations of each district, it is impossible to adopt any other method likely to give more reliable results, and though some allowance, therefore, under the circumstances, may be advisable for a possible margin of error in considering the statistical figures of the more outlying rapidly-growing districts, reasonable indications exist to show that the estimates of population, as given, may, generally speaking, be accepted as providing sufficiently accurate bases for all the statistical returns founded upon them. To this general rule, however, exception must be made in the case of Helwân, where certain peculiarities, arising out of administrative necessity, render the population figures given for this district inapplicable with propriety in certain cases, and for reasons which will be subsequently apparent it has become necessary in this report to review the position of Helwân district as a public health unit of the city in its bearings to the population figures given for the district.

As a public health constituent of Cairo, Helwân exists in two distinct forms: a lesser Helwân, entirely under the Public Health Administration of this city; and a greater, embracing the lesser together with an additional area, attached to the city for all public health purposes except the registration of births and deaths. This greater Helwân is, in effect, an extensive rural area, and includes within its limits a large number of small residential entities so widely dispersed that difficulties of distance render inexpedient any centralization of death and, to a less extent, birth registration, and consequently call for the provision of various sub-centres of registration more convenient for the scattered populace of the district. In accordance with these requirements, therefore, this district has been apportioned into nine registration areas with registering centres at Helwân town, Helwân village, Kafr el 'Elwa, Ma'sara, Tura el Haggâra, Tura el Heit, Tura el Ordi (*Kingi Alai*), Me'âdi el Khâbiri, and Basâtin. Of these, however, only the area served by the Helwân town registry office, which includes the town of Helwân itself and its two dependent hamlets, 'Ezbet Helwân el Bahariya and 'Ezbet Helwân el Qibliya, is, for registration purposes, attached to Cairo city, the remaining centres with their concerned areas forming, for the purposes of birth and death registration, part of Giza province, and being consequently administered in this direction by the Giza Public Health Authority. As a result of this arrangement, of the greater district of Helwân, included for all other public health purposes within the city control, only the births and deaths of Helwân town, 'Ezbet Helwân el Bahariya and 'Ezbet Helwân el Qibliya officially fall within the cognizance of this office.

In the 1907 census the population of Helwân district was given as 7,646, and upon this figure has been based the estimated populations of the district in the various annual reports. In this enumeration, however, are included only the inhabitants of Helwân town and its dependent hamlets of 'Ezbet Helwân el Bahariya and 'Ezbet Helwân el



Qibliya. The census unit of "Helwân District" is therefore coincident with the Helwân registration unit appertaining to Cairo.

Subject, therefore, to some allowance being made for the possibility of an under-estimation of population in a growing suburban area, as a result of the method already referred to of proportionally apportioning to the different districts of Cairo the estimated total increase of the city population, the birth, death, and infantile mortality rates for this district, as given in the different annual reports, may be taken as a fair reflection of the position as regards these in the lesser Helwân, which is the only part of the greater district dealt with by this office in that direction.

The same claim, however, cannot be advanced for the zymotic rates of this district, which, though founded upon an improper basis, have been recorded, since 1914, for the purpose of affording a provisional standard for an inter-annual comparison of the zymotic position of this district, pending such time as the receipt of the more accurate information to be furnished by the 1917 census would permit of a satisfactory review of the whole question.

Circumstances, however, emerging from an undue prevalence of infectious disease in certain of the villages included in the greater district during the two years now under consideration make imperative a more immediate exposition of the circumstances surrounding the presentation of the infectious disease incidence in this district, as given in the annual reports.

Previous to 1913, no comparative records of the incidence of infectious disease in the different districts were kept. In 1913, however, an attempt was made in this direction, but the organization of the work of the special staff appointed in that year for the control of infectious disease was not then sufficiently advanced to render this altogether satisfactory, and it was considered inadvisable to include the figures thus arrived at in the report for that year.

In the following year, however, with a smoother working of the control, accurate district records of the infectious disease incidence became possible, and the results thus obtained, expressed in common rates for the purposes of an inter-district and inter-annual comparison, were included in the report of 1914. As regards these, however, difficulties arose in the case of Helwân. The only figures appertaining to population for this district were the 1907 census figures, which included only the lesser Helwân already referred to, whilst the district records of infectious disease were made up of all the cases derived from the greater district. Obviously, to estimate the morbidity rates of the greater district on the population of what was only a fraction of it could not be taken as a legitimate presentment of the zymotic position of this district. On the other hand, no very exact information could be obtained regarding the population of the greater district, and in the absence of this it was elected provisionally to estimate the zymotic rates of this district on the same basis as its other rates, and to put them on record for the purposes of inter-annual comparison only.

In 1914, the apparent zymotic conditions of the district, disclosed in this way, were not sufficiently obtrusive to call for explanation, and the figures were included in the report of that year without comment, with the object of avoiding a somewhat complicated exposition of the position, which, it was thought, might more fittingly be reviewed when more definite population figures rendered a practical consideration of the whole position possible. For the two years, however, now under consideration, a different situation has arisen. Here the impropriety of estimation has resulted in a presentation of the zymotic conditions of this district which is not only erroneous but importunate in its demands for remark.

The time is, however, scarcely ripe for a general review of the whole question, and, beyond drawing attention in this way to the circumstances surrounding the erroneous inflation of the zymotic rates of this district, and the consequent necessity of limiting their use merely to the provision of data for inter-annual comparison, it is not proposed to attempt any more correct interpretation of the actual conditions by substituting rates based upon possibly truer but still inaccurate guesses at the actual population of the area in question, though it may be stated that, at the moment of writing, advance figures of the 1917 census, unofficially obtained from the Statistical Department, would indicate that the true population of that greater Helwân, upon which the zymotic rates of this district should properly be estimated, is slightly over three times as great as the figure actually recorded as the population of Helwân.



(b) BIRTHS.

During 1915, 29,933 births occurred in Cairo. The annual birth-rate was therefore 40·8 per thousand of the population, as compared with 43·1 per thousand in 1914.

For the quinquennial period ending with 1915, the mean annual rate was 43·8 per thousand, the highest rates during that period being 46·4 per thousand in 1911, and the lowest that of 1915.

The highest district birth-rate in 1915 was in Shubra, where there were 58·9 births per thousand of the population. The lowest rate was Mûski, with 27·5 per thousand.

The district birth-rates in 1915 occupy the same relative positions to the annual birth-rate of the city as a whole as they did in 1914, with the exception of Gamâliya, which is above, and El Khalifa and El Sayeda Zeinab, which are below.

Of the total births, 29,482 were native births, and 451 were foreigners.

In 1916, the number of births was 31,170, making an annual birth-rate of 42·1 per thousand of population, as compared with 40·8 per thousand in 1915.

For the quinquennial period ending with 1916, the mean annual rate was 42·9 per thousand, the highest during that period being 44·8 per thousand in 1912, and the lowest 40·8 per thousand in 1915. The highest district birth-rate in 1916 was in Shubra, with 59·9 per thousand, and the lowest was in Mûski, with 28·1 per thousand of population.

Relatively to the annual birth-rate of the city, the 1916 district rates occupy the same positions as in 1915, with the exception of El Gamâliya, which is slightly below the general rate, and Bab el Sha'riya, Khalifa, and El Sayeda Zeinab, which are above.

Of the total births in 1916, 30,714 were native births, and 456 were births of foreigners.

Table I shows the district annual birth-rates for 1914, 1915, and 1916.

TABLE I.—District Annual Birth-rates per 1,000 of Population.

DISTRICT.	Birth-rate in 1916.	Birth-rate in 1915.	Birth-rate in 1914.
El Ezbekiya ... ..	31·02	30·6	32·7
Helwân ... ..	41·6	36·9	41·7
El Mûski ... ..	28·1	27·5	29·7
'Abdin ... ..	33·05	30·2	33·1
El Darb el Ahmar ... ..	34·6	34·8	36·0
El Gamâliya ... ..	41·9	41·2	42·5
Bab el Sha'riya ... ..	42·2	40·4	39·9
El Sayeda Zeinab... ..	43·2	40·5	44·4
El Khalifa ... ..	42·2	40·2	45·9
El Wâyli ... ..	45·7	45·9	43·4
Bûlâq ... ..	47·6	46·1	50·3
Old Cairo ... ..	47·7	45·8	50·8
Shubra ... ..	59·9	58·9	60·6
Cairo City ... ..	42·1	40·8	43·1

During the year 1915 there were 1,318 still-births.

Of these, 1,297 were among natives, and twenty-one were of foreign parentage. This gives a rate of 4·4 still-births per cent births in 1915, as compared with 4·16 per cent births in 1914.

In 1916 the number was 1,434, of which 1,411 were Egyptians and twenty-three were foreigners. The rate of still-births in 1916 per cent births was 4·6 as compared with the 4·4 per cent of the previous year.

(c) DEATHS.

The total number of deaths occurring in Cairo during the year 1915 was 33,592. Of these, however, 1,038 were irrelevant deaths of non-residents, leaving 32,554 as the number of deaths amongst the actual population of Cairo. This gives an annual death-rate of 44·3 per thousand of the population, as compared with a rate of 36·0 per thousand for 1914.



For the quinquennial period ending with 1915, the mean annual rate was 39·02 per thousand, with a maximum during this period of 44·3 per thousand in the year under consideration, and a minimum of 36·0 per thousand in the previous year.

The lowest district mortality occurred in El Ezbekiya district, with a death-rate of 24·8 per thousand as against 24·1 per thousand in 1914. The highest was in Bôlâq, with a rate of 58·2 as compared with 41·8 per thousand in 1914.

The districts with rates above or below the general city rate are the same as last year, with the exception of El Sayeda Zeinab and Wâyli, whose death-rates this year are below the general city rate.

In 1916, the total number of deaths in Cairo was 29,483.

Of these, however, 1,163 were of persons not normally residing in the city, leaving 28,320 as representing the actual residential deaths. This gives a death-rate per thousand of the population of 38·3, as compared with a rate of 44·3 in 1915. For the quinquennial period ending with 1916, the mean annual rate was 38·8 per thousand, with a maximum of 44·3 per thousand in 1915 and a minimum of 36·0 per thousand in 1914.

As in 1915, the lowest district death-rate occurred in El Ezbekiya district, with 26·02 per thousand living, compared with 24·8 per thousand in 1915. The highest was in Shubra with 53·2 per thousand, as against 52·5 per thousand of population in 1915.

Of the 28,320 deaths amongst Cairo residents, 27,244 were deaths of Egyptians, and 1,076 were foreign deaths.

The districts with rates above, and those with rates below, the general city rate are the same in 1916 as in 1915, with the exception of Wâyli, which is above, and El Khalifa, which is below.

In Table II the district annual death-rates for 1914, 1915, and 1916 are shown :—

TABLE II.—District Annual Death-rates per 1,000 of Population.

DISTRICT.	Annual Death-rate in 1916.	Annual Death-rate in 1915.	Annual Death-rate in 1914.
El Ezbekiya ... ..	26·02	24·8	24·1
Helwân ... ..	26·1	30·1	27·6
El Mûski ... ..	27·5	33·4	25·3
'Abdin ... ..	31·6	32·5	29·3
El Darb el Ahmar ... ..	34·3	38·2	30·9
El Gamâliya ... ..	35·5	43·6	34·9
Bab el Sha'riya ... ..	37·2	42·5	35·5
El Sayeda Zeinab ... ..	37·4	43·1	36·5
El Khalifa ... ..	37·9	54·7	39·8
El Wâyli ... ..	42·1	44·1	36·4
Bûlâq ... ..	44·2	58·2	41·8
Old Cairo ... ..	48·5	55·3	39·9
Shubra ... ..	53·2	52·5	50·8
Cairo City ... ..	38·3	44·3	36·0

In Chart I the weekly incidence of deaths in the city is compared year by year for the period 1911–1916.

#### (d) INFANTILE MORTALITY.

Of children under the age of one year, 9,722 died in Cairo in 1915. Of these, however, 130 were children from outside districts dying in various public institutions in the city, leaving 9,592 as the actual number of Cairo children, under the age of one year, dying during 1915. This gives an infantile mortality rate for the whole city of 320 per thousand births, as compared with 283 per thousand in 1914.

During the quinquennial period ending with 1915, the mean annual infantile mortality rate was 304, the highest during that period being 323 in 1911, and the lowest 283 in 1914.

As regards the various districts of the city, the lowest infantile mortality occurred in Helwân, with 198 infantile deaths per thousand births.



In 1916, 9,376 children under the age of one year died in Cairo. Of these, 168 were institutional deaths of children from outside districts, leaving 9,208 as the number of Cairo children of this age dying during the year. The infantile mortality rate per thousand births was therefore 295 in 1916, as compared with 320 in the previous year, and a mean annual infantile mortality rate of 298 for the quinquennial period ending in 1916, the highest during this period being 320 in 1915, and the lowest 283 in 1914.

The district with the highest infantile mortality rate in 1916 was Old Cairo with 396 infantile deaths per thousand births, and the lowest was Helwân with 158.

In Table III, the district infantile mortality rates for 1914, 1915, and 1916 are compared.

TABLE III.—District Infantile Mortality per 1,000 Births.

DISTRICT.	Infantile Mortality in 1916.	Infantile Mortality in 1915.	Infantile Mortality in 1914.
Helwân ... ..	158	198	197
El Mûski ... ..	235	284	220
El Ezbekiya ... ..	241	212	205
El Sayeda Zeinab ... ..	263	305	278
El Gamâliya ... ..	266	322	278
‘Abdin ... ..	280	304	272
Bab el Sha‘riya ... ..	280	310	284
El Darb el Ahmar ... ..	283	286	266
El Khalifa ... ..	297	357	286
El Wâyli ... ..	299	292	281
Shubra ... ..	306	291	306
Bûlâq ... ..	345	388	306
Old Cairo ... ..	396	434	343
Cairo City ... ..	295	320	283

Taking the number of persons per cent rooms, as given in the last census return, as an index of the residential density in each district, the district annual infantile mortality rates for 1914, 1915, and 1916, together with the district death-rates, are shown in comparison with reference to this in Table IV, which exemplifies the general tendency for the higher densities of population to be accompanied by higher death and infantile mortality rates.

TABLE IV.—District Annual Death and Infantile Mortality Rates in 1914, 1915, and 1916, in relation to Density of Population.

DISTRICT.	Number of Persons per 100 Rooms.	1914.		1915.		1916.	
		Death-rate per 1,000 of Population.	Infantile Mortality Rate per 1,000 Births.	Death-rate per 1,000 of Population.	Infantile Mortality Rate per 1,000 Births.	Death-rate per 1,000 of Population.	Infantile Mortality Rate per 1,000 Births.
Helwân ... ..	121	27·6	197	30·1	198	26·1	158
El Ezbekiya ... ..	151	24·1	205	24·8	212	26·02	241
El Mûski ... ..	176	29·3	272	32·5	304	31·6	280
‘Abdin ... ..	177	25·3	220	33·4	284	27·5	235
El Sayeda Zeinab ... ..	178	36·5	278	43·1	305	37·4	263
El Wâyli ... ..	187	36·4	281	44·1	292	42·1	299
Bab el Sha‘riya ... ..	191	35·5	284	42·5	310	37·2	280
El Darb el Ahmar ... ..	202	30·9	266	38·2	286	34·3	283
Shubra ... ..	203	50·8	306	52·5	291	53·2	306
El Gamâliya ... ..	213	34·9	278	43·6	322	35·5	266
El Khalifa ... ..	213	39·8	286	54·7	357	37·9	297
Bûlâq ... ..	230	41·8	306	58·2	388	44·2	345
Old Cairo ... ..	248	39·9	343	55·3	434	48·5	396



Of the 9,592 deaths of children under the age of one year occurring in 1915, 9,493 were deaths of Egyptian infants, and 99 of foreigners. The Egyptian infantile mortality rate was therefore 322 per thousand Egyptian births, as against 219 in the case of foreigners.

In 1916, the number of deaths of Egyptian children under the age of one year was 9,129, and of foreigners 79. The infantile mortality rate therefore amongst Egyptians in 1916 was 297 per thousand Egyptian births, as against a rate of 173 amongst foreigners.

The infantile mortality curve (*see* Chart II) in 1915 was below the average in January and February, but began to rise in the beginning of March, and, with the exception of a temporary fall in the beginning of June, mounted steadily and continuously to its acme in the middle of that month. From this time onwards, the curve shows a gradual decline, with slight temporary rises in the middle of July and at the beginning and end of August. During its rise and at its height, the weekly infantile mortality in this year was decidedly above the average.

In 1916, infantile deaths began to show a definite tendency to increase about the end of March and the beginning of April, but the actual summer rise in reality did not definitely begin until the middle of the latter month. The highest point was reached in the middle of July, from which time it gradually declined, with the exception of a temporary and slight secondary rise in the first two weeks of October.

In Chart II the infantile mortality curves for 1915 and 1916 are shown in comparison with those of the previous four years.

The principal causes to which the infantile deaths in 1915 and 1916 were attributed were, as usual, diarrhoea, enteritis, and marasmus (*see* Charts III and IV).

In Table V the population and vital statistics for the period 1911–1916 are arranged for comparison in a tabular form, whilst in Tables VI and VII the district statistics for the years 1915 and 1916 respectively will be found similarly arranged.

TABLE V.—Population and Vital Statistics of Cairo, 1911 to 1916.

YEAR.	Population.	Number of Deaths.	Death-rate per 1,000 of Population.	Infantile Deaths.	Infantile Death-rate per 1,000 Births.	Number of Births.	Birth-rate per 1,000 of Population.
1911 ... ..	693,806	27,981	40·3	10,414	323	32,195	46·4
1912 ... ..	704,956	26,385	37·4	9,549	303	31,555	44·8
1913 ... ..	715,609	26,413	36·9	9,250	292	31,599	44·1
1914 ... ..	725,670	26,128	36·0	8,875	283	31,314	43·1
1915 ... ..	733,423	32,554	44·3	9,592	320	29,933	40·8
1916 ... ..	740,000	28,320	38·3	9,208	295	31,170	42·1

For the reasons given in the 1914 report, the death and infantile mortality rates previous to that year had been based on the total deaths which occurred in the city, and included therefore a certain number of deaths of persons not properly belonging to the city population. Some allowance must therefore be made for this in comparing the infantile mortality and death-rates of 1911, 1912, and 1913 with those of the succeeding years, though, as far as the general rates of the city are concerned, the influence of this may largely be ignored, its importance being principally confined to its effects on the district rates of the three Qisms of El Sayeda Zeinab, El Wāyli, and Helwān, where the existence of large public institutions for the treatment of the sick, or a periodical accession of a considerable non-residential element, contributes to a marked inflation of the district infantile mortality and death-rates of these localities.



TABLE VI.—Showing the Population and Vital Statistics  
of Cairo and its Quarters in 1915.

DISTRICT.	Population.	Number of Deaths.	Death-rate per 1,000 of Population.	Number of Births.	Birth-rate per 1,000 of Population.	Number of Infantile Deaths (0-1 Year).	Infantile Mortality Rate per 1,000 Births.
El Mûski ... ..	24,688	827	33·4	679	27·5	193	284
Bab el Sha'riya ... ..	63,296	2,694	42·5	2,560	40·4	794	310
El Ezbekiya ... ..	52,166	1,294	24·8	1,600	30·6	340	212
'Abdin ... ..	59,792	1,948	32·5	1,809	30·2	550	304
El Sayeda Zeinab ... ..	72,840	3,146	43·1	2,956	40·5	904	305
El Khalifa ... ..	60,386	3,304	54·7	2,430	40·2	869	357
Helwân ... ..	8,568	258	30·1	317	36·9	63	198
El Darb el Ahmar ... ..	75,230	2,879	38·2	2,621	34·8	750	286
El Gamâliya ... ..	66,178	2,889	43·6	2,728	41·2	880	322
Shubra ... ..	54,765	2,877	52·5	3,231	58·9	941	291
Bûlâq ... ..	100,422	5,847	58·2	4,634	46·1	1,800	388
Old Cairo ... ..	35,252	1,950	55·3	1,617	45·8	702	434
El Wâyli ... ..	59,840	2,641	44·1	2,751	45·9	806	292
TOTALS FOR CAIRO ...	733,423	32,554*	44·3	29,933	40·8	9,592†	320

\* Does not include 1,038 deaths from outside Cairo, of which 464 were military cases.

† Does not include 130 deaths, in public institutions, of infants coming from outside districts.

TABLE VII.—Showing the Population and Vital Statistics  
of Cairo and its Quarters in 1916.

DISTRICT.	Population.	Number of Deaths.	Death-rate per 1,000 of Population.	Number of Births.	Birth-rate per 1,000 of Population.	Number of Infantile Deaths (0-1 Year).	Infantile Mortality Rate per 1,000 Births.
El Mûski ... ..	24,909	687	27·5	700	28·1	165	235
Bab el Sha'riya ... ..	63,864	2,377	37·2	2,699	42·2	758	280
El Ezbekiya ... ..	52,634	1,370	26·02	1,633	31·02	394	241
'Abdin ... ..	60,328	1,910	31·6	1,994	33·05	560	280
El Sayeda Zeinab ... ..	73,493	2,753	37·4	3,177	43·2	837	263
El Khalifa ... ..	60,927	2,313	37·9	2,572	42·2	764	297
Helwân ... ..	8,645	226	26·1	360	41·6	57	158
El Darb el Ahmar ... ..	75,905	2,609	34·3	2,631	34·6	745	283
El Gamâliya ... ..	66,771	2,371	35·5	2,802	41·9	746	266
Shubra ... ..	55,256	2,945	53·2	3,311	59·9	1,014	306
Bûlâq ... ..	101,323	4,485	44·2	4,828	47·6	1,667	345
Old Cairo ... ..	35,568	1,727	48·5	1,699	47·7	673	396
El Wâyli ... ..	60,377	2,547	42·1	2,764	45·7	828	299
TOTALS FOR CAIRO ...	740,000	28,320*	38·3	31,170	42·1	9,208†	295

\* Does not include 1,163 deaths from outside Cairo.

† Does not include 168 deaths, in public institutions, of infants coming from outside districts.



### III.—INFECTIOUS DISEASE.

#### (a) IN 1915.

During the year 1915, 11,422 cases of infectious disease were recorded in Cairo, as against 5,413 in 1914; 4,161 in 1913; and 2,895 in 1912. This enormous increase in 1915 over the previous year's figures is such as to call for special consideration, and in connection with this I propose to review certain influences which constitute important factors in the study of the causes leading to the striking and progressive increase in the number of cases of infectious disease recorded yearly, and to refer incidentally, in connection with this, to certain points regarding the certification of deaths having an important bearing on the question.

As will be seen from the above-mentioned figures there has been, since 1912, a steady and marked increase in the number of recorded cases which, as I have indicated in former reports, is not to be taken altogether as a measure of increased zymotic incidence, but is to be considered as due, to a large extent, to the nature of the control rendered possible by the provision, in 1912, of the special staff for dealing with infectious disease asked for in my report in 1911.

The increasing strictness of control rendered possible by the provision of this staff has not only led to a considerable increase in the number of cases actually notified by their medical attendants, but beyond this, and of greater importance from a public health point of view, has resulted in an enormous increase in the number of cases of infectious disease discovered amongst those classes in which the provision of medical attendance for their sick is almost unknown.

Amongst such classes, as a result of lack of skilled attendance, nothing is to be expected from notification, as generally understood, and the importance of this fact, from the point of view of infectious disease control, will be recognized when it is considered that, roughly, three-quarters of the total deaths which occur in this city are deaths of persons who have received no skilled attendance of any nature whatsoever during life.

It is true that a certain number of infectious cases from amongst these classes would come in the natural course of events to be recorded after death, as a result of the post-mortem inquiry held in all cases of uncertified death by the district medical officers and *hakimas*, and this inquiry was formerly almost the only source of information in many cases.

The discovery of cases by this means alone, however, can only result in the recording of an extremely small proportion of the total cases, inasmuch as, from the nature of the inquiry, the obtaining, in this way, of accurate records of even deaths from infectious disease, in cases of uncertified death, are not feasible.

The reason for this will be understood if we consider the very large number of inquiries which fall to be held during any year. Thus, in Cairo alone, 25,242 inquiries into cases of uncertified death were held in 1915.

It is obvious from these figures that the holding of formal inquiries in all cases of uncertified death with sufficient thoroughness to establish the exact nature of the cause of death with any degree of accuracy would entail the creation of an investigating staff out of all proportion to the benefit to be obtained.

Whilst some investigation therefore is necessary in every case of uncertified death, it obviously, under existing circumstances, cannot be of anything but a superficial nature, and is primarily held for the purpose of preventing the concealment of criminal deaths, though the discovery of infectious disease is an incidental consideration. With the former as its primary object, the inquiry limits itself, in the absence of any feature of a criminally-suspicious character, to an external inspection of the body, and the basing of a probable diagnosis as to the cause of death, partly on the result of this inspection, and partly on a probably unreliable history of the illness furnished by the relatives of the deceased. It is clear therefore that, with the exception of deaths from diseases presenting obvious and characteristic external post-mortem appearances, only probability, and not accuracy of diagnosis, is, under the circumstances, possible, with the result that by this means alone a fraction only of the actual number of infectious cases occurring ever comes to be recorded, made up principally of fatal cases of those diseases presenting obvious and characteristic post-mortem appearances.



As part of the arrangement for the better control of infectious disease, in 1912 the scope of the investigations in cases of uncertified deaths was extended somewhat by the inclusion of closer inquiries as to the recent occurrence of cases of illness amongst the relatives and associates of the deceased, in every case in which the possibility existed of a missed infectious diagnosis, and of a daily observation of contacts whenever infection was proved, or the inquiry provided elements of suspicion. This has not only resulted in the discovery of many living cases of infectious disease which would otherwise have remained undetected, but, by facilitating a more accurate diagnosis of the cause of death, has increased the proportion of fatal cases of infectious disease actually recorded.

The effect of this, however, in increasing the proportion of cases recorded does not apply equally in the different diseases, but depends, to a great extent, on the results given formerly by the previous sources of information. The more satisfactory these have been in any particular disease, the less room there is for improvement from new methods of investigation.

Thus it has always been recognized that in the more generally known and easily recognized diseases, presenting obvious and characteristic external appearances after death, the difficulty and danger of concealment led in the past to a considerably greater proportion of such cases coming spontaneously to light than was the case with diseases in which the opposite conditions obtained, with the result that the increased proportion of cases discoverable by additional investigation is likely to be much less in the former than in the latter case. Moreover, it must be remembered, in this connection, that any arrangement for accessory inquiries in connection with deaths adjudged to be due to infectious disease is likely to lead to a more frequent erroneous application of these in the case of deaths presenting no obvious characteristic appearances after death, than would be the case where the difficulties of post-mortem diagnosis were less. In the former case the element of doubt in the diagnosis has a tendency to lead to the institution of additional inquiries in many cases where the death, in reality, has resulted from some non-infectious cause. Under such circumstances, therefore, a greater proportion of the total deaths of the city is likely to be submitted to accessory inquiries in connection with infectious disease during the occurrence of epidemics of diseases presenting difficulties of diagnosis after death than would be the case where similar difficulties did not exist. The wider net spread in the former instance leads to a considerable augmentation in the number of cases discovered, since many inquiries, originally instituted on a mistaken diagnosis of the cause of death, have been found to lead to the discovery of infectious disease unconnected with the case, except by the accident of relationship or neighbourhood, and which, but for the doubtful diagnosis, would probably have remained unrecorded. The extent, therefore, to which the apparent general zymotic incidence in any year will be influenced; as compared with the past, by the additional methods of investigation adopted, will largely depend on the nature of the prevailing infectious disease, and the effect of this factor must be borne in mind in weighing the extent to which increase of zymotic incidence may be attributed to more searching enquiries, and that depending on an actual increase in prevalence.

The increased number of infectious cases recorded in 1913, as compared with previous years, was shown in the report of that year to have been in all probability almost entirely due to an increased notification and discovery of cases, and not to any undue prevalence of infectious disease.

In 1914, the increase was largely due to increased discovery of cases, but also partly to the occurrence of an epidemic of smallpox. Smallpox, however, in this country being a disease of almost universal recognition, difficult to conceal during life, and of almost certain detection after death, the increase in the proportion of cases discoverable by additional methods of investigation are less in this than in almost any other infectious disease, whilst its obvious external appearances reduce to a minimum the necessity for investigation in deaths merely open to suspicion, such as arise when less characteristic diseases constitute the prevailing zymoses. The infectious results, therefore, of any year in which an undue prevalence of smallpox has been the outstanding zymotic feature are more comparable with former results than is the case with any other disease.

In 1915, on the other hand, we have an example of the opposite state of affairs. Of the total of 11,422 cases of infectious diseases recorded in 1915, approximately three-fifths were reported as cases of typhoid fever. It is true that investigations subsequently showed that only a third of these cases were true cases of typhoid, the remainder, with the exception of a few mistaken cases of typhus and relapsing fever, consisting of a disease to be referred



to later, and regarding which it will be sufficient to say at present that the symptoms were such as to make a clinical distinction from typhoid fever extremely difficult, if not almost impossible. As far therefore as the proportion of cases recorded are dependent on the nature of the disease, the two diseases may be considered for the moment as one.

The year 1915, from an infectious disease point of view, may therefore be considered as characterized by an undue prevalence of typhoid fever, and of a disease presenting such a close resemblance to typhoid fever that almost all the cases were originally notified as the former disease, that is to say, by diseases presenting all the characters tending to produce a maximum result from the additional sources of information provided by the system of enquiry already referred to.

In this year, therefore, more than in any of the previous years referred to, have the results been influenced by the extended scope of the inquiries now in force, and a careful analysis of the figures are necessary in order to see whether it is possible to arrive at any true conception of the extent to which the increased total may justly be attributed to an increased prevalence of zymotic disease.

From the total of 11,422 cases of infectious diseases inscribed in the registers in 1915, before any comparison can be made, there should be deducted 1,966 cases, which should not enter into the consideration of the relative zymotic statistics of the city, consisting as they do of 1,818 cases derived from the British Military Forces, and 148 hospital cases of extra-urban origin. This leaves, therefore, 9,456 cases as the total of infectious disease recorded from the Cairo population. Of this number, 3,303 consisted of those cases already referred to as having been notified as cases of typhoid, but in which subsequent investigation led to a change of diagnosis.

These undoubtedly constituted a new element in the zymotic totals of 1915, and may be acknowledged at once as representing an actual addition to the incidence. They do not therefore enter into any comparison with previous years, and should therefore be deducted from the 9,456 cases of infectious diseases recorded in 1915 as occurring amongst the Cairo population.

This leaves a balance of 6,153 cases, comparable with the 5,413 cases recorded in 1914, the 4,161 in 1913, and the 2,895 in 1912. It has, however, been found in the past more satisfactory to limit the considerations of relative prevalence to the figures for the eight principal notifiable diseases, *viz.*: smallpox, measles, scarlet fever, diphtheria, typhoid, typhus, relapsing fever, and cerebro-spinal meningitis, the other notifiable diseases being either numerically so unimportant, or so irregularly notified on account of the comparative inconsequence of their symptoms, as to render the figures regarding them useless for purposes of comparison.

TABLE VIII.—Case and Death Rates of the Eight Principal Zymotic Diseases in Cairo Districts in 1915.

DISTRICT.	Population.	Number of Cases recorded.	Cases recorded per 1,000 of Population.	Number of Deaths.	Death-rate per 1,000 of Population.	Ratio of Deaths to Cases recorded. Per Cent.
El Mûski ... ..	24,688	155	6·278	51	2·065	32·9
Bab el Sha'riya ... ..	63,296	453	7·156	175	2·764	38·8
El Ezbeikiya ... ..	52,166	350	6·709	95	1·821	27·1
'Abdin ... ..	59,792	336	5·619	90	1·505	26·7
El Sayeda Zeinab ... ..	72,840	678	9·308	295	4·049	43·5
El Khalifa ... ..	60,386	632	10·466	269	4·454	42·5
Helwân ... ..	8,568	226	26·377	39	4·551	17·2
El Darb el Ahmar ... ..	75,230	483	6·420	192	2·552	39·7
El Gamâliya ... ..	66,178	585	8·839	352	5·318	60·1
Shubra ... ..	54,765	437	7·979	153	2·793	35·0
Bûlâq... ..	100,422	823	8·195	416	4·142	50·5
Old Cairo ... ..	35,252	158	4·482	102	2·893	64·5
El Wâyli ... ..	59,840	428	7·152	136	2·272	31·7
TOTALS FOR CAIRO ... ..	733,423	5,744	7·831	2,365	3·592	41·1

There comes therefore to be deducted from the figures to be considered, an aggregate of 409 cases, composed chiefly of mumps, whooping-cough, and chicken-pox, leaving a total of 5,744 cases of the eight principal infectious diseases, representing a morbidity rate of



7·831 per thousand of population in 1915, as compared with 4,878 similar cases with a morbidity rate of 6·722 in 1914, 3,955 cases with a rate of 5·526 in 1913, and 2,841 cases with a rate of 4·030 in 1912. In Table VIII will be found the general zymotic case and death-rates of the eight principal infectious diseases in 1915 for the city as a whole and for the individual districts, whilst comparative details as regards each disease are shown in Tables IX and X, in the former of which a comparison is made with other years, whilst the latter indicates the relative prevalence of the individual diseases in the various districts. In Figure I the district case and death-rates are shown in diagrammatic form per thousand of population.

The total cases and the morbidity rates of the eight principal notifiable diseases recorded in 1915 show therefore a very considerable increase over those of the previous years. As regards these figures, however, as has been shown in previous reports, the effect of the increased measures of control applied since 1912 has so interfered with the recorded annual totals as to render a free acceptance of them as a basis for the comparison of zymotic incidence in the various years unjustifiable, and to call for some analysis of the results before arriving at any conclusion.

Now, the only other numerical record appertaining to infectious disease is to be found in the recorded deaths from such diseases, and in these we are likely to possess a less unstable guide to an estimate of the relative zymotic prevalence in the different years, since whatever the possibility of evasion in the case of infectious disease during life, it must be much less in the case of death from such diseases, since no burial is permissible without a medical opinion on the cause of death. The recorded deaths from infectious disease in the various years often thus supply a serviceable basis for the control of the deductions to be derived from the morbidity figures, and it has been found a useful check to compare the actual cases recorded in any year with the expectation of cases calculated on the ratios of deaths to cases recorded in other years.

The number of deaths amongst the actual residents of Cairo, from the eight principal infectious diseases, in 1915, was 2,365, as compared with 1,610 in 1914. They consisted of 12 deaths from smallpox, 110 from measles, 7 from scarlet fever, 462 from diphtheria, 1,012 from typhoid, 718 from typhus, 18 from relapsing fever, and 26 from cerebro-spinal meningitis. Now, if the proportion of deaths to cases recorded in the two years had remained constant, the 12 deaths from smallpox in 1915 would, on the 1914 ratios, have corresponded to 65 cases, the 110 measles to 416 cases, the 7 scarlet fever to 76 cases, the 462 diphtheria to 952 cases, 1,012 typhoid to 4,585 cases, 718 typhus to 1,086 cases, 18 relapsing to 180 cases, and 26 cerebro-spinal meningitis to 56 cases, or a total of 7,416 cases of the eight principal infectious diseases, to correspond with 2,365 deaths estimated on the 1914 ratio of deaths to cases recorded. The total cases, however, in 1915 were only 5,744 or 22·6 per cent less than the number of cases there should have been recorded if the ratio of deaths to cases recorded in the previous year had been maintained.

Similarly, when compared with the 1913 figures, if the same ratios had been maintained, we should have had of smallpox 66 cases to correspond with the deaths, of measles 296, scarlet fever 43, diphtheria 1,075, typhoid 3,289, typhus 994, relapsing fever 75, and cerebro-spinal meningitis 92 cases, or a total of 5,930 cases of the eight principal infectious diseases, to correspond with the 2,365 deaths from these in 1915.

Worked out similarly, on the 1912 ratios, we obtain 51 cases of smallpox, 228 of measles, 32 of scarlet fever, 970 of diphtheria, 2,619 of typhoid, 891 of typhus, 222 relapsing, and 79 cerebro-spinal fever, or a total of 5,092 cases, corresponding with the 2,365 deaths in 1915.

The number of deaths, therefore, from the eight principal infectious diseases in 1915, based on the 1914 ratio of deaths to cases recorded, should, therefore, have given a total of 7,416 cases instead of the 5,744 actually recorded, whilst, estimated on the 1913 and 1912 ratios, the numbers should have been 5,930 and 5,092 respectively.

The actual number of cases recorded in 1915 consequently roughly corresponds with the expectations based on the 1913 and 1912 ratios, but is considerably less than the 1914 ratio would lead us to anticipate. The increased incidence of infectious disease in 1915, suggested by the greater number of cases recorded in that year, may be therefore considered as supported by estimates based on the number of deaths, whilst the discrepancy between the actual cases recorded in 1915 and the expectations, based on the 1914 ratios, might be taken to indicate some deterioration in efficiency of control leading to a lessened discovery of cases, unless as is not suggested, an explanation of this is to be found in an increased zymotic virulence in 1915.



TABLE IX.—Infectious Disease in 1912, 1913, 1914, 1915, 1916.

Estimated mid-year population in 1912 ... ..	704,956
" " " 1913 ... ..	715,609
" " " 1914 ... ..	725,670
" " " 1915 ... ..	733,423
" " " 1916 ... ..	740,000

DISEASE.	YEAR.	Number of Cases recorded.	Cases recorded per 1,000 of Population.	Number of Deaths.	Death-rate per 1,000 of Population.	Ratio of Deaths to Cases recorded. Per Cent.
Smallpox ... ..	1912	68	0·096	16	0·022	23·5
	1913	276	0·385	50	0·069	18·1
	1914	983	1·354	181	0·249	18·4
	1915	59	0·080	12	0·016	20·3
	1916	277	0·374	103	0·139	37·1
Measles ... ..	1912	765	1·085	368	0·507	48·1
	1913	1,087	1·518	404	0·564	37·1
	1914	469	0·646	124	0·170	26·4
	1915	363	0·494	110	0·149	30·3
	1916	1,222	1·651	607	0·820	49·7
Scarlet Fever ... ..	1912	107	0·151	23	0·032	21·5
	1913	167	0·233	27	0·037	16·2
	1914	98	0·135	9	0·012	9·1
	1915	37	0·050	7	0·009	18·9
	1916	48	0·064	2	0·002	4·6
Diphtheria ... ..	1912	1,109	1·573	528	0·748	47·6
	1913	1,308	1·827	562	0·785	42·9
	1914	1,412	1·945	685	0·943	48·5
	1915	1,286	1·753	462	0·629	35·9
	1916	836	1·129	335	0·452	40·1
Typhoid ... ..	1912	453	0·642	175	0·248	38·6
	1913	728	1·017	224	0·313	30·7
	1914	1,409	1·941	311	0·428	22·0
	1915	2,378	3·242	1,012	1·379	42·5
	1916	1,462	1·975	632	0·854	43·2
Typhus ... ..	1912	232	0·329	187	0·265	80·6
	1913	216	0·301	156	0·217	72·2
	1914	351	0·483	232	0·319	66·0
	1915	1,112	1·516	718	0·978	64·2
	1916	1,858	2·510	1,075	1·452	57·9
Relapsing ... ..	1912	37	0·052	3	0·004	8·1
	1913	21	0·029	5	0·006	23·8
	1914	10	0·013	1	0·001	10·0
	1915	456	0·621	18	0·002	3·9
	1916	1,035	1·398	59	0·079	5·7
Cerebro-spinal Fever ... ..	1912	70	0·099	23	0·032	32·8
	1913	152	0·212	43	0·060	28·2
	1914	146	0·201	67	0·092	45·8
	1915	53	0·072	26	0·035	49·1
	1916	33	0·044	23	0·031	69·7
TOTALS ... ..	1912	2,841	4·030	1,323	1·877	46·5
	1913	3,955	5·526	1,471	2·055	37·1
	1914	4,878	6·722	1,610	2·218	33·0
	1915	5,744	7·831	2,365	3·224	41·1
	1916	6,771	9·150	2,836	3·832	41·8



**TABLE X.—District Distribution of the Eight Principal Zymotic Diseases in 1915.**

DISTRICT.	Population.	SMALLPOX.		RELAPSING FEVER.		CEREBRO-SPINAL FEVER.		TYPHUS FEVER.		TYPHOID FEVER.		SCARLET FEVER.		DIPHTHERIA.		MEASLES.		TOTALS.	
		Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
El Múski ... ..	24,688	1	—	3	—	3	1	27	9	74	27	2	—	35	12	10	2	155	51
Bab el Sha'riya ... ..	63,296	7	2	29	—	2	1	65	34	232	87	—	—	103	48	15	3	453	175
El Ezbeikiya ... ..	52,166	3	—	14	—	4	2	31	15	100	31	12	2	152	38	34	7	350	95
'Abdin... ..	59,792	4	—	9	—	8	3	39	9	138	52	1	1	109	23	28	2	336	90
El Sayeda Zeinab ... ..	72,840	8	3	77	—	10	5	160	111	259	106	—	—	149	67	15	3	678	295
El Khalifa ... ..	60,386	3	1	91	8	2	—	98	59	335	166	7	—	76	28	20	7	632	269
Helwán ... ..	8,568	5	1	1	—	—	—	27	7	147	24	—	—	31	7	15	—	226	39
El Darb el Ahmar ... ..	75,230	7	1	76	1	5	2	56	21	223	111	1	—	96	49	19	7	483	192
El Gamáliya ... ..	66,178	5	—	42	—	2	2	310	283	127	28	3	2	78	30	18	7	585	352
Shubra ... ..	54,765	3	—	3	—	4	2	49	18	108	37	2	—	207	77	61	19	437	153
Búláq ... ..	100,422	5	3	59	4	8	5	163	97	424	246	2	—	100	32	62	29	823	416
Old Cairo ... ..	35,252	—	—	13	—	—	—	43	38	58	35	1	1	28	15	15	13	158	102
El Wáyli ... ..	59,840	8	1	39	5	5	3	44	17	153	62	6	1	122	36	51	11	428	136
TOTALS FOR CAIRO * ... ..	733,423	59	12	456	18	53	26	1,112	718	2,378	1,012	37	7	1,286	462	363	110	5,744	2,365
Extra-Urban Admissions to Cairo Hospitals † ... ..	...	30	7	21	1	20	4	9	1	668	29	110	2	109	8	207	1	1,174	53
TOTALS ... ..	...	89	19	477	19	73	30	1,121	719	3,046	1,041	147	9	1,395	470	570	111	6,918	2,418

\* Excluding Military Cases.

† Including " "



Such apparently obvious conclusions, however, call for further consideration as regards this year, and in connection with this it will be necessary to weigh carefully to what extent death figures may generally be accepted as an index of zymotic incidence.

As has already been shown, every uncertified death is submitted to a post-mortem investigation with the object of establishing a cause. The nature of every fatal case of illness therefore, at some time or other, falls under skilled consideration, either during life by the treating doctor, or after death by the medical officers or *hakimas* of the Department. Given accuracy of diagnosis in every case, there would result from the arrangement such an exactitude of death records as would permit a free acceptance of these as a basis upon which to establish some true idea of the relative incidence of infectious disease in the various years.

As has, however, been shown, the nature of the post-mortem investigations held can only in many cases be expected to establish a probability and not an exactitude of diagnosis, and does not therefore permit altogether of a free acceptance of the results as a basis upon which to set up conceptions of zymotic incidence.

This, naturally, as has already been indicated, does not apply with equal force to all diseases, as, in such as present obvious and characteristic external appearances after death, the opportunities for error are less than in the case of those diseases where the opposite conditions obtain, with the result that in the former instances the mortality returns are, commensurate with their probabilities of exactitude, less exposed to correction by any arrangements leading to improvement in post-mortem diagnosis.

Whilst therefore it is true that, generally speaking, the number of recorded deaths from infectious disease are less liable to be materially affected by any arrangement for the increased control of such diseases than are the recorded morbidity returns, it must not be forgotten that the former are so influenced, and that the tendency of any more stringent control must always be in the direction of an increased registration of zymotic deaths, since every death from an infectious disease recognised during life is a death from which the possibility of a missed post-mortem diagnosis is excluded.

The extent of this influence on the general zymotic death-rate in any year will naturally depend on the nature of the prevailing zymosis for that year. In some years this factor may almost be left out of account; in others it will exert considerable effect, and in judging of the extent to which allowance must be made for this, the nature of the prevailing infectious disease in each year must therefore be taken into consideration.

Now, the zymotic feature of 1915, as far as deaths from the eight principal notifiable diseases were concerned, was the marked preponderance of typhoid deaths, which provided 1,012 out of the total of 2,365 zymotic deaths recorded in that year. In no disease, however, as might be expected, are the chances of error from a superficial post-mortem diagnosis greater than in typhoid fever, and the death returns of such a year, if exposed to influences tending to reduce the chances of missed diagnosis, must for the reasons already indicated be looked upon with considerable suspicion as a basis for comparison with other years. Some evidence of the extent of this in any year may be expected to show itself in some disturbance of the relative ratios of deaths to cases recorded, and a comparison of the actualities of recorded incidence in 1915 with the expectations of cases based on previous death ratios affords some useful indications bearing on the extent to which reliance may be placed upon the zymotic death figures in 1915 as a basis for a comparison of incidence with other years.

TABLE XI.—Zymotic Expectations in 1915, based on the Ratios of Deaths to Cases recorded in the Three Previous Years.

DISEASE.	Number of Cases actually recorded in 1915.	Number of Deaths recorded in 1915.	Expectation of Cases in 1915, based on 1914 Ratios of Deaths to Cases recorded.	Expectation of Cases in 1915, based on 1913 Ratios of Deaths to Cases recorded.	Expectation of Cases in 1915, based on 1912 Ratios of Deaths to Cases recorded.
Smallpox ... ..	59	12	65	66	51
Measles ... ..	363	110	416	296	228
Scarlet Fever ... ..	37	7	76	43	32
Diphtheria ... ..	1,286	462	952	1,075	970
Typhoid Fever ... ..	2,378	1,012	4,585	3,289	2,619
Typhus Fever ... ..	1,112	718	1,086	994	891
Relapsing Fever ... ..	456	18	180	75	222
Cerebro-spinal Fever ... ..	53	26	56	92	79
TOTALS ... ..	5,744	2,365	7,416	5,930	5,092



In Table XI are shown the numbers of cases and deaths, in 1915, of each of the eight diseases forming the zymotic group under consideration in comparison with the expectation of cases based on the ratios of deaths to cases recorded in the three preceding years.

Now the most prominent feature of this table is the extraordinary discrepancy between the number of cases of typhoid actually recorded and the anticipations, based on the 1914 ratio of deaths to cases in that year, and in considering the extent to which the zymotic deaths in 1915 can be accepted as a basis for a comparison of incidence with other years, it will serve the purpose to confine our attention primarily to the position as regards this disease.

Excluding other influences, such as increased virulence, of which no evidence existed, the most obvious explanation of the discrepancy between the 2,378 cases of typhoid fever actually recorded in 1915, and the expectations from the number of deaths in that year of 4,585 cases, based on the ratio of deaths to cases recorded in 1914, might seem to lie between a lessened discovery of cases in 1915 in consequence of some diminution in the efficiency of control, and an increased recording of deaths as a result of improved diagnosis of the causes of these. In weighing these alternatives, it is impossible to give any definite data upon which to base logical proof, but a consideration of all the circumstances points to the latter as the true explanation, and implies in consequence an unreliability of the death figures for this year as a basis for zymotic comparison.

Thus we have the actual fact that, in 1915, on account of the extensive outbreak of the typhoid-like fever already referred to, and of the vernal prevalence of typhoid fever, the stringency of control was, coincident with the period of the greatest typhoid prevalence, actually increased. Not only were the usual inquiries made, but a house-to-house search for concealed cases was instituted in addition whenever the discovery of a fresh outbreak in a lower-class district led to a suspicion of the likelihood of the existence of these. To seek an explanation of the discrepancy therefore in the direction of lessened efficiency of control would be scarcely justified by the circumstances.

On the other hand, in the present instance we were dealing with a disease of a nature such as has just been described as presenting no obvious external post-mortem appearances, and therefore one in which the possibility of a missed diagnosis is most likely to occur when this falls to be made from a mere inspection of the body after death. In this disease, therefore, more than in almost any other, any increased discovery of living cases is likely to lead to an increase in the number of recorded deaths, inasmuch as every fatal case of the disease previously recognized during life is a case from which the possibility of diagnostic error after death has been removed. It would be difficult at any time to assess with accuracy the extent to which this influence increased recorded deaths, but in the year in question, as will be subsequently more fully described, the typhoid figures were so mixed up with those of the resembling fever already referred to as to make it impossible to appraise, with any exactitude, the number of fatal cases of the former disease discovered during life.

Under the circumstances, therefore, the death returns for the disease in question must be considered as so open to external influence as to render any comparison on a numerical basis impossible, and it may be taken that the influence exerted by the increased control of infectious disease has, in 1915, so modified not only the recorded incidence, but also the death returns of this as well as other diseases in the zymotic group, as to render their acceptance as a basis for zymotic comparison inadmissible. Under these circumstances therefore the only conception of the probable relative prevalence of the various zymotic diseases in 1915, as compared with previous years, is to be derived from impressions obtained in dealing with them.

This is obviously a highly unscientific basis upon which to build any estimate of comparative incidence, but in a country such as this, where the ordinary statistical methods themselves provide an extremely inaccurate means of comparison, the impressions of any person in close association with the work of controlling infectious disease acquire a value which under other circumstances they would not possess.

I propose, therefore, in the absence of any possibility of a statistical comparison, to put these impressions on record for what they are worth.

As regards the eight principal infectious diseases, the idea of increased prevalence only arose in the case of three of these. These were typhoid, typhus, and relapsing fevers. In the case of the first of these there was undoubtedly increased incidence due to an epidemic which occurred in the spring.



As regards the other two the position is not so clear. There was an increase in the number of cases of these diseases put on record, but to a large extent this must be attributed to a considerably increased discovery of cases in the course of the search for concealed cases of typhoid and the associated fever.

Moreover, the typhus figures both as regards cases and deaths were unduly inflated by undoubtedly erroneous returns from one of the districts, a circumstance which will be subsequently more fully discussed, but, even allowing for this and for the increased discovery of cases, the impression remained that the year was marked by a somewhat increased prevalence of this disease.

The apparent increase in relapsing fever could be sufficiently explained by the increased discovery of cases, and there was nothing to suggest any true increase in the prevalence of this disease in 1915.

It is considered therefore that the position as regards zymotic prevalence in 1915, based on the incidence of the eight principal notifiable diseases, showed that there was an actual increase derived from an undue prevalence of typhoid fever, and possibly to some extent of typhus, which more than counterbalanced the diminution in the case of most of the other diseases.

To these sources of general insalubrity must be added the extensive outbreak of the typhoid-like fever, already referred to, with the result that the zymotic position in 1915 must be considered as far from satisfactory. As probably having an important bearing on this, it may be advisable to draw attention to the fact that the year in question was characterized by an enormous influx of troops composed of representatives of many diverse races, and coming from widely-divergent parts of the world.

Reference has already been made to the occurrence in 1915 of a fever clinically resembling typhoid fever, and therefore largely notified as such. Before, therefore, proceeding to the individual discussion of the various infectious diseases it will be expedient to consider, as a whole, the typhoid notifications in 1915, and demonstrate the basis upon which these have been allotted to the two diseases included therein. In this connection it will be well first to point out that, in the review of this subject, the term "typhoid notifications" is used as embracing the two diseases included therein, and must not be considered as referring only to notifications of actual cases of typhoid fever.

Excluding for simplicity a small number of cases of typhus and relapsing fevers, primarily diagnosed as typhoid but subsequently corrected, altogether 5,681 cases of typhoid fever were reported in Cairo city during 1915. As has already been mentioned, however, this total contained a considerable proportion of cases of a disease which was not typhoid, and the figures presented by the registers consequently call for a careful consideration in order to arrive at some conception of the actual incidence of each of the diseases included in those notification figures.

Though it was not until April that any evidence appeared to indicate that another disease was included in the results, it will be advisable to review the typhoid notifications throughout the year as a whole.

Some increase in the weekly totals of typhoid cases chronicled, as compared with the corresponding periods in the previous year, was noted from the commencement of the year, but the increased control since 1912 over infectious disease had, as has been shown, led to a progressive increase in the numbers of infectious cases recorded, generally quite independently of any actual increase in their incidence, and at first there was nothing to indicate that the increased number of typhoid cases then being recorded was any greater than could reasonably be attributable to this cause (*see Chart V*).

By March, however, the number of cases reported in each week had risen to such an extent as to leave no doubt as to the existence of an undue prevalence of disease, particularly affecting the populace in the lower-class quarters of the town, and more especially the inhabitants of those insanitary collections of mud huts to be found in many parts of the city.

In these latter places a community of water storage and the primitive toilet arrangements of the lower-class native combine to produce considerable localized outbreaks of typhoid fever whenever the disease shows itself in such places, and a large proportion of the cases recorded in the beginning of the year were cases of typhoid fever derived from small outbreaks of this nature.

As was pointed out in last year's report, the absence of compulsory powers of isolation in such cases rendered it extremely difficult to deal with local outbreaks of this nature,



though in 1915, during March and April, this difficulty was overcome to some extent by the adoption of active measures of persuasion in such cases, as soon as it became apparent that an augmentation of incidence called for some reinforcement of the control given by law.

Moreover, advantage was taken of the markedly-increased prevalence which began to exhibit itself in March to press for an amendment of the law, so as to have typhoid fever transferred from Part II to Part I of the Schedule attached to the Infectious Disease Law, with the object of obtaining powers of compulsory removal to hospital where this was necessary in the interests of the general public health.

This was effected by an *arrêté* of the Ministry of Interior, dated May 9, 1915, and, as a result of this and of the previous unofficial pressure, in this year 2,544, or almost half of the 5,681 cases originally entered in the infectious registers as typhoid fever, were admitted to the Government Fever Hospital, 'Abbâsiya.

The general bearing of the hospital figures in the consideration of the actual prevalence of typhoid fever throughout the year will become apparent later, but in the meantime it may be said that the absence of any indications of extensive diagnostic error among the not inconsiderable proportion of the total cases taken into hospital during the first quarter of 1915, is sufficient to justify a supposition that the position as regards outside diagnostic inaccuracy which subsequently developed had not then, at least to any great extent, begun to show itself.

As far as the first six weeks of the year are concerned, this is borne out by the figures themselves, for up to the middle of February the reported cases of typhoid fever no more than indicated a normal prevalence of the disease, the slight increase in the numbers recorded being reasonably attributable to an increased discovery of cases.

From the middle of February onwards, however, the marked rise in the number of cases which were then recorded introduced a suggestion of abnormality, neutralized, however, to some extent by the fact that at the time the increase was considered sufficiently explained by the large numbers of concealed cases, in various stages of the disease, at that time being constantly discovered in the course of the systematic search carried out in the case of certain small 'esheshes, where the continued occurrence of dropping cases of typhoid fever rendered it desirable that special steps should be taken to stamp out the disease therein.

From a general consideration, therefore, of all the attendant circumstances, I am of the opinion that sufficient justification can be made out for the acceptance of the typhoid notification figures of the first quarter as uninfluenced by any unusual source of error.

From this time onwards, however, for the rest of the year, different conditions obtained. The first indication of this occurred in April, when the Senior Medical Officer of the Hospital drew the attention of the Inspectorate to the fact that an exceptional and increasing proportion of the typhoid cases admitted during that month were failing to give a positive Widal reaction, and suggested that something had gone wrong with the bacillary strain used at the hospital for diagnostic purposes, inasmuch as the results based on this test were generally contrary to the clinical expectations. This suggestion was not, however, borne out by investigation, and the fact that repeated examinations of the blood, fæces, and urine failed to demonstrate the presence of the typhoid bacillus in the Widal negative cases, indicated that in these we had to deal with a disease which, though clinically presenting the characters of typhoid, could not be rightly labelled as such.

For certain reasons it would have been impolitic to have carried out any large number of autopsies in these cases, but, in the few cases in which a limited post-mortem examination was permissible, no evidence of any intestinal lesion was found.

During the whole course of the epidemic, however, investigations into its nature were considerably handicapped by the conditions then existing. The occurrence of the outbreak itself, which at one time gave rise to a considerable amount of anxiety, threw an enormous strain on a staff, never more than sufficient at any time for the duties required of it, but then depleted by the absence of certain of its members on military service. Moreover, as a result of the war, conditions of political anxiety and unrest affecting an extremely impressionable class were such as to render it highly necessary that a close and responsible supervision should be kept over the methods of application of such measures as were adopted to deal with the outbreak, with a view of obviating the possibility of friction arising from their application with unnecessary harshness. Added to this, the constant arrivals of new troops, fresh to the country, ignorant of the local conditions and their possibilities, and in consequence calling for assistance and advice in all directions, gave rise to such a state



of affairs that it became only possible to deal with the pressing questions then constantly arising by largely abandoning all work not of an absolutely essential character. Whilst, therefore, the outbreak itself continued to be dealt with on broad epidemic lines, the study of its actual character could only be undertaken in a spasmodic and somewhat desultory fashion as occasion offered, with the result that the actual nature of the epidemic was never clearly identified. None of the suggestions advanced have, in my opinion, been sufficiently borne out by the facts to make it other than inadvisable to label this disease in any way suggesting a probable character, and I have, therefore, confined myself in this report to giving, in an appendix, a short description of the facts observed during the epidemic, and to using the unsuggestive term "unidentified fever" in referring to the disease, with the object of avoiding anything likely to prejudice future views on the subject.

As has already been indicated in this report, of the total cases originally notified as typhoid fever in 1915, only 2,378 were considered by us as the probable number of actual cases of typhoid, the remaining 3,303 cases being taken as cases of the unidentified fever referred to above. Since, however, a definite re-diagnosis was only practicable in the hospital cases, the outside results can only be given as estimates, and, in weighing the probable degree of accuracy to be accorded to these, it will be necessary to consider the methods by which the estimated figures were derived.

To have on record, however, the facts as originally chronicled, it will be advisable first to present the "typhoid notifications" received during the year as a whole, both as regards their weekly and district prevalences, and then to indicate the lines on which the readjustment of the figures has been carried out.

The former of these aims will be sufficiently met by the inclusion of a chart, table, and diagram, in which the facts, as originally presented, are recorded. Thus the weekly rates of the "typhoid notifications" per thousand of population will be found shown in black in Chart V, whilst the district distributions of the cases and deaths, with their rates, are given in tabular form in Table XII, and diagrammatically in Figure 2.

TABLE XII.—Case and Death Rates of "Typhoid Notifications" in Cairo Districts in 1915.

DISTRICT.	Population.	Number of Cases recorded.	Cases recorded per 1,000 of Population.	Number of Deaths.	Death-rate per 1,000 of Population.	Ratio of Deaths to Cases recorded. Per Cent.
El Mûski ... ..	24,688	177	7·169	73	2·957	41·2
Bab el Sha'riya... ..	63,296	553	8·736	236	3·728	42·7
El Ezbekiya ... ..	52,166	240	4·600	85	1·629	35·4
'Abdin ... ..	59,792	329	5·502	141	2·358	42·9
El Sayeda Zeinab ... ..	72,840	618	8·484	287	3·940	46·5
El Khalifa... ..	60,386	799	13·231	449	7·435	56·2
Helwân ... ..	8,568	352	41·083	65	7·586	18·5
El Darb el Ahmar ... ..	75,230	533	7·085	300	3·987	56·3
El Gamâliya ... ..	66,178	303	4·578	77	1·163	25·4
Shubra ... ..	54,765	259	4·729	101	1·844	39·0
Bûlâq ... ..	100,422	1,013	10·087	666	6·632	65·7
Old Cairo ... ..	35,252	139	3·943	94	2·666	67·6
El Wâyli ... ..	59,840	366	6·116	170	2·840	46·4
TOTALS FOR CAIRO ... ..	733,423	5,681	7·745	2,744	3·741	48·3

As no useful purpose would be served by any detailed consideration of the figures thus submitted, which are included only as the basis on which have been estimated the probable individual figures of the two diseases comprised in the typhoid notifications, it is not proposed that anything of this nature should be attempted. It will be advisable, however, to refer briefly to certain circumstances which have specially influenced the figures for the districts of Gamâliya and Helwân.

As regards the former district, the extremely low comparative ratio of deaths to cases recorded drew attention at the time to the possibility of error in the returns, and an explanation was found, on investigation, in a relatively large and obviously excessive attribution



of typhus fever as a cause of death in this, as compared with other districts, in cases of uncertified death. The influence of this will be further discussed when dealing with typhus fever, but, in the meantime, it may be stated that its effect is such as to render inadmissible any comparison of the death figures, and to a less extent of the case figures, of this district with those of the other quarters of Cairo. Other influences operating in the case of Helwân have likewise to be especially taken into consideration in any inter-district comparison. The nature of this latter district, composed as it is of small scattered communities, is such as to render the discovery of the sick here a much more simple matter than is the case in truer city areas, with the result that, compared with other districts, a much higher proportion of the total amount of actual sickness comes to be recorded and shows itself in an apparently relatively high incidence, which, resulting principally from increased discovery of living cases, tends also to reduce the ratio of deaths to cases recorded. Moreover, the influence of the erroneous population figures of this district in their relation to the zymotic returns, as has already been explained, still further renders the apparent incidence in this district inadmissible as a basis for comparison with other districts.

As regards the general lines on which the combined figures for "typhoid notifications" have been apportioned to the two diseases embraced thereby, for a proper understanding of these it will be advisable first to discuss the facts as presented by their weekly incidence. In Chart V are shown the estimated weekly rates of the typhoid fever cases, and of the undetermined zymosis per thousand of population, the former in red and the latter in green, compared with the rates for the combined diseases shown in black.

From an examination of the lines of the chart it will be seen that the actual typhoid curve for the first three months of the year is shown coincident with that of the typhoid notifications. As has already been explained, during this period no signs had yet shown themselves of the appearance of that other disease which subsequently complicated the question. There was, moreover, nothing then to suggest any inexplicable abnormality of incidence in comparison with former years and no other evidence had appeared sufficient to negative the propriety of a frank acceptance of the typhoid notifications for what they were intended.

Up to this point, therefore, I think it may be safely acknowledged that, generally speaking, the typhoid notifications put in during this period related only to cases of actual typhoid fever, and upon this hypothesis the initial coincidence of the curve is based.

With the advent of the first week of April, however, a new situation arose. It then began to appear, as has been shown from the cases sent to hospital, that the typhoid notifications had ceased to be a true index of the prevalence of typhoid fever alone, but had commenced to include a considerable proportion of cases which, though clinically presenting the characteristics of typhoid fever, were proved by further investigation to be actually cases of another disease.

Difficulties of diagnosis rendered it manifestly impracticable to verify individually the correctness of every notification, and it therefore became obvious that it was only from the results of the investigations made in hospital that any indication could be obtained of the extent of the general error. When, however, it is remembered that, derived from these hospital cases, we are in possession of definite information as regards nearly one-half of the total number of cases included in the typhoid notifications, it will be seen that we have in this a proportion sufficiently large to justify its absolute acceptance as a representative sample of the whole, and it may be taken for granted that the results found in the investigation of the 2,544 hospital cases may, with absolute propriety, be accepted as a basis on which to build sufficiently accurate estimates of the position as regards the 3,137 cases which were not admitted to hospital.

Week by week, therefore, and district by district, on this principle, estimates of the outside cases have been based on the information derived from corresponding cases in hospital, and it is from the results thus obtained that the tables, diagrams, and charts relating to the probable incidence of typhoid fever, and of the "unidentified fever" in 1915, have been drawn up. Whilst absolute exactness cannot be claimed for these, I think enough has been said to show that the probabilities are on the side of the results being in sufficient conformity with actual conditions as to render them admissible as indices of the relative prevalence of each of the diseases concerned.

The same probabilities of approximate exactitude, however, cannot be advanced as regards the estimates of the relative deaths. Of the 5,681 cases originally notified as typhoid fever, 2,744 cases died. Attempts to apportion these deaths, on the same lines



as the cases, disclosed so many obvious sources of error, that it was considered inadvisable to go to the trouble of collecting and separating the groups of figures on which such an estimate could be based. The combined deaths, therefore, in each district, have been proportionately allotted according to the estimated case figures for each disease in that district, the relative case mortalities of the two diseases, as shown by the hospital results, being taken into consideration in their distribution.

The results as regards the deaths thus obtained, though in all probability offering a fairly accurate reflection of the actual position, are open to some objection, and cannot obviously have the same value placed upon them as is claimed for the estimates of the relative numbers of cases. Whilst, therefore, accepting the latter estimates as an approximately accurate indication of the situation as regards the relative incidence of the two diseases, it is to be taken that the results obtained from the method adopted for the apportionment of the deaths, are not advanced as anything more than a rough presentment of the probable mortality position in the different districts, to be used with care, and subject to some reservation.

With the object, however, of leaving the position open for future criticism, should fresh circumstances arise at any time calling for a reconsideration of the question, it will be advisable to have on record a somewhat more detailed indication of the processes by which the results have been obtained than is furnished by the general indications, already given, of the lines on which the calculations have been made, and I propose to expose, in sufficient detail for a proper assessment of their values, the separate processes by which have been obtained the weekly estimates of the two diseases, their district distribution, and the proportion of deaths attributable to each. The first of these estimates, as has already been indicated, is based on the hospital corrections of the weekly typhoid admissions.

For the purposes of this, separate weekly records of the cases taken into hospital with an original diagnosis of typhoid fever were kept, and the ultimate corrected diagnosis of each case noted. From the relative hospital figures of the two diseases thus obtained, the outside cases for the corresponding week have been apportioned between the two in the proportions exposed by the hospital results. Thus, for the week ending May 13, a total of 317 cases were recorded as "typhoid fever." Of these, 142 were admitted to hospital and ultimately diagnosed, twenty-four as actual cases of typhoid, and 118 as cases of the unidentified fever. Taking these 142 cases removed to hospital as a fair indication of the position as regards the 175 outside cases, the latter were proportionately allotted to the two diseases on the scale of the hospital figures, and apportioned 30 to typhoid fever and 145 to the undetermined zymosis. For the week in question, therefore, 54 of the 317 total cases have been considered as actual cases of typhoid fever, and 263 cases of the unidentified fever.

Week by week the cases have been thus divided and the weekly estimates totalled at the end of the year, with the result that of the total 5,681 cases reported as typhoid, 2,378 is the estimate arrived at for the actual cases of typhoid, and 3,303 for those of the unidentified fever for the whole year. In Table XIII the details of the estimation are set out week by week.

As regards the estimates of the district incidence of the two diseases, there was nothing throughout the epidemic to indicate that the position as regards erroneous notification in relation to these diseases materially differed in any of the qisms, with the two exceptions already mentioned, and the combined figures given in Table XII for the different qisms have been apportioned between the two diseases, on the basis that the relative prevalence in the different districts was the same as that for the whole city. The individual estimates for the two diseases in the various districts have therefore been derived by a redistribution of the typhoid notification figures; in the proportion of 2,378 typhoid to 3,303 unidentified fever, the results obtained being controlled and supported by individual estimates as regards each qism, based on the proportionate figures for the two diseases found in the hospital cases derived from the particular qism, a method which has furnished a useful control, though open to objection, as the actual means of computation, in view of the smallness of the figures relating to some of the districts.

The deaths for each district, and for the city as a whole, given in Table XII as the deaths of cases originally diagnosed as typhoid fever, are allotted proportionally to the number of cases assigned to each disease, due notice being taken of the fact that the death-rate, according to the hospital figures, is higher for the undetermined zymosis than for typhoid fever, being 22·38 per cent for the former and 18·15 per cent for the latter. Taking "A"



**TABLE XIII.—Typhoid Notifications in Cairo City in 1915.**  
**Diagnostic Redistribution of Cases.**

WEEK.				HOSPITAL CASES.			CASES TREATED OUTSIDE.			ALL CASES.		
				Weekly Number of Cases admitted as Typhoid.	FINAL DIAGNOSIS.		Weekly Number of Cases outside Hospital recorded as Typhoid.	ESTIMATED APPORTIONMENT		Weekly Total of all Cases originally recorded as Typhoid.	FINAL CLASSIFICATION.	
					Typhoid Fever.	Unidentified Fever.		Typhoid Fever.	Unidentified Fever.		Typhoid Fever.	Unidentified Fever.
1	January	1- 7	...	17	17	0	2	2	0	19	19	0
2	"	8-14	...	3	3	0	24	24	0	27	27	0
3	"	15-21	...	16	16	0	7	7	0	23	23	0
4	"	22-28	...	11	11	0	14	14	0	25	25	0
5	"	29- 4 Feb.	...	10	10	0	24	24	0	34	34	0
6	February	5-11	...	14	14	0	11	11	0	25	25	0
7	"	12-18	...	19	19	0	33	33	0	52	52	0
8	"	19-25	...	34	34	0	30	30	0	64	64	0
9	"	26- 4 March..	...	34	34	0	42	42	0	76	76	0
10	March	5-11	...	58	58	0	66	66	0	124	124	0
11	"	12-18	...	71	71	0	121	121	0	192	192	0
12	"	19-25	...	42	42	0	80	80	0	122	122	0
13	"	26- 1 April...	...	73	71	2	81	79	2	154	150	4
14	April	2- 8	...	73	69	4	83	78	5	156	147	9
15	"	9-15	...	83	81	2	103	100	3	186	181	5
16	"	16-22	...	86	68	18	160	127	33	246	195	51
17	"	23-29	...	113	64	49	161	91	70	274	155	119
18	"	30- 6 May	...	135	39	96	138	40	98	273	79	194
19	May	7-13	...	142	24	118	175	30	145	317	54	263
20	"	14-20	...	156	18	138	211	24	187	367	42	325
21	"	21-27	...	218	20	198	142	13	129	360	33	327
22	"	28- 3 June	...	232	25	207	161	17	144	393	42	351
23	June	4-10	...	171	33	138	115	22	93	286	55	231
24	"	11-17	...	168	23	145	197	27	170	365	50	315
25	"	18-24	...	94	15	79	113	18	95	207	33	174
26	"	25- 1 July	...	71	13	58	70	12	58	141	25	116
27	July	2- 8	...	84	28	56	79	26	53	163	54	109
28	"	9-15	...	57	4	53	74	5	69	131	9	122
29	"	16-22	...	40	4	36	113	11	102	153	15	138
30	"	23-29	...	35	1	34	63	2	61	98	3	95
31	"	30- 5 Aug.	...	29	3	26	78	8	70	107	11	96
32	August	6-12	...	21	7	14	33	11	22	54	18	36
33	"	13-19	...	13	5	8	48	18	30	61	23	38
34	"	20-26	...	14	2	12	12	2	10	26	4	22
35	"	27- 2 Sept.	...	11	3	8	51	14	37	62	17	45
36	September	3- 9	...	16	4	12	24	6	18	40	10	30
37	"	10-16	...	5	1	4	14	3	11	19	4	15
38	"	17-23	...	5	1	4	11	2	9	16	3	13
39	"	24-30	...	9	4	5	2	1	1	11	5	6
40	October	1- 7	...	6	2	4	15	5	10	21	7	14
41	"	8-14	...	2	1	1	7	4	3	9	5	4
42	"	15-21	...	4	3	1	18	14	4	22	17	5
43	"	22-28	...	6	5	1	7	6	1	13	11	2
44	"	29- 4 Nov.	...	9	8	1	6	5	1	15	13	2
45	November	5-11	...	3	2	1	13	9	4	16	11	5
46	"	12-18	...	6	3	3	8	4	4	14	7	7
47	"	19-25	...	1	0	1	19	19	0	20	19	1
48	"	26- 2 Dec.	...	3	3	0	15	15	0	18	18	0
49	December	3- 9	...	5	4	1	20	16	4	25	20	5
50	"	10-16	...	5	5	0	14	14	0	19	19	0
51	"	17-23	...	8	2	6	23	23	0	31	25	6
52	"	24-31	...	3	0	3	6	6	0	9	6	3
TOTALS ...				2,544	997	1,547	3,137	1,381	1,756	5,681	2,378	3,303



as the number of deaths recorded amongst the cases originally notified as typhoid fever, "B" as the estimated number of actual cases of typhoid fever multiplied by 18·15, and "C" as the estimated number of the unidentified fever cases multiplied by 22·38, the formulas adopted for the estimation of the typhoid fever deaths are  $\frac{A \times B}{C + B}$  and for the unidentified fever  $\frac{A \times C}{C + B}$ .

Having thus given a clear indication of the lines on which have been unravelled the mixed figures included in the typhoid notifications and deaths, I propose subsequently to review separately each of the two diseases included therein, on the basis of an acceptance of the supposition that the estimated figures are coincident with the reality.

Before doing so, however, it will be useful to consider in some detail, as regards the "typhoid notifications," the various effects of the application of those powers of compulsory hospital isolation which, as already stated, were obtained by Ministerial *Arrêté* on May 9, 1915, since, in connection therewith, the reactions to a varying stringency of application demonstrated the complexities which constantly attend the adoption of almost any new procedure in a country where allowance should always be made for unexpected effects, not always of a favourable character, which sometimes follow the application of measures appearing, in themselves, unlikely to give rise to any disadvantageous consequences.

Owing to certain inherent objections to any extensive adoption of hospital isolation in this country as a means of combating infectious disease, it is to be noted that it has always been considered politic to limit this as far as possible to those diseases in which powers of insisting thereon are in certain cases essential. Following this policy, the necessity for compulsory isolation had not, as regards typhoid fever, previously arisen, at least in any acute form, though, as pointed out in my report for 1914, the absence of this gave rise in that year to difficulty in dealing with certain small, almost domestic, outbreaks occurring in certain residential groups in the lower-class quarters of the town, where the conditions of life were such as to supply every opportunity for the propagation of this infection. The disease in consequence had therefore hitherto only been included amongst that group of diseases in the schedule attached to the infectious disease law, regarding which no powers of compulsory isolation had been conferred by law.

With the advent, however, first, of a more marked prevalence of typhoid fever, in 1915, in just those quarters in which difficulty had arisen in the previous year and, later, with the occurrence of the extensive outbreak, in similar localities, of the unidentified fever already referred to, the necessity of obtaining powers of isolation in those cases became urgent. The powers, as already explained, were only definitely conferred by the publication of a Ministerial *Arrêté* early in May, but before this had occurred the position was such as to demand immediate action, and the difficulty had been met by measures which, in effect, constituted a somewhat arbitrary anticipation of the law.

Almost from the beginning, therefore, the hospitalization of hygienically hazardous cases notified as typhoid fever was adopted to an extent hitherto unattempted, and evidence of the effect of this measure in influencing the recording of cases showed itself throughout the epidemic, whilst its application with varying degrees of severity, according to accidents of time, place, or expediency, permitted of a conception of the extent of its effect in the direction in question such as would have been impossible with a more uniform adoption of the measure.

The influence thus manifested derived its origin primarily from the innate objection of the lower-class Egyptian to any measures of a preventive nature, and this is a factor which must always be taken into consideration in estimating the benefit likely to accrue from the application of any new procedure, and the extent to which it may be desirable to make use thereof.

Taking into consideration, therefore, from the beginning, the fact that any general adoption of hospital isolation would be likely to call for some correction of the active attempts at concealment certain to result therefrom, and that this could only be efficiently met by the imposition of a more rigorous system of inquiries than might be politic in view of the circumstances then obtaining, it was decided at first to attempt to avoid this by confining the application of the new measure to such cases as obviously could not be dealt with satisfactorily in any other way.

Experience, however, soon showed that the effect of this limitation, in the direction intended, was almost *nil*, as the fear alone of the possibility of removal to hospital seemed to operate with as much effect in causing concealment of cases as a fuller application of the measure could possibly have done.



By the end of May, therefore, full advantage was taken of the powers conferred by the law, and these were exercised in every case in which any chance existed of treatment outside proving prejudicial to the general health of the community. The effect of this is evidenced by the greater proportion of cases treated in hospital in the period included between May 21 and July 8, and though the problem presented by the concealment of cases still persisted, as far as could be judged by the rates of deaths to cases recorded, it did not occur in any more exaggerated form than had been the case during the milder application of the measure.

In the beginning of July the outbreak had been brought well in hand, though in certain of the lower-class more grossly infected quarters repeated recrudescences of disease still suggested the presence of many concealed foci of infection. With the object, therefore, of arriving at some arrangement for the better control of these, it was considered advisable to review the whole position as regards the mode of application of preventive measures at that time adopted.

Now, experience had shown in certain parts of the city, where the early discovery of disease had given a promise of success and the nature of the district had permitted of it, that it was possible in many cases to stamp out the disease before it got hold, by the institution, with the assistance of the Sheikhs el Hara, of a house-to-house search for concealed cases, and a prompt removal of these to hospital.

Observation of the results, however, had demonstrated certain disadvantages likely to attend this, and had indicated the impropriety of any general application of this method in its entirety, since opposition to search, and subsequent removal to hospital, though practically non-existent in slightly or freshly infected areas containing consequently few concealed cases, was found to be a factor of considerable importance where the opposite conditions obtained. Apart from any political disadvantages likely to be engendered by this, the opposition raised was found to render this method unsound, from a purely public health point of view, since it tended to lead to a transfer of sick to other localities with the object of avoiding discovery.

This procedure had therefore only been adopted hitherto in the very earliest stages of the infection of any area, and to avoid a more general dissemination of infection had immediately been given up as soon as it was seen to have failed to abort the local outbreak.

As it was highly desirable, however, to obtain, if possible, some control over the concealed foci of infection mentioned above, in view of the constant fresh outbreaks resulting therefrom, and as the general position as regards the prevalence of diseases permitted of an extensive substitution of home supervision for hospital isolation, it was determined to try cautiously in certain of the lower-class districts, where there appeared to be evidence of considerable concealment, the effect of a system of house-to-house search in the immediate neighbourhood of every new case discovered, but to avoid any resulting opposition likely to be raised by this by tempering the rigour of the control by a very considerable relaxation in the application of measures of hospital isolation, substituting for these a system of home supervision of the discovered cases.

The results obtained primarily appeared most gratifying. Many cases of concealed disease were discovered, whilst the prejudicial effects, already mentioned, of a house-to-house visitation, when combined with a removal of the concealed cases thus discovered, seemed to be almost entirely neutralized by the substitution of home supervision for hospital isolation. A considerable amelioration in the zymotic conditions resulted in the localities thus dealt with, and it was decided to extend cautiously the operation of this arrangement to other lower-class districts where a continued prevalence of disease seemed to call for this.

Before, however, any general effect could be given to the proposed extension, dropping cases of the disease began to show themselves in areas either hitherto free from either of the diseases included under the typhoid notifications or having been previously cleared from these.

The investigations held in such cases, with the object of discovering the mode of introduction of the infection, showed that a very large proportion of these cases were sick from the inspected localities, whence they had fled to avoid discovery, and suggested that the distrust engendered by active search for cases was likely to introduce a danger of extensive dissemination of infection which might more than counterbalance any local benefit likely to be derived therefrom.

Though the actual extent to which this occurred during the short period when the arrangement was in operation cannot be accurately measured, as investigations into sources



of infection were naturally only carried out in the case of freshly-infected localities, the amount of attempted evasion relatively to the discovery of cases appeared to be small. It was, however, considered sufficiently large to constitute a real danger, presenting potentialities which more than counterbalanced any advantage gained, and the scheme was in consequence discontinued, recourse being had to a resumption of our previous dependence upon a control based upon an interrogation of the residents in the immediate vicinity of known cases, information derived from the Sheikhs el Hara, disinfections in all cases of doubtful death in badly-infected areas, close observation of all known probable contacts and hospital isolation in every detected case of concealment, or where the conditions of living rendered such isolation essential. With the substitution of the possibility of evasion under the latter arrangement for a certainty of detection under the former, the incentive to removal of the sick disappeared, since the risks of detection became equal in any district, and the sporadic outbreaks resulting from this then ceased.

From the foregoing, therefore, it may be seen that certain problems arise, in connection with the application of powers of compulsory isolation in a city such as this, which do not fall within the experience of the sanitarian in countries where less complex conditions obtain, and it may therefore be advisable to record the general conclusions which were drawn from the experience gained in the present instance in the control of an epidemic first without and subsequently with such powers of hospital isolation.

Experience showed in the course of the epidemic the utility of powers of compulsory isolation and demonstrated their necessity in any extensive urban outbreak of infectious disease, though the difficulties arising from their absence could to some extent be dealt with amongst the hygienically most dangerous classes by taking advantage of their amenability to official persuasion.

In taking advantage, however, of such powers, their possibly prejudicial effects should be borne in mind, and any general extensive application of these was shown to be undesirable as a rule, unless the nature of the disease to be dealt with, or its uniform distribution, should be such as to entitle us to ignore the danger of dissemination of disease through attempts at evasion by the secret removal of the sick.

As a general rule, therefore, it may be taken that isolation should only be applied to cases where the continuation of the patient in his home would be likely to constitute some danger to the general public health, and even then it may be advisable at times to permit of an imperfect isolation outside rather than invite attempts at concealment of cases.

If, however, any extensive hospital isolation is necessary, it is useless attempting any lightening of the measure with the object of correcting its disadvantages, as once a possibility of isolation becomes generally recognized it will act with as much effect in producing active attempts at concealment as would the actual removal of every case to hospital.

Unless the disease is unlimited, as regards locality, any obvious open search for concealed cases is likely to tend towards a probable extension of the disease to other areas through attempts of the sick at evasion and is therefore, even if unaccompanied by hospital isolation, inadvisable in a city where it is impossible to impose any efficient control over the movements of the population. If the measure is associated with a removal of the discovered cases to hospital, the possibility of the arrangement being eventually resisted by organized violence must not be lost sight of. The possibility of trouble is, however, inconsiderable if the search is unexpected and the number of concealed cases is few; it is, therefore, at times a useful measure in aborting an incipient localized outbreak. If, however, the desired result is not effected by the first attempt, it is inadvisable, as a general rule, to continue.

The detection of concealed cases in infected urban localities can most satisfactorily be effected by discreet inquiries in the neighbourhood. Such a procedure does not advertise its action, and, having none of the certainty of an organized search, the incentive to flight is therefore lacking, with its consequent tendency to a spread of infection.

When concealed cases were detected in this way it was found advantageous in every case to insist on removal to hospital, and to let it be known that this would be done, at the same time allowing every latitude possible as regards patients voluntarily notified.

Finally, the popular objection to an isolation depending on conveyance to hospital scarcely showed itself in the case of segregation in a local cordon with paid attendants drawn from the families of the sick. Such an arrangement, by removing the element of adventuring towards the unknown and by substituting a control amidst more familiar surroundings, was found largely to remove the popular objection to isolation, which is based, in reality, principally on ignorance and fear.



The cordons at Kafr el 'Elwa and Ma'sara, primarily set up in view of the difficulties attending the conveyance of patients from these districts to hospital, on account of their distances, so facilitated the work of dealing with the outbreaks at these places as to raise a feeling of regret that an earlier and more extensive use had not been made of them.

Their institution in these districts did away to a great extent with attempts at concealment, and reduced to a minimum the opposition to isolation, whilst the arrangement of recruiting whatever unskilled attendance was necessary for the work of the cordons from amongst the contacts in the families of the affected persons, and paying for the services of such as were thus employed, acted as a direct encouragement towards the voluntary reporting of cases by the relatives of the sick.

Whilst, therefore, such instruments of isolation appear, at first sight, to provide a method of segregation more suited for rural than for urban areas, I am not at all convinced, in view of what has already been stated, whether a more general application of this method, when circumstances permitted of it, would not, in this city, give more generally satisfactory results in the control of an extensive epidemic than is to be derived from a centralized hospital isolation. It must be clearly understood, however, that this can only be considered as worthy of consideration in the case of an exceptionally extensive epidemic, calling for such a comprehensive isolation of cases as might tend to produce a condition of popular apprehension likely to result in difficulties of control, and is not to be taken as in any way bearing the suggestion that this form of segregation could ever provide an efficient substitute for isolation in hospital, which must continue as the only practical form of isolation for general purposes.

Whilst advancing these views as to the application of hospital isolation, it must not be taken that there is any intention to suggest that they present any finality, or throw any particularly new light on an old subject, but it has been thought advisable to put on record, for future guidance, the experiences gained in the application of these measures in the course of an exceptionally extensive epidemic, occurring principally in the lower quarters of a large city, where the conditions call for some modifications of the methods applicable to rural districts.

*Typhoid Fever.*—During 1915 the number of cases of typhoid fever attributed to Cairo was extremely high, there being a total of 2,378 cases, giving a morbidity rate of 3·242 per thousand of population as compared with 1·941 per thousand in 1914, 1·017 per thousand in 1913 and 0·642 in 1912. The number of deaths was 1,012, giving a death-rate per thousand living of 1·379 as compared with rates of 0·428 in 1914, 0·313 in 1913, and 0·248 in 1912.

TABLE XIV.—Typhoid Fever Case and Death Rates in Cairo Districts in 1915.

DISTRICT.	Population.	Number of Cases recorded.	Cases recorded per 1,000 of Population.	Number of Deaths.	Death-rate per 1,000 of Population.	Ratio of Deaths to Cases recorded. Per Cent.
El Mûski ... ..	24,688	74	2·997	27	1·093	36·5
Bab el Sha'riya... ..	63,296	232	3·665	87	1·374	37·5
El Ezbekiya ... ..	52,166	100	1·916	31	0·594	31·0
'Abdin ... ..	59,792	138	2·308	52	0·869	37·7
El Sayeda Zeinab ... ..	72,840	259	3·555	106	1·455	40·9
El Khalifa ... ..	60,386	335	5·547	166	2·748	49·5
Helwân ... ..	8,568	147	17·156	24	2·801	16·3
El Darb el Ahmar ... ..	75,230	223	2·964	111	1·475	49·8
El Gamâliya ... ..	66,178	127	1·919	28	0·423	22·04
Shubra ... ..	54,765	108	1·972	37	0·675	34·3
Bûlâq ... ..	100,422	424	4·222	246	2·449	58·01
Old Cairo ... ..	35,252	58	1·645	35	0·992	60·3
El Wâyli ... ..	59,840	153	2·556	62	1·036	40·5
TOTALS FOR CAIRO... ..	733,423	2,378	3·242	1,012	1·379	42·5



This increased death-rate was not, however, altogether unexpected.

As has already been indicated, in the beginning of 1915, with the advent, first, of an undue prevalence of typhoid fever and later of the epidemic of the unidentified fever already referred to, the situation as regards the public health of the city became such as to call for the application of exceptional measures.

Both diseases were occurring principally in the more poverty-stricken quarters, where the conditions of home life were such as to render any home control impossible, and a considerable proportion of the cases had therefore to be removed to hospital. The increased death-rate from this disease, therefore, may largely be attributed, in the manner previously spoken of, to this action, which from the nature of the disease, substituted, in the case of a considerable proportion of its deaths, the certainties of hospital diagnosis for the possibilities of missed post-mortem identification of the cause had the case only been seen after death.

The ratio of deaths to cases recorded, as compared with previous years, is high and suggests considerable concealment of cases, it being 42·5 per cent in 1915 as against 22·0 per cent in 1914, 30·7 per cent in 1913, and 38·6 per cent in 1912.

The highest district morbidity rate shown was 17·156 per thousand of population in Helwân, which also presented the highest death-rate, this being 2·801 per thousand living.

Apart, however, from the inaccuracy of the population estimate of this district as a basis for zymotic rates, which, as has been shown, renders the use of these for interdistrict comparison of no value, the nature of this district lends itself to concealment of cases less readily than is the case in the other more urban areas, and shows a consequent tendency to a relatively undue inflation of its case and death records as regards all infectious diseases.

Moreover, as a result of the fact that the increased zymotic incidence declared itself in this district at a much later period than it did in the rest of the city, its onset coinciding with the decline of the typhoid prevalence and the inception of the unidentified fever outbreak in the other districts, the method already described of apportioning the typhoid notification figures of the various districts to the two diseases embraced thereby is in reality, in view of the discrepancy of periodicity, scarcely applicable with propriety to Helwân, since the number of cases from this district notified as typhoid and treated in hospital was so small as to render their use as a check upon the estimation of the relative prevalence of the two diseases in the district open to objection, whilst conclusions founded upon information derived from the cases which, at a later period, were segregated in the Kafr el 'Elwa and Ma'sara cordons might not be strictly applicable to the conditions obtaining at an earlier period.

In view, however, of the impossibility of arriving at any results of a more definitely defensible nature, it was thought inadvisable to adopt any exceptional estimation as regards this district, and the apportionment of the cases therein to typhoid and the unidentified fever has been made on the same lines as in the other districts. The result of this has been a considerable attribution of cases of typhoid fever to Helwân which undoubtedly with greater propriety should have been included in the figures of the unidentified fever, since, during the whole course of the outbreak in this district, the former disease relatively to the latter strongly suggested a much lower prevalence than was the case in the rest of the city.

Equally therefore with El Gamâliya, the circumstances of which will be subsequently discussed when dealing with typhus fever, Helwân must be left out in any interdistrict comparison of the prevalence of typhoid fever.

With Helwân excluded, the highest morbidity rate occurred in El Khalifa, with 5·547 cases per thousand of population. It also presented the highest death-rate, which was 2·748 per thousand living. The lowest morbidity rate occurred in Old Cairo, with 1·645 cases per thousand of population. Excluding El Gamâliya, El Ezbekiyya showed the lowest death-rate from this cause, with 0·594 deaths per thousand living. The rates of deaths to cases recorded was highest in Old Cairo with 60·3 per cent of deaths, indicating a considerable concealment of cases. This ratio, however, was in general high, except in the two districts to be exceptionally considered.

The disease commenced to assume its epidemic form about the middle of February and reached its highest points in March and April, after which it gradually declined in prevalence until, by the middle of July, the position as regards this disease had returned to normal.



In Table XIV the numbers of cases and deaths in the various districts are given with their morbidity and death-rates and the ratios of deaths to cases recorded in each, whilst the morbidity and death-rates are shown in a diagrammatic form in Figure 3. The weekly totals of cases, in comparison with those in the three previous years, are shown in Chart VI.

*The Unidentified Fever of 1915.*—The most prominent feature in 1915, from a zymotic point of view, was the extensive outbreak of an unidentified fever, which began in March and ended in August or September. In Chart V, the curve of incidence indicates an apparent small occurrence of the disease right on to the end of the year, but in reality this curve

TABLE XV.—District Case and Death Rates of the Unidentified Fever in 1915.

DISTRICT.	Population.	Number of Cases recorded.	Cases recorded per 1,000 of Population.	Number of Deaths.	Death-rate per 1,000 of Population.	Ratio of Deaths to Cases recorded. Per Cent.
El Mûski ... ..	24,688	103	4·172	46	1·863	44·7
Bab el Sha'riya... ..	63,296	321	5·071	149	2·354	46·4
El Ezbekiya ... ..	52,166	140	2·683	54	1·035	38·6
'Abdin ... ..	59,792	191	3·194	89	1·488	46·6
El Sayeda Zeinab ... ..	72,840	359	4·928	181	2·484	50·4
El Khalifa... ..	60,386	464	7·683	283	4·686	61·0
Helwân ... ..	8,568	205	23·926	41	4·785	20·0
El Darb el Ahmar ... ..	75,230	310	4·120	189	2·512	61·0
El Gamâliya ... ..	66,178	176	2·659	49	0·740	27·8
Shubra ... ..	54,765	151	2·757	64	1·168	42·4
Bûlâq ... ..	100,422	589	5·865	420	4·182	71·3
Old Cairo ... ..	35,252	81	2·297	59	1·673	72·8
El Wâyli ... ..	59,840	213	3·559	108	1·804	50·7
TOTALS FOR CAIRO ... ..	733,423	3,303	4·503	1,732	2·361	52·4

should have been with propriety terminated at the end of August, the cases shown subsequently being derived from continued estimates based upon hospital figures, which, in the last four months of the year, were undoubtedly somewhat affected by attempts to find possible cases for further investigations. On account of this, the absence of the previous free supply of undoubted cases led to a tendency, in the latter part of the year, to consider many cases of doubtful diagnosis, presenting some resemblance to the unidentified fever, as possible cases of the disease in which might be found a field for further investigation.

Certainly none of the 23 hospital cases, which were recorded in the last three months as possible cases of the disease in question, could be taken as typical examples of those which had previously been diagnosed as such, and it is almost certain that, without the previous occurrence of the unidentified fever, these would have been adjudged merely somewhat atypical cases of typhus. I am afraid, therefore, that as regards these later cases the wish was to some extent father to the thought, and that the desire to find examples for a continuation of the investigations produced a tendency to record cases certainly open to doubt as actual cases of the disease. As, however, the number of typhoid notifications in the last three months was unimportant, it was considered, for reasons of continuity, advisable to continue to show the estimates as based on the hospital figures.

As already indicated, circumstances did not admit of sufficient investigations to determine the nature of the disease, but certain facts were recorded and are to be found in an appendix to this report. It is therefore here only proposed to give a short review of the disease from the point of view of its prevalence and distribution in the city.

The total number of cases attributed to this disease was 3,303, giving a morbidity rate for the whole city of 4·503 per thousand of the population. Death occurred in 1,732 of the cases, showing a death-rate of 2·361 per thousand of the population. The ratio of deaths to cases recorded was 52·4 per cent, which, in view of the hospital death-rate of 22·30 per cent, indicates a considerable concealment of cases.

The district showing the highest morbidity and death-rates was Helwân, with 23·926 cases and 4·785 deaths per thousand of population. These high rates, however, owing



to the circumstances already explained, must not be used for interdistrict comparison, being attributable chiefly to the erroneous population estimate and to a satisfactory discovery of cases, and not to any greater incidence. The actual totals for the district, as has previously been indicated, are probably in reality shown somewhat lower than they justly ought to be, owing to the manner of apportioning the figures.

Exclusive of Helwân, the highest morbidity rate occurred in El Khalifa, with 7·683 cases per thousand of population. The lowest recorded was in Old Cairo, with 2·297 cases per thousand of population. The district with the highest death-rate, with the exception of Helwân, was also El Khalifa, with 4·686 deaths from this disease per thousand living. Exclusive of El Gamâliya, the rates for which can only be considered in connection with certain influences which will be discussed under typhus fever, the lowest death-rate was recorded in El Ezbekiya, with 1·035 per thousand living. The ratios of deaths to cases recorded were highest in Old Cairo and Bûlâq, with percentages of 72·8 and 71·3 deaths, showing in these districts a considerably unsatisfactory position as regards concealment of cases. Exclusive of El Gamâliya, the ratio of 38·6 per cent in El Ezbekiya points to it as the district in which most satisfactory results were obtained as regards discovery of cases. The number of cases and deaths in each district is shown in Table XV, with the morbidity and death-rates and ratio of deaths to cases recorded in each, whilst this is shown diagrammatically in Figure 4. The weekly incidence is shown in Chart V in rates per thousand of population.

*Typhus Fever.*—The number of cases of typhus fever recorded in 1915 was 1,112 cases, giving a morbidity rate of 1·516 per thousand of population, as compared with rates of 0·483 per thousand, 0·301 per thousand, and 0·329 per thousand in 1914, 1913, and 1912 respectively.

It is difficult definitely to state to what extent this increased rate in 1915 is to be taken as indicating an actual increase in incidence, inasmuch as the figures for this year are undoubtedly inflated by the inclusion of a large number of cases which were incidentally brought to light in the course of the special investigations regarding concealed cases of typhoid and the unidentified fever.

TABLE XVI.—Typhus Fever Case and Death Rates in Cairo Districts in 1915.

DISTRICT.	Population.	Number of Cases recorded.	Cases recorded per 1,000 of Population.	Number of Deaths.	Death-rate per 1,000 of Population.	Ratio of Deaths to Cases recorded. Per Cent.
El Mûski ... ..	24,688	27	1·093	9	0·364	33·3
Bab el Sha'riya... ..	63,296	65	1·026	34	0·537	52·3
El Ezbekiya ... ..	52,166	31	0·594	15	0·287	48·4
'Abdin ... ..	59,792	39	0·652	9	0·150	23·1
El Sayeda Zeinab ... ..	72,840	160	2·196	111	1·523	69·4
El Khalifa ... ..	60,386	98	1·622	59	0·977	60·2
Helwân ... ..	8,568	27	3·151	7	0·816	25·9
El Darb el Ahmar ... ..	75,230	56	0·744	21	0·279	37·5
El Gamâliya ... ..	66,178	310	4·684	283	4·276	91·3
Shubra ... ..	54,765	49	0·894	18	0·328	36·7
Bûlâq ... ..	100,422	163	1·623	97	0·965	59·5
Old Cairo ... ..	35,252	43	1·219	38	1·077	88·3
El Wâyli ... ..	59,840	44	0·735	17	0·284	38·6
TOTALS FOR CAIRO ... ..	733,423	1,112	1·516	718	0·978	64·6

Circumstances, however, all pointed to an undue prevalence of the disease in 1915 as compared with previous years, but beyond registering this impression it is impossible to indicate any basis for a definite comparison in view of the unusual augmentation of the figures for the year in question as a result of the increased discovery of cases referred to.

A total of 718 deaths occurring from this disease was recorded, giving a death-rate per thousand living in 1915 of 0·978 as compared with death-rates of 0·319 per thousand, 0·217 per thousand, and 0·265 per thousand in 1914, 1913, and 1912 respectively.



The death figures for this year are, however, undoubtedly erroneously high as a result of a known source of error affecting one district but discovered too late to permit of any satisfactory basis of readjustment. The erroneous figures have therefore been permitted to stand, but as it is necessary to bear this source of error in mind in the consideration not only of this disease but of the two which have been previously individually described, it will be advisable to review in some detail the conditions affecting the results in the district in question.

A reference to the table of the "Typhoid Notifications" (Table XII) will show that in El Gamāliya the deaths from cases notified as typhoid were exceptionally low as compared with other districts. Now, coincident with the first observation of this fact, it was discovered that the death figures for typhus were correspondingly exceptionally high, whilst a further indication of some extreme abnormality as regards this district was furnished by the ratios of typhus deaths to cases recorded, which at one time were rarely, in any week, much below 90 per cent of the cases, and were more often considerably above this.

An analysis of the figures showed that the bulk of the typhus death totals in the district was at that time largely derived from the considerable numbers of uncertified deaths then being diagnosed in the district, on post-mortem investigation, as deaths from typhus, with the result that, of the 310 cases of this disease recorded in 1915 in El Gamāliya only 27 failed to appear in the death registers.

Such a position was obviously only capable of explanation, given a correctness of diagnosis, on the supposition of an almost impossible concealment of living cases or an equally impossible extreme and localized virulence.

Of this no evidence existed either in the local conditions of the district or in the results of hospital examination. Moreover, there was nothing to indicate that the disease existed in this district to any exceptional extent sufficient to cause the large number of deaths reported, and all the weight of evidence tended to show that the only explanation of the position was to be found in an erroneous post-mortem diagnosis of the cause of a large number of deaths, a great proportion of which ought, properly speaking, to have appeared in the figures for the unidentified fever.

As this diagnostic error, however, had only been discovered somewhat late in the epidemic, when it was impossible to obtain a satisfactory basis on which to estimate the extent of error, it was allowed to continue.

The interdistrict comparison of the individual figures for typhoid, typhus, and the unidentified fever, therefore, is impossible as regards this *qism*, though a comparison based on group figures for these diseases would certainly be admissible. If we take the three other districts of Cairo which bear most resemblance in their characters to El Gamāliya, and compare their rates for the combined group figures of typhoid, typhus, and the unidentified fever, such a close resemblance will be found as to suggest that, in all probability, the position in El Gamāliya did not materially differ from that in these similar districts.

This is shown in Table XVII, where the morbidity-rates, death-rates, and ratios of deaths to cases recorded, of the combined typhus-typhoid-unidentified fever group are worked out and shown in comparison for El Gamāliya and the three other districts of the city most closely resembling it in character.

TABLE XVII.—Case and Death Rates of the Combined Typhoid-Typhus-Unidentified Fever Group in Certain Districts.

DISTRICT.	Population.	Number of Cases recorded.	Cases recorded per 1,000 of Population.	Number of Deaths.	Death-rate per 1,000 of Population.	Ratio of Deaths to Cases recorded.
						Per Cent.
El Gamāliya ... ..	66,178	613	9.262	360	5.439	58.7
El Darb el Ahmar ... ..	75,230	589	7.829	321	4.266	54.5
Bab el Sha'riya... ..	63,296	618	9.763	270	4.265	43.6
El Sayeda Zeinab ... ..	72,840	778	10.680	398	5.464	51.1

I am therefore of the opinion that a fairly correct idea of the situation in El Gamāliya, as regards the three diseases, would be obtained by a readjustment of the figures for each on the lines of an average of those of El Darb el Ahmar, Bab el Sha'riya, and El Sayeda



Zeinab, though in the case of the last-mentioned the typhus death figures suggest the possibility of a similar but less marked inflation, of which, however, no actual evidence could be obtained.

Under the circumstances, therefore, the death figures of typhus fever actually recorded for El Gamâliya constitute an unsafe index of the position in the district as regards this disease, whilst the figures for recorded cases, having been similarly influenced, are likewise inadmissible.

Excluding El Gamâliya, the district showing the highest morbidity rate was Helwân, with 3.151 per thousand living.

Partly owing to greater facilities for the discovery of cases in this district, resulting from its somewhat rural and scattered character, and partly owing to the exceptional measures of investigation taken to avoid concealment of cases of the unidentified fever, this district was so well combed out that I believe the Helwân district totals of deaths and cases recorded in 1915 for this disease, as well as for the other infectious diseases yet to be described in detail, approximate more closely to a true indication of the actual situation than has ever previously been the case.

The rates, however, given by these totals, based, as they are, on the inaccurate population estimate for this district already mentioned, render these inadmissible for comparison with other districts, whilst the fact that the recorded figures include probably a much greater bulk of the cases which actually occurred, still further increases the impropriety of any comparison with other Cairo districts where a greater concealment is possible.

Excluding both Helwân and El Gamâliya, therefore, the highest district morbidity rate occurred in El Sayeda Zeinab, with 2.196 cases per thousand of population.

The lowest morbidity rate was in El Ezbekiya, with 0.594 cases per thousand of population.

The highest death-rate from typhus fever, excluding the erroneous figures for El Gamâliya, occurred in El Sayeda Zeinab, with 1.523 per thousand living. This exceptionally high death-rate, taken in association with the accompanying high rates of deaths to cases recorded, suggested a possibility as regards this district that the same factor has been in operation here as influenced the El Gamâliya figures, though no definite confirmation of this was obtainable either as regards this qism or Old Cairo district, which was similarly suspected for the like reasons.

The lowest death-rate was recorded in 'Abdîn, with 0.150 per thousand living.

Exclusive of El Gamâliya, the highest ratios of deaths to cases recorded were found in Old Cairo and El Sayeda Zeinab, with 88.3 and 69.4 per cent of deaths respectively. The lowest were in 'Abdîn and Helwân, with 23.1 per cent and 25.9 per cent respectively, results closely approximating to the known fatality rate of the hospital cases.

The general incidence of the disease began to increase in February and reached its acme during June and July. In the latter half of July it rapidly declined, and from August onwards comparatively few cases occurred.

In Table XVI is given the district figures of cases and deaths, with the morbidity and death-rates and the ratios of deaths to cases based thereon. A comparison of the recorded position in the districts is shown diagrammatically in Figure 5, whilst the weekly totals of cases is shown in comparison with those of the previous three years in Chart VII.

*Relapsing Fever.*—The number of cases of relapsing fever recorded in Cairo in 1915 was 456, giving a morbidity rate of 0.621 per thousand of population, as compared with rates of 0.013, 0.029, and 0.052 per thousand in 1914, 1913, and 1912 respectively.

There were eighteen deaths, giving a death-rate of 0.024 per thousand living, as compared with 0.001 in 1914, 0.006 in 1913, and 0.004 in 1912.

Though these figures would appear to indicate an increase in the incidence of this disease in 1915, there was nothing to suggest that an explanation of the increased figures need be looked for further than in a larger proportion of discovered cases found in the course of inquiries into concealed cases of unidentified fever.

The ratio of deaths to cases recorded was exceptionally low, being 3.9 per cent, as compared with 10.0 per cent, 23.8 per cent, and 8.1 per cent in 1914, 1913, and 1912 respectively.

The district with the highest incidence was El Sayeda Zeinab, with seventy-seven cases and a morbidity rate of 1.506 per thousand of population.

The lowest morbidity rate occurred in Shubra, with 0.054 per thousand of its population.



The highest death-rate was found in El Khalifa, with eight deaths, giving a rate of 0.132 per thousand living.

Exclusive of the nine districts in which no deaths were recorded, the lowest death-rate was in Darb el Ahmar, with 0.013 deaths per thousand living.

In the four districts in which deaths occurred, the highest ratio of deaths to cases recorded was found in El Waily, with 12.8 per cent, whilst the lowest was in El Darb el Ahmar, with 1.3 per cent. The accidental variations to which such small figures are liable, however, render rates based upon them of little statistical value.

In Table XVIII are shown the figures of the cases and deaths in the various districts, with their morbidity and death-rates and the ratios of deaths to cases recorded. The

TABLE XVIII.—Relapsing Fever Case and Death Rates in Cairo Districts in 1915.

DISTRICT.	Population.	Number of Cases recorded.	Cases recorded per 1,000 of Population.	Number of Deaths.	Death-rate per 1,000 of Population.	Ratio of Deaths to Cases recorded. Per Cent.
El Mûski ... ..	24,688	3	0.126	0	—	—
Bab el Sha'riya ... ..	63,296	29	0.458	0	—	—
El Ezbekiya ... ..	52,166	14	0.268	0	—	—
'Abdin... ..	59,792	9	0.150	0	—	—
El Sayeda Zeinab ... ..	72,840	77	1.506	0	—	—
El Khalifa... ..	60,386	91	1.057	8	0.132	8.6
Helwân ... ..	8,568	1	0.116	0	—	—
El Darb el Ahmar ... ..	75,230	76	1.010	1	0.013	1.3
El Gamâliya ... ..	66,178	42	0.634	0	—	—
Shubra ... ..	54,765	3	0.054	0	—	—
Bûlâq ... ..	100,422	59	0.587	4	0.039	6.8
Old Cairo ... ..	35,252	13	0.368	0	—	—
El Wâyli ... ..	59,840	39	0.651	5	0.083	12.8
TOTALS FOR CAIRO... ..	733,423	456	0.621	18	0.024	3.9

recorded morbidity and death-rates are shown in diagrammatic form in Figure 6, whilst the weekly totals of cases compared with those of the previous three years are shown in Chart VIII.

*Diphtheria.*—During 1915 there were recorded 1,286 cases of diphtheria, giving a morbidity rate of 1.753 per thousand of population, as compared with rates of 1.945, 1.827, and 1.573 for 1914, 1913, and 1912 respectively. Of the 1,286 cases, 462 died, making the death-rate for the disease 0.629 per thousand living, as compared with 0.943 in 1914, 0.785 in 1913, and 0.748 in 1912. The ratio of deaths to cases recorded was 35.9 as compared with 48.5 per cent in 1914, 42.9 per cent in 1913, and 47.6 per cent in 1912, a diminution in the ratio for 1915 which suggests an improved position as regards the discovery of cases.

The disease showed its usual seasonal prevalence, being most marked in the autumn, reaching its maximum at the end of October, and being lowest in April, May, and June. This is shown in Chart IX, where the weekly totals of cases are shown in comparison with the weekly prevalence of the previous three years.

In Table XIX are shown the district distributions of the cases and deaths from this disease with the case mortality in each. The highest incidence occurred in Shubra quarter, with a morbidity rate of 3.779 per thousand of population.

An apparent high relative prevalence, as regards Helwân, is to be discounted for the circumstances already mentioned.

The lowest morbidity rate was shown by Old Cairo, with 0.794 cases per thousand of population. In this case, however, the ratio of deaths to cases recorded was the highest of all the districts, being 53.5 per cent, indicating that the low morbidity rate in that district probably depended more on a greater concealment of living cases than on any satisfactory position as regards actual incidence.



The highest death-rate from the disease was in Shubra, with 1·406 per thousand of population. The lowest recorded was in Bûlâq, with 0·318 per thousand. In Figure 7 the morbidity and death-rates of the various districts are shown in a diagrammatic form.

TABLE XIX.—Diphtheria Case and Death Rates in Cairo Districts in 1915.

DISTRICT.	Population.	Number of Cases recorded.	Cases recorded per 1,000 of Population.	Number of Deaths.	Death-Rate per 1,000 of Population.	Ratio of Deaths to Cases recorded. Per Cent.
El Mûski ... ..	24,688	35	1·417	12	0·486	34·2
Bab el Sha'riya... ..	63,296	103	1·627	48	0·758	46·6
El Ezbekiya ... ..	52,166	152	2·913	38	0·728	25·0
'Abdin ... ..	59,792	109	1·822	23	0·384	21·1
El Sayeda Zeinab ... ..	72,840	149	2·045	67	0·919	44·9
El Khalifa... ..	60,386	76	1·258	28	0·463	36·8
Helwân ... ..	8,568	31	3·618	7	0·816	22·5
El Darb el Ahmar ... ..	75,230	96	1·276	49	0·651	51·04
El Gamâliya ... ..	66,178	78	1·178	30	0·453	38·4
Shubra ... ..	54,765	207	3·779	77	1·406	37·1
Bûlâq ... ..	100,422	100	0·995	32	0·318	32·0
Old Cairo ... ..	35,252	28	0·794	15	0·425	53·5
El Wâyli ... ..	59,840	122	2·038	36	0·602	29·5
TOTALS FOR CAIRO ... ..	733,423	1,286	1·753	462	0·629	35·9

*Measles.*—During 1915 the incidence of measles was low, only 363 cases being registered, giving a rate of 0·494 cases recorded per thousand of population, as compared with 0·646 per thousand in 1914, 1·518 per thousand in 1913, and 1·085 per thousand in 1912.

The highest morbidity rate was recorded in Helwân, with 1·750 cases per thousand living. This, however, as in the case of other infectious diseases, is to be attributed to

TABLE XX.—Measles Case and Death Rates in Cairo Districts in 1915.

DISTRICT.	Population.	Number of Cases recorded.	Cases recorded per 1,000 of Population.	Number of Deaths.	Death-rate per 1,000 of Population.	Ratio of Deaths to Cases recorded. Per Cent.
El Mûski ... ..	24,688	10	0·405	2	0·081	20·0
Bab el Sha'riya... ..	63,296	15	0·236	3	0·047	20·0
El Ezbekiya ... ..	52,166	34	0·651	7	0·134	20·5
'Abdin ... ..	59,792	28	0·468	2	0·033	7·1
El Sayeda Zeinab ... ..	72,840	15	0·205	3	0·041	20·0
El Khalifa... ..	60,386	20	0·331	7	0·115	35·0
Helwân ... ..	8,568	15	1·750	—	—	—
El Darb el Ahmar ... ..	75,230	19	0·252	7	0·093	36·8
El Gamâliya ... ..	66,178	18	0·271	7	0·105	38·8
Shubra ... ..	54,765	61	1·113	19	0·346	31·1
Bûlâq ... ..	100,422	62	0·617	29	0·288	46·7
Old Cairo ... ..	35,252	15	0·425	13	0·368	86·6
El Wâyli ... ..	59,840	51	0·852	11	0·183	21·5
TOTALS FOR CAIRO ... ..	733,423	363	0·494	110	0·149	30·3

the causes already mentioned and is not to be taken as representing an actual greater relative incidence as compared with other districts.

The next highest was in Shubra, with a rate of 1·113 per thousand living, as compared with 1·347 per thousand in the previous year, when Shubra was the district showing the highest morbidity rate.



The lowest morbidity rate in 1915 occurred in El Sayeda Zeinab, with 0.205 per thousand of population as compared with 0.999 in the previous year.

Of the 363 cases recorded, 110 died, giving a death-rate for measles of 0.149 per thousand of population, as against a rate of 0.170 per thousand in 1914, 0.564 per thousand in 1913, and 0.507 per thousand in 1912.

The highest district death-rate occurred in Old Cairo with a rate of 0.368 per thousand living. The ratio of deaths to cases recorded in this district was 86.6 per cent, showing an unsatisfactory position as regards discovery of cases.

The lowest district death-rate was in 'Abdīn, with 0.033 per thousand of population, whilst its ratio of deaths to cases recorded was only 7.1 per cent. No deaths from this disease occurred in Helwān.

The highest weekly record of cases was in April.

The ratio of deaths to cases recorded for the whole city was 30.3 per cent as compared with 26.4 in 1914. The highest and lowest ratios were the ratios already mentioned of Old Cairo and 'Abdīn respectively.

The district case and death-rates are shown in Table XX, together with the ratios of deaths to cases recorded. The latter are almost universally high, indicating an extremely unsatisfactory position as regards the notification of measles. This is to be attributed in part to the mildness of the disease, and in part to the fact that medical attendance is relatively more rarely called for in this disease than is the case with more dangerous illnesses. As a consequence of this, under present conditions, it is impossible to obtain any record of more than a trivial fraction of the total cases of the disease which occur.

In Chart X are the weekly totals of cases compared with the previous three years, whilst Figure 8 exhibits the district morbidity and death rates in diagrammatic form.

*Smallpox.*—The number of cases of smallpox recorded in 1915 was only fifty-nine, giving a morbidity rate for the disease of 0.080 per thousand of population, as compared with rates of 1.354, 0.385, and 0.096 in 1914, 1913, and 1912 respectively.

The number of deaths was twelve, giving a death-rate for this disease of 0.016 per thousand living, as compared with death-rates of 0.249, 0.069, and 0.022 in the three previous years.

TABLE XXI.—Smallpox Case and Death Rates in Cairo Districts in 1915.

DISTRICT.	Population.	Number of Cases recorded.	Cases recorded per 1,000 of Population.	Number of Deaths.	Death-rate per 1,000 of Population.	Ratio of Deaths to Cases recorded. Per Cent.
El Mūsī ... ..	24,688	1	0.040	0	—	—
Bab el Sha'riya... ..	63,296	7	0.110	2	0.031	28.5
El Ezbekeya ... ..	52,166	3	0.057	0	—	—
'Abdīn ... ..	59,792	4	0.066	0	—	—
El Sayeda Zeinab ... ..	72,840	8	0.109	3	0.041	37.5
El Khalifa ... ..	60,386	3	0.049	1	0.016	33.3
Helwān ... ..	8,568	5	0.583	1	0.116	20.0
El Darb el Ahmar ... ..	75,230	7	0.093	1	0.013	14.2
El Gamāliya ... ..	66,178	5	0.075	0	—	—
Shubra ... ..	54,765	3	0.054	0	—	—
Būlāq ... ..	100,422	5	0.049	3	0.029	60.0
Old Cairo ... ..	35,252	0	—	0	—	—
El Wāyli ... ..	59,840	8	0.133	1	0.016	12.5
TOTALS FOR CAIRO ... ..	733,423	59	0.080	12	0.016	20.3

No cases occurred in Old Cairo. Of the other districts, excluding Helwān for the general reasons already given, the highest district morbidity rate occurred in El Wāyli with 0.133 cases per thousand of population. The lowest was in El Mūsī with 0.040 per thousand.

In six of the districts no deaths were recorded. Of those in which deaths occurred, the highest death-rate from this cause, exclusive of Helwān, was in El Sayeda Zeinab with 0.041 per thousand living, whilst the lowest was in El Darb el Ahmar with 0.013 per thousand.



In Bûlâq, a ratio of deaths to cases recorded of 60·0 per cent suggested considerable concealment of cases. In El Wâyli and El Darb el Ahmar, with ratios of 12·5 per cent and 14·2 per cent respectively, the position as regards this was more satisfactory.

The ratio of deaths to cases recorded for the whole city was 20·3 per cent as compared with 18·4 per cent in 1914, 18·1 per cent in 1913, and 23·5 per cent in 1912.

In Table XXI are given the figures and rates of the district cases and deaths and the ratios of deaths to cases recorded, whilst in Figure 9 the district morbidity and death-rates are shown in diagrammatic form. In Chart XI is shown the weekly occurrence of cases in comparison with the previous three years.

In my report for the previous year I entered at some length on the reasons upon which was based a decision in 1914 to include chicken-pox in the smallpox records. In a year such as that, which was characterized by an extensive epidemic of smallpox, the proportion of cases wrongly reported as chicken-pox was found to be so extremely large that the inclusion of the small number rightly so diagnosed amongst the smallpox figures had little material effect on these.

In 1915, however, no undue prevalence of the graver disease occurred and there was nothing to indicate that any of the 143 cases notified as chicken-pox in 1915 were other than as labelled.

The necessity therefore of bracketing the two diseases for the purpose of obtaining some reflection of the actual smallpox position did not arise in this year as in the last.

As, however, the notification of smallpox cases as cases of chicken-pox, for the purpose of evading hospital isolation, is likely again to complicate matters whenever an undue prevalence of the former disease renders the control of individual diagnosis difficult, it has been thought advisable to chart the relative weekly prevalence of the two diseases in a year such as this, when a control of diagnosis is feasible, with the object of obtaining some record of the seasonal prevalences of each of the diseases upon which to base some control of the probabilities of diagnosis, if such is possible in this way.

This has been done in Chart XII, where the weekly totals of cases of each of the diseases is shown for comparison.

The general tendency seems to be for an earlier occurrence of chicken-pox, though this is not brought out clearly in the chart for this year. It is hoped, however, that a series of such charts made up in those years when a small prevalence permits of some control of diagnosis may furnish in the future some useful information, and it is with this object that the chart of the two diseases in 1915 is here included.

*Cerebro-Spinal Fever.*—The incidence of this disease in 1915 was lower than in any year since I have been in charge of Cairo, the total number of cases recorded being only fifty-three, with twenty-six deaths, giving a ratio of deaths to cases recorded of 49·05

TABLE XXII.—Cerebro-spinal Fever Case and Death Rates in Cairo Districts in 1915.

DISTRICT.	Population.	Number of Cases recorded.	Cases recorded per 1,000 of Population.	Number of Deaths.	Death-rate per 1,000 of Population.	Ratio of Deaths to Cases recorded. Per Cent.
El Mûsky ... ..	24,688	3	0·121	1	0·040	33·3
Bab el Sha'riya... ..	63,296	2	0·031	1	0·015	50·0
El Ezbekiya ... ..	52,166	4	0·076	2	0·038	50·0
'Abdin ... ..	59,792	8	0·133	3	0·050	37·5
El Sayeda Zeinab ... ..	72,840	10	0·137	5	0·068	50·0
El Khalifa ... ..	60,386	2	0·033	—	—	—
Helwân ... ..	8,568	—	—	—	—	—
El Darb el Ahmar ... ..	75,230	5	0·066	2	0·026	40·0
El Gamâliya ... ..	66,178	2	0·030	2	0·030	100·0
Shubra ... ..	54,765	4	0·073	2	0·036	50·0
Bûlâq ... ..	100,422	8	0·079	5	0·049	62·5
Old Cairo ... ..	35,252	—	—	—	—	—
El Wâyli ... ..	59,840	5	0·083	3	0·050	60·0
TOTALS FOR CAIRO ... ..	733,423	53	0·072	26	0·035	49·5



per cent as compared with 45·8 per cent in 1914, 28·2 per cent in 1913, and 32·8 per cent in 1912. The morbidity rate per thousand of population was 0·072 and the death-rate 0·035, as compared with morbidity and death-rates of 0·201 and 0·092 respectively in 1914, 0·212 and 0·060 in 1913 and 0·099 and 0·032 in 1912.

The highest district incidences occurred in El Sayeda Zeinab and 'Abdîn, with morbidity rates of 0·137 and 0·133 respectively; the lowest was in El Gamâliya, with a rate of 0·030 per thousand of population.

The highest death-rate per thousand living was in El Sayeda Zeinab with 0·068, whilst the lowest in the districts in which deaths occurred was in Bâb el Sha'riya, with 0·015 per thousand of population.

No cases occurred in Helwân and none were recorded in Old Cairo, whilst, in addition to these districts, no deaths were reported from El Khalifa.

The highest ratio of deaths to cases recorded was in El Gamâliya district with 100 per cent; the lowest was in El Mûsky with 33·3 per cent.

The majority of the cases occurred in March, April and the beginning of May.

The figures of the district cases and deaths are given in Table XXII with the rates of each, whilst the latter are shown in Figure 10 in diagrammatic form. Chart XIII shows the weekly totals of cases in comparison with those of the three previous years.

*Scarlet Fever.*—Only thirty-seven cases of scarlet fever were recorded in 1915, giving a morbidity rate of 0·050 per thousand of population as compared with 0·135 per thousand in 1914, 0·233 per thousand in 1913, and 0·151 per thousand in 1912.

Of the thirty-seven cases, seven died, giving a death-rate for this disease, in 1915, of 0·009 as compared with 0·012 in 1914, 0·037 in 1913, and 0·032 in 1912.

The ratio of deaths to cases recorded was 18·9 per cent.

The disease principally occurred in El Ezbekiya, El Khalifa, and El Wâyli districts, which provided about two-thirds of the cases recorded, the morbidity rate in these three districts being 0·230, 0·115, and 0·100 respectively per thousand of population.

TABLE XXIII.—Scarlet Fever Case and Death Rates in Cairo Districts in 1915.

DISTRICT.	Population.	Number of Cases recorded.	Cases recorded per 1,000 of Population.	Number of Deaths.	Death-rate per 1,000 of Population.	Ratio of Deaths to Cases recorded. Per Cent.
El Mûski ... ..	24,688	2	0·081	—	—	—
Bab el Sha'riya... ..	63,296	—	—	—	—	—
El Ezbekiya ... ..	52,166	12	0·230	2	0·038	16·6
'Abdîn ... ..	59,722	1	0·016	1	0·016	100·0
El Sayeda Zeinab ... ..	72,840	—	—	—	—	—
El Khalifa... ..	60,386	7	0·115	—	—	—
Helwân ... ..	8,568	—	—	—	—	—
El Darb el Ahmar ... ..	75,230	1	0·013	—	—	—
El Gamâliya ... ..	66,178	3	0·045	2	0·030	66·6
Shubra ... ..	54,765	2	0·036	—	—	—
Bûlâq ... ..	100,422	2	0·019	—	—	—
Old Cairo ... ..	35,252	1	0·028	1	0·028	100·0
El Wâyli ... ..	59,840	6	0·100	—	0·016	16·6
TOTALS FOR CAIRO ... ..	733,423	37	0·050	7	0·009	18·9

No cases were reported from Bab el Sha'riya, El Sayeda Zeinab, and Helwân districts, and in addition to these three districts, in El Mûski, El Khalifa, El Darb el Ahmar, Shubra, and Bûlâq no deaths occurred.

The district with the lowest incidence of those in which the disease occurred was El Darb el Ahmar with 0·013 cases per thousand of population.

The highest district death-rate recorded was in El Ezbekiya, with a rate of 0·038 per thousand of population. The lowest death-rate, exclusive of those districts in which no deaths occurred, were in 'Abdîn and El Wâyli, with 0·016 deaths per thousand living in each.



The ratio of deaths to cases recorded was highest in 'Abdin and Old Cairo, each with 100 per cent resulting from the death of the single case reported from each. The lowest ratios were in El Ezbekiya and El Wāyli with 16·6 per cent. The disease, as reported, was almost entirely confined to Europeans.

In Table XXIII are shown the cases and deaths occurring in each district, with their morbidity and death-rates and ratios of deaths to cases recorded, whilst these rates are shown in diagrammatic form in Figure 10. Chart XIV shows the weekly totals of cases reported in comparison with those of the preceding three years.

*Puerperal Fever.*—During 1915, there were eighty-five deaths recorded from puerperal fever. Of these, eighty-one were deaths of Egyptian women and four of European.

These eighty-five deaths give a death-rate of 0·115 per thousand of population, as compared with 0·066 per thousand in 1914, and 0·103 per thousand in 1913.

Calculated on the number of births the maternal death-rate from this cause per thousand births was 2·839 as compared with 1·532 in 1914 and 2·34 in 1913.

Considering the parturition conditions in this country amongst the lower classes, these rates are remarkably low and compare very favourably with countries where the conditions are much more advantageous.

In addition to the eighty-five deaths actually certified as from puerperal fever, thirty-two deaths of parturient women were noted as occurring within a period of fifteen days after confinement. The causes of deaths assigned in these cases were hæmorrhage eight, tuberculosis two, dysentery one, ruptured uterus one, difficult labour three, heart disease one, adherent placenta one, typhus one, typhoid three, uræmia one, nephritis one, abortion three, peritonitis one, and eclampsia five. Possibly some of those cases ought rightly to have been certified as puerperal fever, but even if we include them all with the eighty-five deaths actually reported as from that cause, the total of 117 deaths only gives a rate for deaths in connection with parturition of 0·159 per thousand of population, or a maternal death-rate per thousand births of 3·903, a result which must be rather surprising to any one aware of the circumstances surrounding parturition amongst the lower classes in this country.

#### (b) IN 1916.

The unsatisfactory zymotic position in 1915, which resulted largely from the extensive outbreak of the unidentified fever already mentioned, was not reproduced to the same extent in 1916, when the total number of cases of notifiable diseases which were reported was 7,427 as against the 11,422 cases in 1915.

Deducting from the latter total the 3,303 cases of the unidentified fever of 1915 as peculiar to that year and consequently incomparable with anything in 1916, we arrive at a numerical residue of 8,119 cases of the ordinarily notifiable diseases in 1915 to be set against the 7,427 cases in 1916.

Both of these totals, however, contain cases not properly appertaining to the city, but consisting of cases of military or extra-urban origin, which must be deducted before we arrive at the city figures proper.

The number of such cases, to be subtracted from the total in 1915, was, as already mentioned, 1,966, composed of 1,818 of military and 148 of extra-urban origin.

In 1916 the number to be deducted for this reason was less, as all notification and registration of individual military cases had been stopped during the year owing to the uncertain transmission of the military notifications, and the fact that the unit of the military registration area did not coincide with our own.

No entries of military cases were therefore made in our registers in 1916, a sufficient record of the infectious incidence in the Army, as far as it was likely to concern us, being supplied by the filing of weekly district returns of infectious disease supplied by the military authorities.

To be deducted therefore from the 7,427 total of 1916 are only 244 cases, coming from outside the city boundary, mostly for treatment in various city hospitals.

This leaves the number of cases actually belonging to Cairo recorded in 1916 as 7,183, compared with the 6,153 Cairo cases of the ordinarily notifiable diseases in 1915.

As has already been explained, however, it has been found in the past more satisfactory to base interannual comparisons on the figures of the eight principal notifiable diseases, viz.: smallpox, measles, scarlet fever, diphtheria, typhoid, typhus, relapsing fever, and



cerebro-spinal meningitis, and to exclude the other notifiable diseases either on account of their numerical unimportance or of a symptomatic triviality resulting in unsatisfactory notification.

Omitting therefore 412 cases, composed chiefly of whooping-cough, chicken-pox, and mumps, 6,771 cases of the eight principal notifiable diseases were recorded in Cairo in 1916 as against 5,744 in the previous year. As compared with 1915, therefore, the present year shows an increase of 1,027 cases recorded of the eight principal notifiable diseases.

In Table IX are shown the annual figures for the quinquennial period 1912-1916, and it is interesting, in this connection, to observe the steady, continuous increase in the annual cases recorded in the five years during which the arrangements for increased control have been in operation. As regards this, it is to be noted that, from the nature of the problems involved, in a city such as this a certain amount of caution had to be observed in the beginning in the application of the new measures of control, whilst inherent difficulties from the lack of trained staff rendered the efficiency of the machinery employed a matter of gradual growth.

It was not therefore to be expected that any revolutionary results were likely to accrue at once, and in 1912, the year of the inception of the new arrangements, only 2,841 cases of the eight principal infectious diseases were recorded, a total only slightly greater than that of the years antecedent to the application of the measures in question.

Since then, however, each year has shown a gradual and constant rise as compared with that of the previous year.

Thus 1913, with its 3,955 cases recorded, showed an increase of 39.2 per cent as compared with 1912; 1914 with its 4,378 cases recorded gave an increase of 23.3 per cent over 1913; the 5,744 cases in 1915 were an increase of 17.7 per cent over 1914, whilst the 1916 total of 6,771 was 17.8 per cent in advance of 1915.

In other words, coincident with the new control there has been an increase of roughly 1,000 cases recorded in each year of its operation as compared with the previous year, so that in effect 1916 gave a total of 6,833 cases of the eight principal infectious diseases recorded as compared with 2,841, the figure for 1912, a result which, I think, may reasonably be attributed, at least in large part, to greater control under the new arrangement.

This increased efficiency of control, however, has tended to raise increasing difficulty in making exact interannual comparisons as regards the actualities of zymotic incidence in the various years, inasmuch as it has been impossible to state in any definite terms to what extent the increased number of cases recorded in any year can be claimed as due to the increased efficiency of control, and to what extent these may be influenced by an actual increase in the number of cases occurring.

This question has been gone into in some detail in previous reports, and in the first three years of the operation of the new arrangements, supporting evidence of the increase being due to a greater discovery of cases was to be found in the progressive decrease in the ratio of deaths to cases recorded.

The widespread epidemic of the unidentified fever, in 1915, however, by necessitating a more extensive and stringent application of preventive measures throughout the city than had hitherto been called for, led to a more general active concealment of cases than had occurred in any of the previous years, and this factor not only materially affected those ratios, in 1915, in the direction of an exceptional increase, but further complicated the question by continuing to exert its influence on the figures of the present year to an extent which rendered such ratios in 1916, similarly, of little utility as a guide to relative efficiency of control.

The manner in which this result has been brought about has already been discussed in detail, and it has been shown in the course of this that the general tendency of any increased control of infectious disease is to result in an increase in the infectious deaths recorded, from the fact that every fatal infectious case discovered and diagnosed during life is a case from which the possibility of a missed diagnosis after death is excluded.

The bearing of this influence on different infectious diseases has already been fully examined in this as well as in previous reports, and it will be sufficient to refer here briefly to the fact that the greatest influence in this direction is to be expected in the case of those diseases which present no obvious characteristic appearances after death upon which to base a reasonable probability of diagnosis.

It might be thought that the results of the missed post-mortem diagnosis of infectious disease were likely to be, at least to a large extent, compensated for by occasional erroneous



inclusion of non-infectious deaths. This, however, does not take place to any extent. Once a death is labelled as infectious, the necessity of applying the necessary preventive measures arises, and it is therefore unjustifiable to attribute to any dubious death an infectious cause unless reasonable grounds for so doing exist.

An infectious diagnosis, therefore, can be warranted, in practice, only in those indeterminate cases of death when attendant circumstances definitely point to this, with the result that errors in the direction of missed diagnosis are unlikely ever to be compensated for by the mistaken inclusions of non-infectious deaths in the infectious returns.

The progressive annual increase in the general zymotic deaths recorded since 1912 has been largely supplied by an increased number of deaths recorded from just those diseases most likely to be influenced in this way, and to whatever extent the increase may, or may not, have been due to a true increase in the actual number of deaths, the figures must have been markedly influenced in the manner described.

In considering therefore the question of the extent to which the death figures are likely to have been influenced purely by variations of incidence, little guidance is now to be obtained from the comparative ratios of deaths to cases registered.

Moreover, in 1916, certain circumstances resulting from increased control, hitherto of slow growth, obtained, a fuller influence in that year and exerted a considerable effect in increasing the proportion of deaths to recorded cases.

In the beginning, every case recorded during life might be expected to have a normal chance of living. This, however, is not now the case, and it will be well to consider in detail the influences which have contributed to this result.

Previous to 1912, I am of the opinion that there was in Cairo no very clear recognition in the minds of the bulk of the populace that the State might, as a general rule, desire to intervene more actively in any one group of diseases than in any other, unless when, at long intervals, an outbreak of some vexatious type such as cholera seemed to upset the established order of things. It was recognized, it is true, that, here and there, even in ordinary times, occasional cases of sickness were removed to hospital and disinfection of their quarters carried out, but these were too irregular and appeared too accidental to convey any suggestion other than that the action taken was the result of an officious interference, certainly unfortunate, but of too rare an occurrence to call for consideration in the ordinary scheme of life.

Individuals, therefore, became ill, and ultimately recovered or died, without any idea being raised that the event might be of moment to anyone other than the immediate associates of the sick person.

There was no extensive publicity given to the occurrence of illness; on the other hand there were no great attempt at concealment.

This was, however, merely the result of the apathy of ignorance.

The initial application of more rigid supervision did not at first materially affect this indifference, but as time went on and as the increasing number of cases dealt with began to advertise the existence of an infectious disease control, its effect began to be seen in a more active concealment of cases.

This result was at first, to some extent, neutralized by a correspondingly increased receipt of information from neighbours as a result of the more general perception of the necessity of notification and was not sufficiently large to interfere with an increased discovery of cases which manifested itself in the progressive and marked reduction in the ratio of deaths to cases recorded in the first three years.

With the advent, however, of the excessive zymotic prevalence in 1915, systematic attempts at concealment to an extent not previously experienced began to manifest themselves, and had finally to be met by a more active application of the penal section of the law.

This eventually resulted in a more general popular recognition of the legal dangers of concealment, but did not go further than suggest the inadvisability of failure to notify cases when likely to be discovered.

The effect of this, which began to be recognized towards the end of 1915, has continued to influence the recorded figures and to show itself in a tendency towards the attainment of fuller information regarding cases in a moribund and semi-moribund condition, and therefore threatening detection through death, than is to be obtained of those presenting greater hopes of recovery.



This has affected the ratios of deaths to cases recorded in the direction of increase to such an extent as to render these still more useless now as a guide in the estimation of the extent of the improvement in the detection of cases and has moreover evolved a situation suggesting the desirability of a less extensive use of the powers of hospital isolation for the present in such cases, since the condition of many of these is such as to leave little hope of recovery, and their removal to hospital is likely therefore to increase the proportion of fatal results amongst hospital cases to such an extent as to add greatly to the existing popular prejudice against hospital treatment.

Under the circumstances already described, it is not proposed to enter into any detailed comparison of the zymotic figures in 1916 with those of previous years, with the object of arriving at some idea of the relative extent to which the increase in this year may be claimed to have resulted from an increased discovery of cases and of the extent to which the possible occurrence of an increased incidence may have contributed to this. It may, however, be put on record that there was nothing in 1916 to lead the staff engaged in the control of infectious disease to believe that the augmentation in the number of cases recorded was other than might justly be attributed to an increased detection of disease.

With the completion, in 1916, of the first quinquennial period since the institution of the special service in Cairo for dealing with infectious disease, it may be of interest to compare, to some extent, the zymotic position of this city, as shown by the death figures in 1916, with that of London, as given in the recently published annual report for 1915, issued by the Registrar-General for England and Wales. This comparison can only be based, however, on the figures for what we consider the eight principal notifiable diseases, since these are the only zymotic figures, as regards Cairo, open to sufficient control to permit of their admission to any extent as an approximate reflection of the actual position, and is therefore subject to certain reservations as an indication of the relative zymotic positions in view of the complex differences of the conditions in the two cities.

TABLE XXIV.—Zymotic Case and Death Rates in Cairo District in 1916.

DISTRICT.	Population.	Number of Cases recorded.	Cases recorded per 1,000 of Population.	Number of Deaths.	Death-rate per 1,000 of Population.	Ratio of Deaths to Cases recorded. Per Cent.
El Mûski ... ..	24,909	247	9·916	70	2·810	28·3
Bâb el Sha'riya... ..	63,864	302	6·138	184	2·881	46·9
El Ezbekiya ... ..	52,634	570	10·829	135	2·564	23·6
'Abdin ... ..	60,328	579	9·597	161	2·668	27·8
El Sayeda Zeinab ... ..	73,493	742	10·096	374	5·088	50·4
El Khalifa... ..	60,927	408	6·696	189	3·002	46·3
Helwân ... ..	8,645	189	21·862	40	4·626	21·1
El Darb el Ahmar ... ..	75,905	901	11·870	437	5·757	48·5
El Gamâliya ... ..	66,771	474	7·098	242	3·624	51·0
Shubra ... ..	55,256	548	9·917	193	3·492	35·2
Bûlâq ... ..	101,323	782	7·717	401	3·957	51·2
Old Cairo ... ..	35,568	374	10·515	232	6·522	62·0
El Wâyli ... ..	60,377	565	9·357	178	2·948	31·5
TOTALS FOR CAIRO ... ..	740,000	6,771	9·150	2,836	3·832	41·8



The figures of the Registrar-General are expressed in rates per million of the population, fractions above 0.5 being considered as one, and below as zero. During 1915, in London three deaths occurred from smallpox, recorded as a death-rate of one per million living; 2,286 were attributed to measles, giving a rate of 530 per million; 327 to scarlet fever, with a rate of 75 per million; 703 to diphtheria, with a rate of 163; 104 to typhoid, with a rate of 24; 2 resulted from typhus, recorded as a death-rate of zero; whilst there were 361 deaths from cerebro-spinal fever (including deaths from posterior basal meningitis), giving a rate of 83 per million living. There were no deaths from relapsing fever.

These eight diseases therefore contributed a total of 3,786 deaths, which, calculated on an estimated population of 4,310,030, gives a death-rate for London of 878 per million living for this group of diseases, as compared with a rate of 3,832 per million for Cairo.

With the exception of scarlet fever and cerebro-spinal fever, the death-rates for the individual diseases of this group were considerably in excess of those for London, the great preponderance of the total rate for Cairo being chiefly contributed to by the large number of typhoid and typhus deaths in that city, a position which is bound to continue to some extent until the evolution of circumstances will have raised the conditions of life in Cairo to a standard more comparable with that obtaining in cities longer subjected to the influences of sanitary control.

Such comparisons must not be considered as supplying anything more than a numerical confirmation of the position we already know to exist, and are not to be accounted as possible evidence of the relative consideration given to the question in the two cases.

The fullest application of every possible practical measure, under the present conditions in this country, could not be expected to give any more than a very partial result, and as a matter of fact, for the comparatively small effect produced, probably more thought and energy are expended in a country such as this than is necessary in one longer accustomed to the application of sanitary rules.

As has already been exemplified, the application of any fresh measure is so likely to set up some form of reaction, tending largely to militate against its efficiency, that a very careful consideration must be given in every case to the question of its value and expediency before it is brought into any general use.

This position to a great extent depends on the ignorance of the larger bulk of the population, rendering its constituent elements conservative to a degree which induces them to view with suspicion, and therefore to oppose, every course of action new to their experience.

The matter is therefore largely one of education and training, and as regards this, though it would be scarcely justifiable to claim any great advance in this direction during the five years in which a more systematic infectious control has been in operation in this city, I think there are sufficient indications to show that some effect has been produced, and that custom and careful application have converted in many cases an original tendency to active opposition into a somewhat unwilling acquiescence.

In Table XXIV are given the zymotic rates for 1916 in the different districts, with their morbidity and death-rates per thousand of population and the ratios of deaths to cases recorded in each, whilst in Figure 12 the district morbidity and death-rates are shown in a diagrammatic form. The district case and death figures for the various diseases separately are shown in Table XXV, whilst the total for each disease with their rates are shown in Table IX in comparison with those of the four previous years.



TABLE XXV.—District Distributions of Zymotic Disease in 1916.

DISTRICT.	SMALLPOX.		RELAPSING.		MENINGITIS.		TYPHUS.		TYPHOID.		SCARLET FEVER.		DIPHTHERIA.		MEASLES.		TOTALS.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
El Muski ... ..	10	2	36	0	0	0	62	22	64	21	2	0	32	13	41	12	249	70
Bâb el Sha'riya ... ..	29	13	68	4	0	0	123	75	95	46	1	0	41	18	35	28	392	184
El Ezbekeya ... ..	48	16	93	4	2	1	62	32	142	35	14	1	95	28	114	18	570	135
'Abdin... ..	62	32	55	1	3	3	76	23	159	65	13	0	85	25	126	12	579	161
El Sayeda Zeinab ... ..	15	2	63	3	4	4	292	193	113	43	4	0	74	34	177	95	742	374
El Khalifa... ..	4	3	97	13	2	1	127	76	65	26	2	0	59	36	52	34	408	189
Helwân ... ..	0	0	57	0	0	0	67	33	43	3	0	0	15	4	7	0	189	40
El Darb el Ahmar... ..	13	3	178	1	5	3	250	119	180	110	1	0	102	59	172	142	901	437
El Gamâliya ... ..	3	1	76	0	2	1	232	162	73	30	2	1	40	21	46	26	474	242
Shubra ... ..	27	8	47	0	2	2	53	19	151	57	1	0	104	29	163	78	548	193
Belâq ... ..	36	14	116	13	1	0	276	194	134	71	2	0	84	38	133	71	782	401
Old Cairo ... ..	8	3	51	13	5	5	118	59	113	86	0	0	20	11	59	55	374	232
El Wâyli ... ..	22	6	98	7	7	3	120	68	130	39	6	0	85	19	97	36	565	178
TOTALS FOR CAIRO ... ..	277	103	1,035	59	33	23	1,858	1,075	1,462	632	48	2	836	335	1,222	607	6,771	2,836
Extra-urban Admissions to Hospitals ... ..	7	1	92	4	2	2	91	13	40	11	0	0	6	2	6	0	244	33
TOTAL ... ..	284	104	1,127	63	35	25	1,949	1,088	1,502	643	48	2	842	337	1,228	607	7,015	2,869



*Typhoid Fever.*—In 1916 there were 1,462 cases of typhoid fever recorded in Cairo, as against 2,378 in 1915. The 1916 morbidity rate from this disease was therefore 1·975 per thousand of population as compared with 3·242 in the previous year.

There were 632 deaths recorded from this cause, the death-rate in 1916 being therefore 0·854 per thousand living as against a rate of 1·379 in 1915.

TABLE XXVI.—Typhoid Fever Case and Death Rates in Cairo Districts in 1916.

DISTRICT.	Population.	Number of Cases recorded.	Cases recorded per 1,000 of Population.	Number of Deaths.	Death-rate per 1,000 of Population.	Ratio of Deaths to Cases recorded. Per Cent.
El Mûski ... ..	24,909	64	2·569	21	0·843	32·8
Bâb el Sha'riya ... ..	63,864	95	1·487	46	0·720	48·4
El Ezbekiya ... ..	52,634	142	2·697	35	0·664	24·6
Abdin ... ..	60,328	159	2·635	65	1·077	40·8
El Sayeda Zeinab ... ..	73,493	113	1·536	43	0·585	38·05
El Khalifa... ..	60,927	65	1·066	26	0·426	40·0
Helwân ... ..	8,645	43	4·973	3	0·347	6·9
El Darb el Ahmar... ..	75,905	180	2·371	110	1·449	61·1
El Gamâliya ... ..	66,771	73	1·093	30	0·449	41·09
Shubra ... ..	55,256	151	2·732	57	1·031	37·7
Bûlâq ... ..	101,323	134	1·322	71	0·700	52·9
Old Cairo ... ..	35,568	113	3·177	86	2·417	76·1
El Wâyli ... ..	60,377	130	2·153	39	0·645	30·0
TOTALS FOR CAIRO ... ..	740,000	1,462	1·975	632	0·854	43·2

For the quinquennial period ending with the present year, the morbidity and death-rates of 1916 are only exceeded by those of the previous year, though the morbidity rate in 1914 closely approximates that of 1916 (*see* Table IX). The increase is almost entirely to be attributed to a better discovery of cases, in spite of the contra-indication furnished by the high rate of 43·2 per cent of deaths to cases recorded, as a result of circumstances which have already been fully entered into.

The highest district morbidity rate was recorded in Helwân, with 4·973 cases per thousand of population. This position, however, was almost entirely due to the circumstances already mentioned regarding this district, and is not therefore to be taken as indicating an undue prevalence of the disease.

Next to Helwân the highest morbidity rate was in Old Cairo, with 3·177 per thousand of population. This district also provided the highest death-rate for this disease, the eighty-six typhoid deaths recorded in the area giving a death-rate of 2·417 per thousand living.

If reference be made to the description of the disease for 1915 it will be seen that, in that year, Old Cairo, of all the other districts, showed the lowest morbidity rate and one of the lowest death-rates. This position was almost certainly entirely fictitious, and was undoubtedly due chiefly to a concealment of large numbers of cases.

An increased discovery of cases in the present year furnishes, in large part, the explanation of the altered position in which this district finds itself in 1916, not only with regard to typhoid fever but to typhus and relapsing fever as well.

The ratio of deaths to cases recorded, however, would seem to indicate actually a somewhat more unsatisfactory position as regards the discovery of cases in 1916 than in 1915, but this is to be attributed largely to the fact that Old Cairo in 1916 was under those influences already described as tending to a relatively greater detection of the almost moribund than of the less serious cases.

The lowest morbidity rate, 1·066 per thousand of population, was recorded in El Khalifa, which last year, with the exception of Helwân, showed the highest.

A comparison of the figures and tables for the two years will show a general tendency in this direction, those districts showing a high morbidity rate in 1915 having a correspondingly low one in 1916, and *vice-versâ*.



This result is possibly to be explained by the greater diminution of the susceptible elements of the districts most affected in 1915.

The lowest death-rate was in Helwân, with 0.347 per thousand living.

For the reasons already given, the weight to be attached to the ratios of deaths to cases recorded as indices of relative case detection has been so modified by the comparatively greater increase in the discovery of cases likely to prove fatal, that its value is somewhat problematical in diseases such as typhoid, typhus, and relapsing fevers, where the post-mortem external appearances present no obvious characteristics.

They have been given, however, for what they are worth.

Helwân presented the lowest ratio with 6.9 per cent of deaths. The highest ratio occurred in Old Cairo with 76.1 per cent, and next to it was El Darb el Ahmar with 61.1 per cent, both of which are greatly in excess of the ratio of 43.2 per cent for the whole city.

In Table XXVI are given the typhoid fever deaths and cases for the various districts of the city, with the morbidity and death-rates and ratios of deaths to cases recorded in each. The comparative morbidity and death rates for the various districts are shown in Figure 13 in diagrammatic form.

In Chart XV are given the weekly totals of cases recorded during the year, but a difference has been made in this, as well as in all the other charts in 1916, by a change in the nature of the curves, shown for comparison.

Hitherto the comparison has been made with the actual curves of previous years. In this year, which begins the second quinquennial period in which such charts have been kept, the actual totals in each week of the year are shown in comparison with the maximum and the minimum totals which have occurred in each corresponding week during the quinquennial period ending with 1915, together with the mean weekly occurrence of cases during that period.

Thus, for the quinquennial period in question, the number of cases in the first week of the various years were three in 1911, seven in 1912 and 1913, nine in 1914, and nineteen in 1915. The minimum number of cases therefore recorded in the first week of any of the years during this period was three, the maximum was nineteen, and the mean of the five years was nine, and these are the figures advanced in the three curves for comparison with those of the present year.

From the chart it will be seen that the recorded incidence in the first part of 1916 closely approximated in each week the mean occurrence of the previous five years. In May, June, July, and August it was considerably higher than this mean, closely coinciding with the quinquennial maxima during these months. For the remainder of the year it roughly corresponded to, or was even somewhat below, the mean figures. The height of the prevalence was somewhat later than usual, the acme of the curve occurring in May.

*Typhus Fever.*—During 1916, 1,858 cases of typhus fever were recorded in the city, giving a morbidity rate of 2.510 per thousand of population, as compared with a total of 1,112 cases and a morbidity rate of 1.516 in 1915.

Of the cases recorded, 1,075 died, giving a death-rate of 1.452, as compared with a total of 718 deaths, and a death-rate of 0.978 in 1915. The ratio of deaths to cases recorded in 1916 was 57.8 per cent, which was somewhat lower than the 64.6 per cent of 1915. Both ratios, however, have been subject to the influences already described, and it is to be remembered, in connection therewith, that typhus fever is one of the diseases most likely to be affected thereby.

The district with the highest morbidity rate was Helwân, with 7.750 cases per thousand of population. The highest death-rate also occurred in this qism, with 3.817 per thousand. These figures, however, like others appertaining to this qism, for the reasons already given, scarcely furnish a basis of comparison with the other districts of the city.

Excluding Helwân, the highest morbidity rate was in El Sayeda Zeinab with 3.973 cases per thousand inhabitants. The lowest was in Shubra, with 0.959 cases per thousand.

Again excluding Helwân, the highest death-rate occurred in El Sayeda Zeinab with 2.626 deaths per thousand of population. The lowest was in Shubra with 0.343 per thousand living. Excluding El Gamâliya, the figures for which, as have been shown, were unreliable in 1915, a comparison of the positions of the various districts as regards this disease shows that relatively this was much the same, El Darb el Ahmar being the only district showing a marked advance in the number of cases relatively to the other districts. This is well brought out by a comparison of the Figures showing diagrammatically the relative inter-district comparison in the two years.



The highest ratio of deaths to cases recorded was in Bûlâq, with 70·2 per cent of deaths. The lowest was in 'Abdîn, with 30·2 per cent.

TABLE XXVII.—Typhus Fever Case and Death Rates in Cairo Districts in 1916.

DISTRICT.	Population.	Number of Cases recorded.	Cases recorded per 1,000 of Population.	Number of Deaths.	Death-rate per 1,000 of Population.	Ratio of Deaths to Cases recorded. Per Cent.
El Mûski ... ..	24,909	62	2·489	22	0·832	35·4
Bâb el Sha'riya... ..	63,864	123	1·925	75	1·174	60·9
El Ezbekiya ... ..	52,634	62	1·117	32	0·607	51·6
'Abdîn... ..	60,328	76	1·259	23	0·381	30·2
El Sayeda Zeinab ... ..	73,493	292	3·973	193	2·626	66·09
El Khalifa ... ..	60,927	127	2·084	76	1·247	59·8
Helwân ... ..	8,645	67	7·750	33	3·817	49·2
El Darb el Ahmar ... ..	75,905	250	3·293	119	1·567	47·6
El Gamâliya ... ..	66,771	232	3·474	162	2·426	69·8
Shubra ... ..	55,256	53	0·959	19	0·343	35·8
Bûlâq ... ..	101,323	276	2·723	194	1·914	70·2
Old Cairo ... ..	35,568	118	3·317	59	1·658	50·0
El Wâyli ... ..	60,377	120	1·987	68	1·126	56·6
TOTALS FOR CAIRO ... ..	740,000	1,858	2·510	1,075	1·452	57·8

In Table XXVII are given the district case and death totals with their morbidity and death rates and ratios of deaths to cases recorded. The interdistrict comparison of the morbidity and death rates is shown diagrammatically in Figure 14, whilst the weekly incidence is shown in Chart XVI in comparison with the weekly maximum, minimum, and mean figures of the previous five years. From this it will be seen that in 1916 the seasonal prevalence began earlier and reached its height before that of the previous five years. Up to the end of June the weekly prevalence was markedly above the maximum of the previous five years, whilst from this time on it roughly corresponded with that maximum. The acme of prevalence was recorded in May.

*Relapsing Fever.*—During 1916, 1,035 cases of relapsing fever were recorded in Cairo city, giving a morbidity rate of 1·398 per thousand population in 1916, as compared with a rate of 0·621 in the previous year. Of the cases occurring in 1916 there were fifty-nine deaths, giving a death-rate for this disease of 0·079 per thousand of population as compared with a death-rate of 0·024 in 1915.

The ratio of deaths to cases recorded was 5·7 per cent, as compared with 3·9 per cent of the previous year, but the smallness of the figures and the fact that the influences, already described as tending to an increase of this ratio, may have acted with varying effect in the two years renders any deductions based on their comparison open to objection.

With the exception of El Sayeda Zeinab, the general increase has affected all the districts, though in Shubra, 'Abdîn, El Ezbekiya, Mûsky and Old Cairo districts the relative increase in the morbidity rate is more marked than in the others. In El Sayeda Zeinab alone of all the districts is the recorded incidence smaller than that of last year, the morbidity rate of this district being 0·857 per thousand of population as compared with a rate of 1·506 in 1915.

The district showing the highest morbidity rate in 1916 was Helwân. Excluding, however, this district for the reasons already given, El Darb el Ahmar showed the highest morbidity rate, with 2·345 cases per thousand inhabitants.

The lowest morbidity rate was recorded in Shubra, with 0·850 cases recorded per thousand of population, but El Sayeda Zeinab, with a rate of 0·857, closely approximated this position.

The highest death-rate from this disease occurred in Old Cairo, with 0·365 deaths per thousand living.



Exclusive of the four districts in which no deaths took place, the lowest death-rates were recorded in El Darb el Ahmar with a rate of 0·013, and 'Abdin with a rate of 0·016 per thousand living. The individual district figures for this disease are, however, from their smallness, exposed considerably to the risks of accidental variations, and the possibilities of error from this source alone is so particularly great in the case of ratios of deaths to cases recorded as to render these statistically dangerous. Any comparison of them therefore would be of no value whatever, and the figures for this ratio have been merely entered in the table regarding relapsing fever as a record, and not for any interdistrict comparison. In Table XXVIII are given the district totals of cases and deaths recorded from relapsing fever with the morbidity and death-rates in each, whilst these rates are shown in diagrammatic form in Figure 15.

TABLE XXVIII.—Relapsing Fever Case and Death Rates in Cairo Districts in 1916.

DISTRICT.	Population.	Number of Cases recorded.	Cases recorded per 1,000 of Population.	Number of Deaths.	Death-rate per 1,000 of Population.	Ratio of Deaths to Cases recorded. Per Cent.
El Mûski ... ..	24,909	36	1·445	0	—	—
Bâb el Sha'riya ... ..	63,864	68	1·064	4	0·062	5·8
El Ezbekiya ... ..	52,634	93	1·767	4	0·075	4·3
'Abdin ... ..	60,328	55	0·911	1	0·016	1·8
El Sayeda Zeinab ... ..	73,493	63	0·857	3	0·040	4·7
El Khalifa... ..	60,927	97	1·592	13	0·213	13·4
Helwân ... ..	8,645	57	6·593	0	—	—
El Darb el Ahmar... ..	75,905	178	2·345	1	0·013	0·5
El Gamâliya ... ..	66,771	76	1·138	0	—	—
Shubra ... ..	55,256	47	0·850	0	—	—
Bûlâq ... ..	101,323	116	1·144	13	0·128	11·2
Old Cairo ... ..	35,568	51	1·433	13	0·365	25·4
El Wâyli ... ..	60,377	98	1·623	7	0·115	7·1
TOTALS FOR CAIRO... ..	740,000	1,035	1·398	59	0·079	5·7

Chart XVII shows the weekly totals of cases in 1916 in comparison with the maximum, minimum, and mean totals of the corresponding weeks for the quinquennial period 1911–1915. From this it will be seen that the curve of incidence in 1916 is considerably higher than the curve of maximum incidence in the preceding five years. The period of greatest incidence closely corresponded with that usually experienced, but the rise in prevalence began to show itself earlier than usual in 1916, beginning at the end of January instead of at the end of March.

*Diphtheria.*—There were 836 cases of diphtheria registered in Cairo city during 1916, with a morbidity rate of 1·129 cases per thousand inhabitants, as compared with a rate of 1·753 in 1915.

There were 335 deaths recorded from this disease, giving a death-rate of 0·452 per thousand living as compared with a rate of 0·629 in 1915.

The ratio of deaths to cases recorded was 40·07 per cent of deaths in 1916 as compared with 35·9 per cent in 1915.

The general reduction in the number of cases in 1916 has been distributed fairly evenly over all the districts, as will be seen from the comparison of Figures 7 and 16, with the exception of El Sayeda Zeinab, which has experienced a relatively larger reduction compared with the other districts.

The district with the highest morbidity rate was Shubra, with a rate of 1·882 cases per thousand of population. The lowest was in Old Cairo, with 0·562 recorded per thousand inhabitants.

The highest district death-rate from diphtheria occurred in El Darb el Ahmar, with 0·777 deaths per thousand living. The lowest was in El Bâb el Sha'riya, with 0·281 deaths per thousand of population.



TABLE XXIX.—Diphtheria Case and Death Rates in Cairo Districts in 1916.

DISTRICT.	Population.	Number of Cases recorded.	Cases recorded per 1,000 of Population.	Number of Deaths.	Death-rate per 1,000 of Population.	Ratio of Deaths to Cases recorded. Per Cent.
El Mûski ... ..	24,909	32	1·284	13	0·521	40·6
Bâb el Sha'riya... ..	63,864	41	0·641	18	0·281	43·9
El Ezbekiya ... ..	52,634	95	1·804	28	0·531	29·4
'Abdîn... ..	60,328	85	1·408	25	0·414	29·4
El Sayeda Zeinab ... ..	73,493	74	1·006	34	0·462	45·9
El Khalifa... ..	60,927	59	0·968	36	0·590	61·01
Helwân ... ..	8,645	15	1·735	4	0·462	26·6
El Darb el Ahmar ... ..	75,905	102	1·343	59	0·777	57·8
El Gamâliya ... ..	66,771	40	0·599	21	0·314	52·5
Shubra ... ..	55,256	104	1·882	29	0·524	27·8
Bûlâq ... ..	101,323	84	0·829	38	0·375	45·2
Old Cairo ... ..	35,568	20	0·562	11	0·309	55·0
El Wâyli ... ..	60,377	85	1·407	19	0·314	22·3
TOTALS FOR CAIRO ... ..	740,000	836	1·129	335	0·452	40·07

The highest ratio of deaths to cases recorded was given by El Khalifa with 61·01 per cent of deaths. The lowest ratio was in El Wâyli with 22·3 per cent of deaths.

In Table XXIX are given the district case and death totals and rates, and in Figure 16 the rates are shown in diagrammatic form.

In Chart XVIII the weekly prevalence is shown in comparison with the minimum, maximum, and mean weekly incidence for the five preceding years.

In the first quarter the curve of incidence in 1916 roughly corresponded with the mean, but for the remainder of the year it showed a tendency to be somewhat below the minimum for the preceding quinquennial period. The seasonal prevalence was as usual lowest in the spring and early summer, and reached its highest point about the beginning of November.

*Measles.*—During 1916, 1,222 cases of measles were recorded in Cairo, giving a morbidity rate of 1·651 per thousand of population as compared with 0·494 in 1915.

There were 607 deaths, giving a death-rate for this disease of 0·820 per thousand living as compared with a death-rate of 0·149 in 1915.

The ratio of deaths to recorded cases was 49·6 per cent as against 30·3 per cent in 1915.

The district which showed the highest morbidity rate was Shubra, with 2·949 cases recorded per thousand inhabitants. The lowest district morbidity rate was shown by El Bâb el Sha'riya with 0·548 cases per thousand of population.

El Darb el Ahmar had the highest death-rate recorded for this disease, with 1·870 deaths per thousand living.

The lowest was in 'Abdîn, with 0·198 deaths per thousand of inhabitants.

The ratio of deaths to cases recorded was highest in Old Cairo, with 93·2 per cent of deaths, indicating, in this district, a considerable number of unrecorded living cases.

This is probably the worst reported of all the eight principal infectious diseases, as may be seen from the ratio of deaths to cases recorded in all the districts.

The lowest ratio shown was in 'Abdîn, with 9·5 per cent of deaths to cases recorded.

The relative results recorded in the various districts are in fact more or less what might be expected. The comparative symptomatic mildness of this disease, together with the poverty and carelessness of the lower-class natives, render the general detection of living cases difficult apart from any active attempts at concealment, and the spontaneous ratio of deaths to cases recorded is, in this disease, probably less influenced by measures of control than is the case in any other disease, from the tendency amongst the more ignorant and unthinking sections of the community to view the disease generally less as an actual illness than as a mere passing indisposition.



TABLE XXX.—Measles Case and Death Rates in Cairo Districts in 1916.

DISTRICT.	Population.	Number of Cases recorded.	Cases recorded per 1,000 of Population.	Number of Deaths.	Death-rate per 1,000 of Population.	Ratio of Deaths to Cases recorded. Per Cent.
El Mûski ... ..	24,909	41	1·645	12	0·481	29·2
Bâb el Sha'riya ... ..	63,864	35	0·548	28	0·438	80·0
El Ezbekiya ... ..	52,634	114	2·165	18	0·341	15·7
'Abdin ... ..	60,328	126	2·088	12	0·198	9·5
El Sayeda Zeinab ... ..	73,493	177	2·408	95	1·292	53·6
El Khalifa... ..	60,927	52	0·853	34	0·558	65·3
Helwân ... ..	8,645	7	0·809	0	—	—
El Darb el Ahmar... ..	75,905	172	2·265	142	1·870	82·5
El Gamâliya ... ..	66,771	46	0·688	26	0·389	56·5
Shubra ... ..	55,256	163	2·949	78	1·411	47·8
Bûlâq ... ..	101,323	133	1·312	71	0·700	53·3
Old Cairo ... ..	35,568	59	1·658	55	1·546	92·2
El Wâyli ... ..	60,377	97	1·606	36	0·596	37·1
TOTALS FOR CAIRO ... ..	740,000	1,222	1·651	607	0·820	49·6

The comparative ratios therefore of deaths to cases of this disease recorded in the various districts may be taken as giving a rough guide to the relative character of each district with regard to its notification probabilities. In Table XXX are shown the district case and death totals, with the morbidity and death-rates in each, and the ratios of deaths to cases recorded. In Figure 17 the district morbidity and death-rates are shown diagrammatically. Chart XIX gives the weekly occurrence of cases in comparison with the weekly maximum, minimum, and mean incidences of the disease in the preceding five years.

For the first four months of the year the incidences roughly coincided or slightly exceeded the quinquennial mean. During May, June, and July it tended to exceed the maximum, and for the remainder of the year roughly coincided with this.

*Smallpox.*—In 1916 there were 277 cases of smallpox recorded in the city, giving a morbidity rate of 0·374 per thousand of population as compared with a rate of 0·080 per thousand in 1915. The number of deaths from this cause was 103, with a death-rate of 0·139 per thousand living as against a rate of 0·016 in 1915.

The highest district morbidity rate occurred in 'Abdin, with 1·027 cases per thousand inhabitants. The lowest was in El Gamâliya with a rate of 0·044 per thousand inhabitants. 'Abdin showed the highest death-rate, with 0·530 deaths per thousand living.

Exclusive of Helwân, in which no deaths occurred, the lowest death-rate was shown by El Gamâliya with 0·014 deaths per thousand living.

The general ratio of deaths to cases recorded in the whole city was 37·1 per cent of deaths. The highest ratio was shown by Bâb el Sha'riya with 44·8 per cent of deaths to cases recorded. The lowest was in El Sayeda Zeinab with 13·3 per cent.

In Table XXXI are given the case and death totals in the various districts, with the morbidity and death-rates and ratios of deaths to cases recorded in each, whilst the morbidity and death-rates for the various districts are shown in diagrammatic form in Figure 18.

Chart XX shows the weekly totals of cases in comparison with the weekly maximum, minimum and mean numbers of the preceding five years. From April to August the prevalence of the disease was above the quinquennial mean but below the maximum. The period of highest incidence occurred, as usual, in May.

During 1916, 162 cases were notified as chicken-pox. There was nothing to suggest that these were otherwise than reported, but in discussing the incidence of small-pox in 1915, reference was made to the possible utility of charting the relative seasonal prevalence of chicken-pox in comparison with that of small-pox, in years when a comparative paucity of cases permitted of some confirmation of the individual diagnoses, with the view of obtaining information as to possible differences of seasonal incidence such as might provide



TABLE XXXI.—Smallpox Case and Death Rates in Cairo Districts in 1916.

DISTRICT.	Population.	Number of Cases recorded.	Cases recorded per 1,000 of Population.	Number of Deaths.	Death-rate per 1,000 of Population.	Ratio of Deaths to Cases recorded. Per Cent.
El Mûski ... ..	24,909	10	0·401	2	0·080	20·0
Bâb el Sha'riya ... ..	63,864	29	0·454	13	0·203	44·8
El Ezbeikiya ... ..	52,634	48	0·911	16	0·303	33·3
'Abdin ... ..	60,328	62	1·027	32	0·530	51·6
El Sayeda Zeinab ... ..	73,493	15	0·204	2	0·027	13·3
El Khalifa ... ..	60,927	4	0·065	3	0·049	75·0
Helwân ... ..	8,645	0	—	0	—	—
El Darb el Ahmar ... ..	75,905	13	0·171	3	0·039	23·0
El Gamâliya ... ..	66,771	3	0·044	1	0·014	33·3
Shubra ... ..	55,256	27	0·488	8	0·144	29·6
Bûlâq ... ..	101,323	36	0·355	14	0·138	38·8
Old Cairo ... ..	35,568	8	0·224	3	0·084	37·5
El Wâyli ... ..	60,377	22	0·364	6	0·099	27·2
TOTALS FOR CAIRO ... ..	740,000	277	0·374	103	0·139	37·1

assistance during excessive prevalence of one or other of the diseases in checking the fallacious diagnoses of chicken-pox frequently made in order to avoid hospital isolation.

Circumstances, as has been stated, have suggested a tendency to an earlier prevalence of the milder disease and in Chart XXI, in which the seasonal incidence of the two diseases in 1916 is shown, this is corroborated to some extent.

*Cerebro-Spinal Fever.*—In 1916 there were thirty-three cases of cerebro-spinal fever recorded in the city with a morbidity rate of 0·044 per thousand of population as against 0·072 in 1915. The deaths recorded were twenty-three, showing a death-rate from this cause for the whole city of 0·031 as compared with 0·035 in 1915. The ratio of deaths to cases recorded in 1916 was 69·6 per cent as against 49·05 in 1915.

The totals of cases and deaths in the various districts are shown in Table XXXII, together with the morbidity and death rates and the ratios of deaths to cases recorded in each. The district morbidity and death rates are shown for comparison in a diagrammatic form in Figure 19.

TABLE XXXII.—Cerebro-spinal Fever Case and Death Rates in Cairo Districts in 1916.

DISTRICT.	Population.	Number of Cases recorded.	Cases recorded per 1,000 of Population.	Number of Deaths.	Death-rate per 1,000 of Population.	Ratio of Deaths to Cases recorded. Per Cent.
El Mûsky ... ..	24,909	0	—	0	—	—
Bâb el Sha'riya ... ..	63,864	0	—	0	—	—
El Ezbeikiya ... ..	52,634	2	0·037	1	0·018	50·0
'Abdin ... ..	60,328	3	0·049	3	0·049	100·0
El Sayeda Zeinab ... ..	73,493	4	0·054	4	0·054	100·0
El Khalifa ... ..	60,927	2	0·032	1	0·016	50·0
Helwân ... ..	8,645	0	—	0	—	—
El Darb el Ahmar ... ..	75,905	5	0·065	3	0·039	60·0
El Gamâliya ... ..	66,771	2	0·029	1	0·014	50·0
Shubra ... ..	55,256	2	0·036	2	0·036	100·0
Bûlâq ... ..	101,323	1	0·009	0	—	—
Old Cairo ... ..	35,568	5	0·140	5	0·140	100·0
El Wâyli ... ..	60,377	7	0·115	3	0·049	42·8
TOTALS FOR CAIRO ... ..	740,000	33	0·044	23	0·031	69·6



Chart XXII shows the weekly totals of cases throughout the year in comparison with the weekly maximum, minimum and mean figures for the quinquennial period ending with 1915. From this it will be seen that the prevalence showed a general correspondence with the minimum of the preceding quinquennial period.

*Scarlet Fever.*—During 1916, there were recorded in Cairo city forty-eight cases of scarlet fever. The morbidity rate was therefore 0·064 per thousand of population as against 0·050 in 1915. Two of the cases died, giving a death-rate of 0·002 per thousand living as compared with a death-rate of 0·009 in 1915.

TABLE XXXIII.—Scarlet Fever Case and Death Rates in Cairo Districts in 1916.

DISTRICT.	Population.	Number of Cases recorded.	Cases recorded per 1,000 of Population.	Number of Deaths.	Death-rate per 1,000 of Population.	Ratio of Deaths to Cases recorded. Per Cent.
El Mûski ... ..	24,909	2	0·080	0	—	—
Bâb el Sha'riya... ..	63,864	1	0·015	0	—	—
El Ezbekiya ... ..	52,634	14	0·265	1	0·018	7·1
'Abdin ... ..	60,328	13	0·215	0	—	—
El Sayeda Zeinab ... ..	73,493	4	0·054	0	—	—
El Khalifa ... ..	60,927	2	0·032	0	—	—
Helwân ... ..	8,645	0	—	0	—	—
El Darb el Ahmar ... ..	75,905	1	0·012	0	—	—
El Gamaliya ... ..	66,771	2	0·029	1	0·014	50·0
Shubra ... ..	55,256	1	0·018	0	—	—
Bûlâq ... ..	101,323	2	0·019	0	—	—
Old Cairo ... ..	35,568	0	—	0	—	—
El Wâyli ... ..	60,377	6	0·099	0	—	—
TOTALS FOR CAIRO ... ..	740,000	48	0·064	2	0·002	4·1

In Table XXXIII are shown the recorded cases and deaths in each district, with their morbidity and death-rates and ratios of deaths to cases recorded. The morbidity and death-rates of the various districts are shown in Figure 20 in diagrammatic form.

Chart XXIII shows the weekly totals of cases in comparison with the weekly maximum, minimum and mean cases for the preceding five years.

*Puerperal Fever.*—In 1916 the number of deaths certified as from puerperal fever was seventy-five, of which seventy-three were deaths of Egyptian women and two of European. The death-rate for this disease, therefore, per thousand of the general population was 0·113, as compared with 0·115 in 1915. Estimated on the birth figures for the year, the maternal death-rate from puerperal fever was 2·406 per thousand births, as compared with 2·839 in 1915. The rates for this disease in Cairo are therefore low.

With the object of checking the correctness of the figures, special note has been taken for the last three years of deaths of all women dying within fifteen days of their confinement, but even if all such cases were included as puerperal fever, the position would still be far from unsatisfactory, especially in view of the circumstances generally surrounding the parturient woman in this country.

Thus, in addition to the seventy-five deaths declared as from puerperal fever, twenty-nine other maternal deaths occurred within fifteen days of confinement. The causes of death assigned in these cases were uræmia five, peritonitis two, eclampsia four, nephritis one, dysentery one, difficult labour one, hæmorrhage nine, typhus three, heart disease one, and tuberculosis two.

Bracketing these cases with those of puerperal fever we obtain a total of 104 maternal deaths resulting from, or occurring in connection with, parturition, and furnishing a death-rate of 0·140 per thousand of the general population, or a maternal death-rate of 3·336 per thousand births.



#### IV.—DISINFECTION SERVICE.

During the two years 1915 and 1916, 66,785 rooms and 505,614 removed articles were disinfected by the city disinfection staffs.

In 1915 the number of rooms disinfected by the two services of El 'Abbâsiya and Fumm el Khalig was 30,889. Of these, El 'Abbâsiya was responsible for 14,457 rooms and Fumm el Khalig for 16,432. This gives a daily average for that year of 39·6 per cent rooms disinfected by the former and 45·01 rooms by the latter service.

Of the rooms disinfected in 1915 by the El 'Abbâsiya service, 365 were disinfected with formaline, making a daily average of 1·0; 10,038 were disinfected with sublimate solution, and 4,054 with cylline, giving a daily average of 27·5 and 11·10 respectively.

Of the 16,432 rooms disinfected in 1915 by the Fumm el Khalig service, 204 were disinfected by formaline, equivalent to a daily average of 0·55; 10,582 rooms were disinfected with sublimate solution, and 5,646 with cylline. This gives a daily average respectively of 28·99 and 15·46.

In addition to these disinfections, 232,471 articles of clothing were removed during the year by the two services for steam disinfection at the stations.

Of these, 169,493 were disinfected at the El 'Abbâsiya station and 62,978 at Fumm el Khalig, or a daily average of 464·3 articles disinfected at El 'Abbâsiya station and 172·2 at Fumm el Khalig.

During 1916, the number of rooms with their contents disinfected was 35,896, of which 18,782 rooms were dealt with by the El 'Abbâsiya service and 17,114 by Fumm el Khalig service, or a daily average of 51·4 rooms for El 'Abbâsiya and 46·8 rooms for Fumm el Khalig.

Of the 18,782 rooms dealt with by El 'Abbâsiya in 1916, 301 were disinfected with formaline, making a daily average of 0·8; 15,057 rooms were disinfected with sublimate solution, and 3,424 with cylline, making a daily average of 41·2 and 9·3 respectively.

Of the 17,114 rooms dealt with by Fumm el Khalig during the year, 259 were disinfected with formaline, making a daily average of 0·7, whilst 14,026 rooms were disinfected with sublimate solution, and 2,829 with cylline, making a daily average of 38·4 and 7·7 respectively.

In addition to these disinfections, 273,143 articles of clothing were removed in 1916 by the two services for steam disinfection.

Of this number, 190,652 articles were disinfected at El 'Abbâsiya, making a daily average of 519·5, and 82,491 were dealt with at Fumm el Khalig, making an average of 226 per day.

The daily average of work has therefore, in 1915, been, for El 'Abbâsiya 27·5 rooms and their contents disinfected by sublimate, 1·0 by formaline, 11·1 by cylline, and 312·1 articles removed to the disinfection station and disinfected by steam. In 1916 this station dealt daily, on an average, with 41·2 rooms and their contents disinfected by sublimate, 0·8 by formaline, 9·3 by cylline, and 519·5 articles removed to the station and disinfected by steam.

In 1915 the daily average of work for Fumm el Khalig station was 28·9 rooms and their contents disinfected by sublimate, 0·5 by formaline, and 15·4 by cylline. There were removed to the disinfection station and disinfected by steam a daily average of 135·3 articles. In 1916 the average daily number of rooms disinfected by the Fumm el Khalig station with sublimate, formaline, and cylline respectively were 38·4, 0·7, and 7·7, whilst a daily average of 226·0 articles were removed for steam disinfection.

There has therefore been a considerable and continuous increase in the amount of work carried out by the Disinfection Service of this city within the last few years, the daily average of rooms disinfected being 98·3 in 1916 as against 84·6 rooms in 1915, 48·8 in 1914, and 28·3 in 1913, whilst the average daily number of articles removed for disinfection at the stations were 748·3 in 1916, as compared with 636·9 in 1915, 447·4 in 1914, and 222·8 in 1913.



# V.—FEVER HOSPITAL.

During the year 1915 there were 4,654 admissions to the Government Fever Hospital as compared with 2,348 in 1914. Of these admissions 3,307 were males and 1,347 females (see Table XXXIV).

The number of patients admitted each month was 142 in January, 188 in February, 411 in March, 623 in April, 1,070 in May, 871 in June, 496 in July, 175 in August, 224 in September, 205 in October, 139 in November, and 110 in December.

The admissions consist of 63 cases of smallpox, 9 of chicken-pox, 99 of measles, 68 of scarlet fever, 997 of typhoid fever, 279 of typhus fever, 1,547 of the unidentified fever of 1915, 281 of relapsing fever, 17 of cerebro-spinal fever, 107 of diphtheria, 9 of mumps, 1 of bubonic plague, 1 of German measles, and 1,176 other cases, consisting of 917 cases sent to hospital under a mistaken diagnosis of infectious disease, 196 persons under observation in whom no disease of any sort manifested itself, and 63 mothers of young children and other persons accompanying patients.

TABLE XXXIV.—Male and Female Patients admitted each Month in 1915, and Diseases for which they were admitted.

MONTH.	SEX.	Small-pox.	Chicken-pox.	Measles.	Scarlet Fever.	Typhoid Fever.	Typhus Fever.	Unidentified Fever of 1915.	Relapsing Fever.	Cerebro-spinal.	Diphtheria.	Mumps.	Bubonic Plague.	Erysipelas.	German Measles.	Other Diseases.	Observation Cases.	Persons accompanying Sick.	TOTAL.
January ...	Male ...	8	0	1	12	41	1	0	1	5	17	1	0	3	0	12	9	0	111
	Female ...	1	0	0	0	9	0	0	0	0	6	1	0	1	0	3	10	0	31
February ...	Male ...	13	0	1	3	55	12	0	0	2	7	0	0	3	0	27	9	0	131
	Female ...	0	0	0	0	29	6	0	0	0	3	0	0	1	0	6	11	1	57
March... ..	Male ...	7	2	9	25	171	3	0	5	5	3	0	0	3	0	50	19	0	301
	Female ...	3	1	1	0	85	0	1	0	0	1	0	0	1	0	7	2	8	110
April ... ..	Male ...	8	0	1	14	168	12	53	40	2	1	0	0	2	0	77	35	0	414
	Female ...	1	0	3	0	129	3	33	3	0	0	0	0	0	0	17	13	7	209
May ... ..	Male ...	1	3	0	0	71	42	421	87	1	0	0	0	1	1	70	12	0	710
	Female ...	3	1	1	0	34	21	239	7	1	2	0	0	2	0	32	13	4	360
June ... ..	Male ...	2	0	0	0	48	97	287	40	1	1	0	0	1	0	55	7	0	540
	Female ...	3	1	0	0	51	40	209	9	0	1	0	0	0	0	10	7	1	331
July ... ..	Male ...	4	1	79	14	28	20	131	47	0	14	0	0	0	0	40	0	8	385
	Female ...	1	0	0	0	12	7	65	11	0	0	0	0	1	0	9	2	2	111
August ...	Male ...	2	0	1	0	14	3	45	8	0	4	1	0	1	0	55	5	0	139
	Female ...	0	0	0	0	3	0	13	1	0	3	1	0	1	0	9	1	4	36
September ...	Male ...	2	0	1	0	11	2	23	1	0	11	2	0	3	0	127	8	0	191
	Female ...	1	0	0	0	0	0	4	0	0	5	0	0	0	0	9	2	12	33
October ...	Male ...	0	0	2	0	12	2	8	0	0	7	3	0	0	0	128	17	0	179
	Female ...	2	0	0	0	3	1	0	0	0	3	0	0	1	0	9	0	7	26
November ...	Male ...	1	0	0	0	8	2	4	3	0	5	0	0	1	0	85	4	0	113
	Female ...	0	0	0	0	4	0	1	0	0	8	0	0	1	0	6	0	6	26
December ...	Male ...	0	0	0	0	10	5	6	17	0	3	0	1	4	0	38	9	0	93
	Female ...	0	0	0	0	1	0	4	1	0	2	0	0	1	0	4	1	3	17
1915 ... ..	Male ...	48	6	94	68	637	201	978	249	16	73	7	1	22	1	764	134	8	3,307
	Female ...	15	3	5	0	360	78	569	32	1	34	2	0	10	0	121	62	55	1,347
TOTALS ... ..		63	9	99	68	997	279	1,547	281	17	107	9	1	32	1	885	196	63	4,654



**TABLE XXXV.—Admission by Classes per Month in 1915, and Diseases for which they were admitted.**

MONTH.	CLASS.	Smallpox.	Chicken-pox.	Measles.	Scarlet Fever.	Typhoid Fever.	Typhus Fever.	Unidentified Fever of 1915.	Relapsing Fever.	Cerebro-spinal Fever.	Diphtheria.	Mumps.	Bubonic Plague.	Erysipelas.	German Measles.	Other Diseases.	Observation Cases.	Persons accompanying Sick.	TOTAL.
January ...	First ...	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Second ...	4	0	1	12	0	0	0	0	1	4	0	0	0	0	2	0	0	24
	Third ...	5	0	0	0	50	1	0	1	4	19	2	0	4	0	13	19	0	118
February ...	First ...	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3
	Second ...	10	0	0	3	1	0	0	0	0	0	0	0	0	0	2	2	0	18
	Third ...	2	0	0	0	83	18	0	0	2	10	0	0	4	0	31	17	0	167
March... ..	First ...	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Second ...	2	1	9	24	5	0	0	0	1	0	0	0	0	0	10	2	0	54
	Third ...	8	2	1	0	251	3	1	5	4	4	0	0	4	0	46	19	8	356
April ... ..	First ...	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Second ...	4	0	2	13	5	2	0	0	0	0	0	0	0	0	4	0	0	30
	Third ...	5	0	2	0	292	13	86	43	2	1	0	0	2	0	91	48	7	592
May ... ..	First ...	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	3
	Second ...	0	0	1	0	4	2	11	0	0	1	0	0	1	1	2	0	1	24
	Third ...	4	4	0	0	101	61	649	93	0	1	0	0	2	0	100	25	3	1,043
June ... ..	First ...	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
	Second ...	0	0	0	0	1	6	3	0	0	1	0	0	0	0	0	0	0	11
	Third ...	5	1	0	0	98	131	493	49	1	1	0	0	1	0	64	14	1	859
July ... ..	First ...	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4
	Second ...	1	1	76	13	1	4	2	2	0	13	0	0	0	0	2	0	8	123
	Third ...	4	0	0	0	39	23	194	56	0	1	0	0	1	0	47	2	2	369
August ... ..	First ...	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
	Second ...	0	0	1	0	1	0	1	0	0	0	0	0	0	0	2	1	0	6
	Third ...	2	0	0	0	16	3	57	9	0	6	2	0	2	0	62	5	4	168
September ...	First ...	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Second ...	0	0	0	0	0	0	2	0	0	4	0	0	0	0	0	0	1	7
	Third ...	3	0	1	0	11	2	25	1	0	12	2	0	3	0	136	10	11	217
October ... ..	First ...	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Second ...	2	0	1	0	1	0	0	0	0	1	0	0	0	0	1	0	0	6
	Third ...	0	0	1	0	14	3	8	0	0	9	3	0	1	0	136	17	7	199
November ... ..	First ...	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Second ...	0	0	0	0	1	0	0	0	0	4	0	0	0	0	0	0	0	5
	Third ...	1	0	0	0	11	2	5	3	0	9	0	0	2	0	91	4	6	134
December ... ..	First ...	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Second ...	0	0	0	0	2	1	0	0	0	0	0	0	0	0	1	1	0	5
	Third ...	0	0	0	0	9	4	10	18	0	5	0	1	5	0	41	9	3	105
1915 ... ..	First ...	1	0	3	3	0	0	0	1	2	1	0	0	0	0	1	1	1	14
	Second ...	23	2	91	65	22	15	19	2	2	28	0	0	1	1	26	6	10	313
	Third ...	39	7	5	0	975	264	1,528	278	13	78	9	1	31	0	858	189	52	4,327
TOTAL ... ..		63	9	99	68	997	279	1,547	281	17	107	9	1	32	1	885	196	63	4,654

The 917 cases sent to the hospital under mistaken diagnosis of infectious disease were found on examination to consist of 32 cases of erysipelas, 26 cases of malaria, 354 of influenza, 18 of three-day fever, 287 of seven-day fever, 2 of puerperal fever, 3 of rheumatic fever, 4 tetanus, 14 pulmonary tuberculosis, 32 pneumonia, 30 bronchitis, 34 tonsillitis, 1 retro-pharyngeal abscess, 17 enteritis, 5 septic glands, 1 simple cerebro-spinal meningitis, 2 dysentery, 19 various skin diseases, and 36 such other diseases as pyæmic abscess, pleurisy, cellulitis, heart disease, kidney disease, gangrene, etc.



Of the 4,654 admissions, 14 were first class, 313 second class, and 4,327 third class.

The admissions from the eight principal notifiable diseases (smallpox, measles, scarlet fever, diphtheria, typhoid, typhus, relapsing and cerebro-spinal fevers) were 1,911, or, calculated on the total of 5,744 cases recorded in Cairo during 1915, 33·2 per cent of the total cases were admitted to hospital. From the hospital admissions, however, should be deducted 259 military and extra-urban cases not derived from the city totals, so that only 1,652 of the total of 5,744 cases recorded were admitted to hospital, or a percentage of 28·7 as compared with 27·8 per cent in 1914 and 10·8 per cent in 1913.

In Table XLI are shown the proportions of cases of each of the eight principal notifiable diseases admitted to hospital for 1915, in comparison with those of 1914 and 1916.

There were 720 deaths in the hospital during 1915 (*see* Table XXXVI), or, estimated on the 4,654 admissions, 15·47 per cent of the cases admitted.

Of these there were thirteen deaths from smallpox, giving a hospital case mortality of 20·6 per cent for this disease, two from scarlet fever with a case mortality of 2·9 per cent, 181 from typhoid fever with a case mortality of 18·1 per cent, sixty from typhus with case mortality of 21·5 per cent, 346 from the unidentified fever with a case mortality of 22·38 per cent, eleven from cerebro-spinal fever with a case mortality of 64·7 per cent, twenty-nine or 27·1 per cent from diphtheria, eight or 2·84 per cent from relapsing fever, one from measles, one from mumps, and one from bubonic plague.

TABLE XXXVI.—Government Fever Hospital. Monthly Mortality Incidence in 1915.

MONTH.	Smallpox.	Scarlet Fever.	Typhoid Fever.	Typhus Fever.	Unidentified Fever of 1915.	Cerebro-spinal Fever.	Diphtheria.	Erysipelas.	Measles.	Mumps.	Bubonic Plague.	Relapsing Fever.	Other Diseases.	TOTALS.
January ... ..	1	0	7	1	0	4	2	1	0	0	0	0	1	17
February ... ..	3	0	12	5	0	3	1	1	0	0	0	0	2	27
March ... ..	3	1	38	1	0	2	2	1	0	0	0	0	8	56
April ... ..	2	1	49	9	0	1	0	0	0	0	0	1	13	76
May... ..	1	0	52	2	124	1	0	0	0	0	0	4	5	189
June ... ..	1	0	10	14	149	0	0	0	0	0	0	1	9	184
July ... ..	1	0	7	20	49	0	2	0	1	0	0	0	2	82
August ... ..	0	0	3	3	14	0	3	0	0	0	0	1	7	31
September ... ..	0	0	1	2	6	0	5	3	0	0	0	1	4	22
October ... ..	1	0	1	0	1	0	4	0	0	1	0	0	4	12
November ... ..	0	0	1	1	0	0	6	0	0	0	0	0	1	9
December ... ..	0	0	0	2	3	0	4	1	0	0	1	0	4	15
TOTALS ... ..	13	2	181	60	346	11	29	7	1	1	1	8	60	720

In addition, there were 67 deaths amongst patients sent in under a mistaken diagnosis of various infectious diseases and whose condition on arrival did not permit of a refusal of admission.

Of these deaths, 7 occurred from erysipelas, 18 from pneumonia, 4 from pulmonary tuberculosis, 2 from puerperal fever, 2 from tetanus, 1 from heart disease, 13 from broncho-pneumonia, 1 registered "natural causes" on the diagnosis of the medico-legal expert in a case brought to hospital after death, 1 premature delivery, 1 rickets, 3 chronic kidney disease, 10 chronic enteritis, 1 cirrhosis of liver, 2 general tuberculosis, and 1 peritonitis.

Included amongst the 4,327 third class admissions were 325 sick convicts from the Cairo prisons (*see* Table XXXVII). Of these, 1 was a case of chicken-pox, 47 were typhoid fever, 7 typhus fever, 40 cases of the unidentified fever, 53 relapsing, 1 cerebro-spinal, 18 diphtheria, 3 mumps, 7 erysipelas, 125 sent in under a mistaken diagnosis, 15 observation cases, and 8 persons accompanying sick.

The 125 convict cases admitted under a mistaken diagnosis included cases of pneumonia, various skin diseases, malaria, tuberculosis, influenza, three-day fever, seven-day fever, rheumatic fever, and tonsillitis.



Of the convict patients, 22 died (*see* Table XXXVIII), death being due to typhoid in seven cases, to typhus in one, to the unidentified fever in nine, to relapsing fever in one, to erysipelas in one, and to other diseases in three (one cirrhosis of liver and kidney, and two pulmonary tuberculosis).

The convict case-mortality was therefore 6.76 per cent of the total number of convicts admitted in 1915.

TABLE XXXVII.—Monthly Convict Admissions and Diseases for which they were admitted in 1915.

MONTH.	Chicken-pox.	Measles.	Typhoid Fever.	Typhus Fever.	Unidentified Fever of 1915.	Relapsing Fever.	Cerebro-spinal Fever.	Diphtheria.	Mumps.	Erysipelas.	Other Diseases.	Observation Cases.	Persons accompanying Sick.	TOTALS.
January ...	0	0	7	0	0	0	1	12	1	2	5	1	4	33
February ...	0	0	4	1	0	0	0	4	0	0	5	1	1	16
March ...	0	0	12	1	1	3	0	0	0	2	13	1	0	33
April ...	0	0	8	0	2	6	0	1	0	1	12	2	0	32
May...	1	0	2	2	10	12	0	1	0	0	7	0	0	35
June ...	0	0	3	3	10	5	0	0	0	0	2	2	0	25
July ...	0	0	0	0	5	12	0	0	0	0	10	0	0	27
August ...	0	0	2	0	3	0	0	0	0	0	11	0	1	17
September ...	0	0	2	0	2	0	0	0	0	1	20	4	2	31
October ...	0	0	3	0	3	0	0	0	2	1	17	2	0	28
November ...	0	0	4	0	4	2	0	0	0	0	13	1	0	24
December ...	0	0	0	0	0	13	0	0	0	0	10	1	0	24
TOTALS ...	1	0	47	7	40	53	1	18	3	7	125	15	8	325

In the hospital laboratory 8,142 examinations of specimens were carried out during 1915. These consisted of 485 blood films examined for malaria, 3,103 for relapsing fever, 2,822 Widal reactions for typhoid fever, 997 for paratyphoid, and 150 for Malta fever. Blood cultures were made in 56 cases, whilst from the stools and urine 213 cultures were made in typhoid and paratyphoid cases, 46 sputa were examined for the tubercle bacillus, 248 swabs for diphtheria, 17 specimens of fluid for cerebro-spinal fever, and 5 cultures were made for plague.

TABLE XXXVIII.—Monthly Convict Mortality Incidence in 1915.

MONTH.	Erysipelas.	Typhoid Fever.	Typhus Fever.	Unidentified Fever of 1915.	Relapsing Fever.	Other Diseases.	TOTAL.
January ...	0	2	0	0	0	0	2
February ...	0	0	1	0	0	0	1
March ...	0	3	0	0	0	1	4
April ...	0	1	0	0	0	0	1
May...	0	1	0	2	0	0	3
June ...	0	0	0	4	0	1	5
July ...	0	0	0	1	1	0	2
August ...	0	0	0	0	0	0	0
September ...	1	0	0	1	0	1	3
October ...	0	0	0	0	0	0	0
November ...	0	0	0	0	0	0	0
December ...	0	0	0	1	0	0	1
TOTALS ...	1	7	1	9	1	3	22



In addition to these, 868 examinations were carried out at the Public Health Laboratories on behalf of the hospital.

In 1916 the total number of patients admitted to the hospital was 3,419 as compared with 4,654 in 1915. Of these admissions 2,557 were males and 862 females (see Table XXXIX).

TABLE XXXIX.—Government Fever Hospital, 1916.

MALE AND FEMALE PATIENTS ADMITTED EACH MONTH AND THE DISEASES FOR WHICH THEY WERE ADMITTED.

MONTH.	SEX.	Smallpox.	Chicken-pox.	Measles.	Scarlet Fever.	Typhoid Fever.	Typhus Fever.	Relapsing Fever.	Cerebro-spinal Fever.	Diphtheria.	Mumps.	Bubonic Plague.	Erysipelas.	Paratyphoid Fever.	Para-Malta Fever.	Other Diseases.	Observation Cases.	Persons accompanying Sick.	TOTALS.
January ...	Male ...	0	1	1	0	3	9	19	1	4	0	0	1	1	0	15	17	0	72
	Female ...	2	0	1	0	1	7	0	0	2	0	0	0	0	0	0	0	5	18
February ...	Male ...	5	0	1	0	8	38	65	2	5	0	0	3	0	0	23	12	0	162
	Female ...	1	1	0	0	1	10	6	0	3	0	0	1	0	0	2	2	7	34
March... ..	Male ...	15	2	9	0	13	105	129	1	7	0	0	8	0	1	41	13	0	344
	Female ...	5	1	15	0	3	42	8	1	2	1	0	2	0	0	5	9	18	112
April ... ..	Male ...	41	1	1	0	5	135	194	2	1	0	1	7	0	0	25	19	2	434
	Female ...	9	0	2	0	5	66	42	1	2	1	0	1	0	0	4	6	6	145
May ... ..	Male ...	72	5	0	0	6	217	194	1	2	0	0	2	0	0	29	35	4	567
	Female ...	33	0	3	0	3	69	58	0	3	0	0	1	0	0	7	15	23	215
June ... ..	Male ...	33	0	3	0	10	102	132	0	1	0	0	3	0	0	53	37	0	374
	Female ...	14	0	3	0	4	29	60	0	0	1	0	1	0	0	17	8	6	143
July ... ..	Male ...	11	0	3	0	24	27	46	0	0	0	1	6	0	0	36	13	0	167
	Female ...	17	0	1	0	7	18	15	0	3	0	0	1	0	0	13	4	5	84
August ... ..	Male ...	9	0	0	0	15	13	15	0	4	1	0	0	0	3	35	11	0	106
	Female ...	4	1	2	0	4	1	8	0	1	0	0	0	0	0	4	2	4	31
September ...	Male ...	1	1	0	0	12	2	13	0	4	0	1	0	0	3	35	9	0	81
	Female ...	1	0	0	1	4	2	1	1	2	0	0	3	0	0	7	1	6	29
October ... ..	Male ...	0	1	0	0	9	11	6	0	4	0	0	1	0	0	43	10	0	85
	Female ...	0	1	0	0	2	2	0	0	1	0	0	0	0	0	6	1	2	15
November ...	Male ...	1	0	0	0	7	10	17	0	4	0	0	4	0	0	39	18	0	100
	Female ...	1	0	0	0	0	2	2	0	3	0	0	1	0	0	1	1	7	18
December ...	Male ...	5	0	1	0	3	4	8	1	2	2	0	5	0	0	23	11	0	65
	Female ...	2	0	1	0	5	1	0	0	2	0	0	1	0	0	2	0	4	18
1916... ..	Male ...	193	11	19	0	115	673	838	8	38	3	3	40	1	7	397	205	6	2,557
	Female ...	89	4	28	1	39	249	200	3	24	3	0	12	0	0	68	49	93	862
TOTALS ... ..		282	15	47	1	154	922	1,038	11	62	6	3	52	1	7	465	254	99	3,419

The number of patients admitted each month was 90 in January, 196 in February, 456 in March, 579 in April, 782 in May, 517 in June, 251 in July, 137 in August, 110 in September, 100 in October, 118 in November, and 83 in December.

The admissions consisted of 282 cases of smallpox, 15 of chicken-pox, 47 measles, 1 scarlet fever, 154 typhoid fever, 1 paratyphoid fever, 922 typhus fever, 1,038 relapsing fever, 11 cerebro-spinal fever, 62 diphtheria, 6 mumps, 3 bubonic plague, 7 para-Malta, and 870 other cases, consisting of 517 cases sent to hospital under a mistaken diagnosis of infectious disease, 254 persons sent in under observation but in whom no disease of any sort ever manifested itself, and 99 mothers of young children and other persons accompanying patients. The 517 cases sent to hospital under a mistaken diagnosis of



**TABLE XL.—Government Fever Hospital.**

ADMISSIONS IN 1916 BY CLASSES PER MONTH AND THE DISEASES FOR WHICH THEY WERE ADMITTED.

MONTH.	Class.	Smallpox.	Chicken-pox.	Measles.	Scarlet Fever.	Typhoid Fever.	Typhus Fever.	Relapsing Fever.	Cerebro-spinal Fever.	Diphtheria.	Mumps.	Erysipelas.	Bubonic Plague.	Paratyphoid Fever.	Para-Malaria Fever.	Other Diseases.	Observation Cases.	Persons accompanying Sick.	TOTAL.
January ...	First ...	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Second ...	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3
	Third ...	1	1	1	0	4	16	19	1	6	0	1	0	1	0	14	17	5	87
February ...	First ...	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Second ...	4	0	0	0	2	2	0	0	0	0	0	0	0	0	2	0	2	12
	Third ...	1	1	1	0	7	46	71	2	8	0	4	0	0	0	23	14	5	183
March ...	First ...	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Second ...	5	0	0	0	1	3	0	1	0	0	1	0	0	0	0	1	0	12
	Third ...	15	3	24	0	15	144	137	1	9	1	9	0	0	1	46	21	18	444
April ...	First ...	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Second ...	22	0	1	0	0	3	0	0	2	0	0	0	0	0	0	0	2	30
	Third ...	28	1	2	0	10	198	236	3	1	1	8	1	0	0	29	25	6	549
May ...	First ...	3	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	5
	Second ...	35	0	1	0	0	2	2	0	0	0	0	0	0	0	9	3	15	67
	Third ...	67	5	2	0	9	283	250	1	5	0	3	0	0	0	26	47	12	710
June ...	First ...	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Second ...	14	0	0	0	2	3	0	0	0	0	1	0	0	0	2	1	1	24
	Third ...	32	0	6	0	12	128	192	0	1	1	3	0	0	0	68	44	5	492
July ...	First ...	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Second ...	2	0	0	0	4	1	0	0	0	0	1	1	0	0	1	1	0	11
	Third ...	25	0	4	0	27	44	61	0	3	0	6	0	0	0	48	16	5	239
August ...	First ...	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Second ...	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	3
	Third ...	12	1	2	0	19	13	23	0	5	1	0	0	0	3	38	13	4	134
September ...	First ...	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Second ...	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Third ...	2	0	0	1	16	4	14	1	6	0	3	1	0	3	42	10	6	109
October ...	First ...	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
	Second ...	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	2
	Third ...	0	2	0	0	11	11	6	0	5	0	1	0	0	0	48	11	2	97
November ...	First ...	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Second ...	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
	Third ...	1	0	0	0	6	12	19	0	7	0	5	0	0	0	40	19	7	116
December ...	First ...	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Second ...	1	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	4
	Third ...	6	0	2	0	7	5	8	1	3	2	5	0	0	0	25	11	4	79
1916 ...	First ...	6	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	9
	Second ...	86	1	3	0	11	16	2	1	3	0	4	1	0	0	17	6	20	171
	Third ...	190	14	44	1	143	904	1,036	10	59	6	48	2	1	7	447	248	79	3,238
TOTALS ...		282	15	47	1	154	922	1,038	11	62	6	52	3	1	7	465	254	99	3,419



infectious disease consisted of 52 cases of erysipelas, and 2 of cellulitis, 150 cases of influenza, 9 of seven-day fever, 2 of three-day fever, 52 malaria, and 15 various febrile conditions of a non-infectious character, 50 gastro-intestinal affections, 76 pneumonia, pulmonary tuberculosis, and other affections of the lungs and pleura, 22 non-infectious affections of the throat, 20 various skin diseases, 24 abscesses and swollen glands from septic wounds, 10 non-infectious cases presenting symptoms of cerebral disturbance, and 33 other cases of a most diverse nature, consisting of bilharzia, fistula in ano, elephantiasis, syphilis, prolapse of rectum, piles, orchitis, anaemia, heart disease, senility, etc.

Of the 3,419 admissions, 9 were first class, 171 second class, and 3,239 third class patients (*see* Table XL).

The admissions from the eight principal notifiable diseases (smallpox, measles, scarlet fever, diphtheria, typhoid, typhus, relapsing, and cerebro-spinal fevers) in 1916 were 2,517, which, estimated on the total of 6,771 cases of these diseases recorded in Cairo during the year, gives a percentage of admissions of 37.1 per cent, as compared with 33.2 per cent in 1915, and 27.8 per cent in 1914.

In 1916, however, as in 1915, a sufficiently appreciable number of admissions were derived from military and extra-urban sources to make it desirable to exclude these from the calculation, and 65 cases of smallpox, 2 of measles, 3 of diphtheria, 18 of typhoid, 55 of typhus, 66 of relapsing and 2 of cerebro-spinal fever, all of which were cases extraneous to Cairo, should be deducted from the hospital figures. This leaves a total of 2,306 cases, giving a percentage of 34.0 per cent as compared with a similarly estimated percentage of 28.7 per cent in 1915, and a crude percentage of 27.8 per cent for 1914, in which year, however, the subsequent necessity for correction had not arisen.

In Table XLI the corrected city totals and the admissions, exclusive of military and extra-urban cases, are shown separately for each disease in 1914, 1915, and 1916, together with the percentage of admissions in each case.

TABLE XLI.—Government Fever Hospital.

TOTAL CASES RECORDED AND NUMBER OF ADMISSIONS TO HOSPITAL IN 1914, 1915, AND 1916, OF THE EIGHT PRINCIPAL INFECTIOUS DISEASES.

DISEASE.	1914			1915			1916		
	Corrected City Total of Cases.	Cairo Cases admitted to Hospital.	Percentage of Total Cases removed to Hospital.	Corrected City Total of Cases.	Cairo Cases admitted to Hospital.	Percentage of Total Cases removed to Hospital.	Corrected City Total of Cases.	Cairo Cases admitted to Hospital.	Percentage of Total Cases removed to Hospital.
			Per Cent.			Per Cent.			Per Cent.
Smallpox ... ..	983	587	59.7	59	38	64.4	277	217	78.3
Measles ... ..	469	28	5.9	363	7	1.9	1,222	45	3.6
Scarlet Fever ... ..	98	7	7.1	37	1	2.7	48	1	2.0
Diphtheria ... ..	1,412	91	6.4	1,286	85	6.6	836	59	7.0
Typhoid Fever... ..	1,409	511	36.2	2,378	969	40.7	1,462	136	9.3
Typhus Fever ... ..	351	65	18.5	1,112	267	24.0	1,858	867	46.6
Relapsing Fever ... ..	10	10	100.0	456	270	59.2	1,035	972	93.9
Cerebro-spinal Fever ... ..	146	58	39.7	53	15	28.3	33	9	27.2
TOTALS ... ..	4,878	1,357	27.8	5,744	1,652	28.7	6,771	2,306	34.0

Hospital isolation is not compulsory in measles, scarlet fever, and diphtheria, and the relative admissions of these are small. The reduction in the percentage of admission for typhoid fever in 1916 to 9.3 per cent, as compared with 40.7 per cent in 1915 and 36.2 per cent in 1914, is largely due to a lessened relative prevalence of this disease in the poorer quarters of the city in 1916 as compared with the previous two years. As regards the other diseases, the table, generally speaking, shows a tendency in the direction of a relatively increased number of admissions.

There were 439 deaths in the hospital during 1916 (*see* Table XLII), which, estimated on the 3,419 total admissions, give a death percentage of 12.8 per cent of admissions as compared with 15.47 per cent in 1915. Of these, 75 were caused by smallpox, 22 by



typhoid fever, 206 by typhus fever, 8 by cerebro-spinal meningitis, 25 by diphtheria, 6 by erysipelas, 1 by paratyphoid B, 25 by relapsing fever, 11 by measles, 1 by plague, and 1 by para-Malta, whilst 58 of the deaths occurred amongst cases of various non-infectious diseases sent to hospital under mistaken diagnosis. Of these 58 non-infectious deaths, 11 were from gastro-enteritis, 2 from uræmia, 4 from tetanus, 1 from simple meningitis, 12 from pneumonia, 2 from rheumatic fever, 1 from broncho-pneumonia, 2 from heart disease, 3 from dysentery, 2 from premature labour (children born in the hospital), 2 from pulmonary tuberculosis, 2 from senility, 2 from septicæmia, 1 from scurvy, 1 from rickets, 1 from peritonitis, 1 from apoplexy, and 1 from hydrophobia, whilst 4 were found dead on arrival at the hospital.

TABLE XLII.—Government Fever Hospital.  
Monthly Mortality and Causes of Death in 1916.

MONTH.	Smallpox.	Scarlet Fever.	Typhoid Fever.	Typhus Fever.	Cerebro-spinal.	Diphtheria.	Erysipelas.	Paratyphoid Fever.	Para-Malta Fever.	Relapsing Fever.	Measles.	Bubonic Plague.	Other Diseases.	TOTAL.
January ...	0	0	0	6	1	0	0	0	0	0	0	0	1	8
February ...	2	0	0	6	2	5	0	1	0	2	0	0	1	19
March ...	3	0	2	22	1	2	0	0	0	4	9	0	4	47
April ...	14	0	3	44	2	0	2	0	0	5	1	1	10	82
May ...	27	0	0	57	1	4	2	0	0	7	0	0	12	110
June ...	17	0	1	43	0	1	1	0	0	4	0	0	13	80
July ...	7	0	3	17	0	2	1	0	0	3	1	0	9	43
August ...	3	0	5	5	0	3	0	0	0	0	0	0	0	16
September ...	0	0	5	1	1	3	0	0	0	0	0	0	1	11
October ...	0	0	2	4	0	2	0	0	1	0	0	0	5	14
November ...	0	0	1	1	0	2	0	0	0	0	0	0	2	6
December ...	2	0	0	0	0	1	0	0	0	0	0	0	0	3
TOTALS ...	75	0	22	206	8	25	6	1	1	25	11	1	58	439

Such non-infectious cases are only admitted when examination shows that their condition is such as to render it impossible for them to undergo any further transportation, and the large number of deaths from such causes may be taken as an indication of the grave condition in which a considerable proportion of such patients are received in the hospital, and not as pointing to any prolonged detention of non-infectious cases. No non-infectious case is retained longer than sufficient to establish a diagnosis, unless further removal would endanger life.

The hospital case-mortalities for the various diseases in 1916 were 26·7 per cent in smallpox as compared with 20·16 per cent in 1915, and 16·3 per cent in 1914, the high mortality in 1916 and to some extent in 1915 as compared with 1914 being contributed to by the deaths of a certain number of non-vaccinated cases from the British Army; 14·2 per cent in typhoid fever as against 18·1 per cent in 1915, and 12·1 per cent in 1914; 22·3 per cent in typhus fever as compared with 21·5 per cent in 1915, and 36·9 per cent in 1914; 72·7 per cent in cerebro-spinal fever as against 64·7 per cent in 1915, and 55·1 in 1914; and 40·3 per cent in diphtheria as compared with 27·1 per cent in 1915, and 45·0 per cent in 1914.

The high percentage of mortality in cerebro-spinal fever and diphtheria is largely attributable to the fact that a considerable proportion of the cases are received in the hospital in the last stages of the disease, when the opportunity of advantage from specific treatment has been lost. In such late stages are admissions from these diseases received that cases have actually died on their way to the hospital, whilst in a large number of cases death has occurred within a few hours of admission.

Included amongst the 3,239 third class admissions were 310 sick convicts from Cairo prisons (see Table XLIII). Of these, 2 were cases of smallpox, 37 typhoid fever, 63 typhus fever, 110 relapsing fever, 7 diphtheria, 2 mumps, 7 erysipelas, 2 mothers accompanying sick, 16 cases under observation in which no symptoms of disease subsequently developed, and 64 cases of a non-infectious nature sent in as suspected cases or under a mistaken diagnosis. These cases were found to be suffering from either influenza, three-day fever, seven-day fever, pneumonia, bronchitis, tonsillitis, septic wounds, or some form of skin disease.



TABLE XLIII.—Government Fever Hospital. Monthly Convict Admissions and Diseases for which admitted in 1916.

MONTH.	Smallpox.	Typhoid Fever.	Typhus Fever.	Relapsing Fever.	Diphtheria.	Mumps.	Erysipelas.	Other Diseases.	Observation Cases.	Persons accompanying Sick.	TOTAL.
January ... ..	0	1	1	3	0	0	0	2	2	0	9
February ... ..	0	0	2	18	1	0	1	4	0	0	26
March ... ..	0	8	13	24	2	1	3	8	4	0	63
April ... ..	1	0	17	23	0	1	1	2	3	1	49
May ... ..	1	3	16	11	0	0	0	0	1	0	32
June ... ..	0	6	6	11	0	0	1	4	1	1	30
July ... ..	0	7	5	9	0	0	0	4	1	0	26
August ... ..	0	6	1	4	1	0	0	7	2	0	21
September ... ..	0	2	0	2	1	0	0	13	0	0	18
October ... ..	0	0	1	1	2	0	0	12	0	0	16
November ... ..	0	4	0	2	0	0	1	6	1	0	14
December ... ..	0	0	1	2	0	0	0	2	1	0	6
TOTALS ... ..	2	37	63	110	7	2	7	64	16	2	310

Of the convict patients, 19 died (*see* Table XLIV), death being due to typhoid fever in four cases, to typhus fever in ten, diphtheria one, smallpox one, para-Malta one, and two were from non-infectious disease (gastro-enteritis and pulmonary tuberculosis), the patients being admitted as suspected of infectious disease.

TABLE XLIV.—Government Fever Hospital. Monthly Convict Mortality and Causes of Death in 1916.

MONTH.	Smallpox.	Typhoid Fever.	Typhus Fever.	Diphtheria.	Para-Malta Fever.	Other Diseases.	TOTAL.
January ... ..	0	0	0	0	0	0	0
February ... ..	0	0	1	0	0	0	1
March ... ..	0	1	2	0	0	0	3
April ... ..	0	0	2	0	0	0	2
May ... ..	1	1	3	0	0	0	5
June ... ..	0	1	0	0	0	1	2
July ... ..	0	1	1	0	0	0	2
August ... ..	0	0	1	0	1	0	2
September ... ..	0	0	0	0	0	0	0
October ... ..	0	0	0	1	0	1	2
November ... ..	0	0	0	0	0	0	0
December ... ..	0	0	0	0	0	0	0
TOTALS ... ..	1	4	10	1	1	2	19

The convict case-mortality was therefore 6·1 per cent on the total number of convicts admitted in 1916.

In the hospital laboratory 4,375 specimens were examined during 1916. These consisted of 213 blood films examined for malaria, and 1,251 for relapsing fever, 1,078 Widal's reaction were carried out for typhoid, 1,078 for paratyphoid, and 161 for Malta and para-Malta.

Blood cultures were made in 20 cases, whilst from the stools and urine 320 cultures were made in typhoid and paratyphoid cases. Seventy-four sputa were examined for the tubercle bacillus, 146 swabs for diphtheria, 12 specimens of fluid for cerebro-spinal fever, and 11 cultures were made for plague. Bacteriological examinations of faeces were made in 11 cases of dysentery.



## VI.—AMBULANCE SERVICE.

During 1915, 3,668 calls were made on the Ambulance Service as compared with 2,786 in 1914, and 2,414 in 1913, there being in the year in question 108 journeys made by the ambulances of the first class, 207 by those of the second class, 372 by the third class, and 2,420 by hooded carts, whilst 561 removals of sick were carried out in motor ambulances lent by the Military Authorities.

In 1916 the number of journeys was 3,101, 120 of these being made by the first class, 135 by the second class, and 413 by the third class ambulances, whilst the hooded carts were called for on 2,433 occasions.

The provision of ambulance transport, as regards materials and personnel, remained the same as described in the 1913 report.

With the additional demand, however, made on this service as a result of the increased number of infectious cases now dealt with, considerable difficulty has at times been experienced in meeting all demands, and in 1915 the number of conveyances had to be augmented by two motor ambulances lent by the Military Authorities. Without these it would have been impossible to cope with the very considerable calls for infectious transport which occurred in the summer of 1915, as a result of the extensive prevalence of infectious disease at that time.

The primary duty of the service is naturally the provision of transport for the infectious sick, but it is expected to provide, in addition, for the carriage of dog-bitten persons undergoing treatment at the Antirabic Institute, between that place and Qasr el 'Aini Hospital, and to supply conveyance for non-infectious sick when these are called for.

The requirements of the city as regards the last are, however, ably met by the very efficient service provided for this by the *Association Internationale d'Assistance Publique*, and, with the exception of the period in 1915 when the unusual demands for infectious transport necessitated the assistance of the Military Authorities, it has been possible for us so far to meet all calls for the removal of the infectious sick by limiting the service to this as far as possible.

The question of augmentation has, however, been considered, and it has been decided to give effect to this by the provision of two infectious motor ambulances as soon as circumstances will permit of these being obtained.

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## VII.—DEATH INQUIRIES.

During the year 1915, there died in Cairo city 25,242 persons who had received no medical attendance during life, and whose deaths therefore called for investigation. Estimated on the 33,592 total deaths occurring in the city, the proportion of uncertified deaths was 75·1 per cent, but, as the investigations altogether concerned only cases of Cairo origin, the percentage should more properly be calculated upon the 32,554 deaths of persons actually forming part of the Cairo population. Based on this, the ratio of uncertified to total deaths was 77·5 per cent as compared with 73·8 per cent in 1914, and 76·2 per cent in 1913.

Of the 25,242 inquests held, the investigation was made in 16,569 or 65·6 per cent of the cases by the District Medical Officer, in 7,218 or 28·5 per cent by the District *hakimas*, whilst in remote hamlets attached to the city 1,291 cases or 5·1 per cent were carried out by village sanitary barbers, and 164 or 0·6 per cent by the village midwives.

The general arrangement is that the inquiry should be made by the District Health Officer, or in the case of outlying villages by the sanitary barber, when the death concerns a male or a female under the age of five years, whilst the investigation into deaths of females over the age of five years is left to the *hakimas* or village *dāyas* (midwives).

Within the true urban areas, therefore, the majority of the inquiries have to be made by the District Medical Officers, and in the outlying hamlets by the sanitary barbers.

As, however, the reasons underlying this apportionment of the duties permit of a certain elasticity in the application of the arrangement, by the extension of the *hakimas'* functions to the investigation of the deaths of children, should other claims upon the service of the Medical Officers necessitate this, the figures are not to be taken as indicating the relative prevalence of the two categories of deaths, and the preponderance of the investigations carried out by the *hakimas* in the case of No. 2 subdivision of Bûlâq district (see Tables XLV and XLVI) is not, in any sense, an intimation of any abnormality as regards the conditions in this district.

TABLE XLV.—Distribution of Uncertified Deaths and Death Inquiries in the Various Districts in 1915.

DISTRICT.	All Deaths.	UNCERTIFIED DEATHS.				District Totals.	Percentage of Deaths Uncertified.
		Investigated by District Medical Officers.	Investigated by District <i>Hakimas</i> .	Investigated by Village Sanitary Barbers.	Investigated by Village <i>Dāyas</i> .		
							Per Cent.
El Mûski ... ..	827	235	167	—	—	402	48·6
Bâb el Sha'riya ... ..	2,694	1,493	482	—	—	1,975	73·3
El Ezbekiya ... ..	1,294	316	274	—	—	590	45·5
'Abdin ... ..	1,948	1,020	396	—	—	1,416	72·6
El Sayeda Zeinab ... ..	3,146	1,447	991	—	—	2,438	77·4
Helwân ... ..	258	129	35	—	—	164	63·5
El Khalifa ... ..	3,304	2,156	750	—	—	2,906	87·9
El Darb el Ahmar ... ..	2,879	1,482	770	—	—	2,252	78·2
El Gamâliya ... ..	2,889	1,679	558	—	—	2,237	77·4
Shubra ... ..	2,877	1,081	375	682	90	2,228	77·4
Bûlâq { Bûlâq I ... ..	5,847	2,677	788	—	—	3,465	91·1
{ Bûlâq II ... ..		724	1,142	—	—	1,866	
Old Cairo ... ..	1,950	1,090	303	266	44	1,703	87·3
El Wâyli { El Zeitûn ... ..	2,641	218	51	343	30	642	60·5
{ El 'Abbâsiya ... ..		822	136	—	—	958	
TOTALS FOR CAIRO ... ..	32,554	16,569	7,218	1,291	164	25,242	77·5



The average daily number of death inquiries held in 1915 was 69.15 as compared with 52.9 in 1914, and 55.2 in 1913, 45.39 being the daily average carried out by the Medical Officers in 1915 as against 34.9 in 1914, and 42.4 in 1913, 19.77 by the *hakîmas* as compared with 14.5 in 1914, and 9.9 in 1913, 3.53 by the village sanitary barbers, and 0.45 by the village *dâyas*. Of the investigations held by the individual Medical Officers, the greatest number was 2,677 inquiries held by the Medical Officer of the first subdivision of Bûlâq, who had an average of 7.3 per day.

The lowest number was 129 deaths, investigated by the Medical Officer of Helwân, with an average of 0.35 daily.

Of the *hakîmas*' inquiries, the largest number was held by the *hakîma* of the second subdivision of Bûlâq district, with 1,142 investigations, or an average of 3.1 daily. The smallest number of deaths investigated by a *hakîma* was in Helwân, with only 35 inquiries for the whole year.

In Table XLV are given the detailed number of the inquiries held by the various investigators in 1915 in the different districts, with the district ratios of uncertified to total deaths.

In 1916, out of a total of 29,483 deaths recorded in the city, inquiries into the cause had to be held in 21,208 cases, or a percentage of 71.9 per cent. As, however, the investigations, with the exception of a negligible few, related purely to the deaths of actual Cairo residents, the percentage with more propriety should be estimated on the 28,320 corrected deaths for the city, and based on this the proportion of uncertified deaths calling for post-mortem enquiry was 74.8 per cent as compared with 77.5, 73.8, and 76.2 in 1915, 1914, and 1913 respectively.

TABLE XLVI.—Distribution of Uncertified Deaths and Death Inquiries in the Various Districts in 1916.

DISTRICT.	All Deaths.	UNCERTIFIED DEATHS.					Percentage of Deaths Uncertified.
		Investigated by District Medical Officers.	Investigated by District <i>Hakîmas</i> .	Investigated by Village Sanitary Barbers.	Investigated by Village <i>Dâyas</i> .	District Totals.	
							Per Cent.
El Mâski ... ..	687	221	89	—	—	310	45.1
Bâb el Sha'riya ... ..	2,377	1,270	299	—	—	1,569	66.0
El Ezbekiya ... ..	1,370	240	259	—	—	499	36.4
'Abdin ... ..	1,910	946	265	—	—	1,211	63.4
El Sayeda Zeinab ... ..	2,753	1,416	632	—	—	2,048	74.3
Helwân ... ..	226	150	17	—	—	167	73.8
El Khalifa ... ..	2,313	1,687	397	—	—	2,084	90.0
El Darb el Ahmar ... ..	2,609	1,619	421	—	—	2,040	78.1
El Gamâliya ... ..	2,371	1,344	396	—	—	1,740	73.3
Shubra ... ..	2,945	980	291	830	103	2,204	74.8
Bûlâq ... { Bûlâq I ... ..	4,485	2,222	379	—	—	2,601	90.4
{ Bûlâq II ... ..		596	861	—	—	1,457	
Old Cairo ... ..	1,727	961	210	246	132	1,549	89.6
El Wâyli... { El Zeitûn ... ..	2,547	242	35	459	45	781	67.8
{ El 'Abbâsiya ... ..		822	126	—	—	948	
TOTALS FOR CAIRO ... ..	28,320	14,716	4,677	1,535	280	21,208	74.8

Of the 21,208 inquiries held, 14,716 or 69.3 per cent were held by the fifteen district Medical Officers, 4,677 or 22.05 per cent by the fifteen district *hakîmas*, whilst in the outlying villages attached to Shubra, Old Cairo, and El Zeitûn, 1,535 or 7.2 per cent of the total uncertified deaths were examined by the sanitary barbers of the villages concerned, and 280 or 1.3 per cent by the village *dâyas*.



The average daily number of inquests in 1916 was 58.1 as compared with 69.15 in the previous year, and 52.9 and 55.2 in 1914 and 1913 respectively.

The daily average of examinations carried out by the district Medical Officers in 1916 was 40.31, as compared with 45.39, 34.9 and 42.4 in 1915, 1914, and 1913 respectively.

The daily average of death inquiries held by the *hakimas* was 12.81 as compared with 19.77 in 1915, 14.5 in 1914, and 9.9 in 1913.

In the outlying hamlets the daily average number of inquiries was 4.20 held by the sanitary barbers, and 0.76 by the *dāyas* of the various places concerned.

The largest number of inquiries held by a Medical Officer in 1916 was 2,222, carried out by the Medical Officer of the first subdivision of Bûlâq, who dealt with an average of 6.08 cases per day as compared with 7.3, the highest daily average of the previous year, also carried out by the same Medical Officer.

The smallest number of inquiries in 1916, as in 1915, was held by the Medical Officer of Helwân with 150 cases during the year, or a daily average of 0.41 as compared with his average of 0.35 in the previous year.

The *hakima* of the second subdivision of Bûlâq carried out the largest number of deaths inquiries held by *hakimas*, with a total of 861 deaths investigated in 1916, or a daily average of 2.35 as compared with 3.1 daily, her average for 1915, which was also the highest for that year.

The smallest number of investigations was, as was the case last year, carried out by the *hakima* of Helwân, who had only seventeen inquiries to make in 1916 as compared with her total of thirty-five in 1915, the smallest in that year.

TABLE XLVII.—District Percentages of Uncertified Deaths  
in the Years 1914, 1915, and 1916.

DISTRICT.	1914	1915	1916
	Per Cent.	Per Cent.	Per Cent.
El Mûski ... ..	53.6	48.6	45.1
Bâb el Sha'riya... ..	73.8	73.3	66.0
El Ezbekiya ... ..	34.4	45.5	36.4
'Abdîn... ..	58.6	72.6	63.4
El Sayeda Zeinab ... ..	79.2	77.4	74.3
Helwân ... ..	73.9	63.5	73.8
El Khalifa... ..	87.5	87.9	90.0
El Darb el Ahmar ... ..	70.5	78.2	78.1
El Gamâliya ... ..	74.1	77.4	73.3
Shubra ... ..	72.6	77.4	74.8
Bûlâq ... ..	89.2	91.1	90.4
Old Cairo ... ..	76.1	87.3	89.6
El Wâyli ... ..	66.7	60.5	67.8
Cairo City ... ..	73.8	77.5	74.8

In Table XLVI are given the details of the various inquiries held in 1916 in the different districts of the city with the ratios of uncertified to total deaths in each district, whilst in Table XLVII the district percentages of uncertified deaths are compared for the years 1914, 1915, and 1916.

Four unusual factors have tended to influence the proportions of deaths uncertified in 1915 and 1916 as compared with 1914.

The exceptionally high mortality in 1915 and 1916, affecting principally just those classes in which uncertified deaths are the rule, naturally inclined the uncertified ratios in the direction of increase at the same time that the more vigorous search in 1915 for cases of the unidentified fever tended to a diminution of this ratio by leading to an early examination of numerous cases of all sorts of illnesses, with a consequent ante-mortem diagnosis of many which would have otherwise swelled the uncertified totals.



At the same time the application of the stricter measures of control of infectious disease, necessitated by its occurrence in serious epidemic form, inculcated a desire to avoid any exposure to a possible risk of notification of infectious disease such as might issue from a call for medical attendance, and resulted in a tendency to a relative augmentation in the number of uncertified deaths, which, to a large extent was ultimately counter-balanced by a tendency to report spontaneously all moribund cases of sickness as soon as the adoption of punitive measures in bad cases of concealment suggested the advisability of discounting the results of this whenever approaching death increased the risks of detection.

These influences have largely neutralized each other to all appearance, as far as the ratios of uncertified deaths for the whole city are concerned, there being 77·5 per cent in 1915 and 74·8 per cent in 1916, as compared with 73·8 per cent in 1914.

Their relative values, however, in affecting the ratios, have varied in the different districts, there being, broadly speaking, a tendency to increase in the number of uncertified deaths in those districts which contain a considerable population of persons on the borderline between those habitually seeking medical assistance in sickness and those never doing so, whilst the inclination was toward a diminution in those districts where circumstances rendered successful concealment of sickness more difficult.

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## VIII.—MEDICO-LEGAL AND POLICE.

### (a) 1915.

During 1915, 13,797 medico-legal examinations were carried out by the District and Police Medical Officers as compared with 13,915 in the previous year. Of these examinations, 433 were cases of injury of such a trifling character as to call for no definition of the probable length of treatment necessary, 12,048 were examinations of persons on account of injuries appearing to require shorter periods of treatment than twenty days, 342 were examinations of more serious cases, where the injuries were such as to indicate that a longer period than twenty days was likely to be involved in the treatment, 223 were post-mortem examinations of dead bodies of persons dying in the street, or whose death had been surrounded by circumstances of a suspicious nature, or who had been the victims of accidental or other violence, and 751 were re-examinations of injured persons submitted for a second examination on account of the prolongation or permanence of the results of the original injury.

There were 182 examinations of lunatics in 1915 as compared with 132 in 1914.

964 *ghafirs* and policemen were examined as to their fitness to enter the service as against 1,180 in 1914. Of these, 791 were *ghafirs* sent up for examination by the Commandant's Office, two were policemen examined at the request of the Personnel Office of the Ministry of the Interior, and 171 were police referred for examination from the Commandant's Office.

On account of sickness, 3,102 police, *ghafirs*, and employés of the Governorate and Commandant's Office were dealt with during 1915 as against 2,629 in 1914.

Of these, 690 were Police Officers, European constables, and civilian employés of the Governorate, Commandant's Office, and Police Qisms examined for sick leave, 819 were *ghafirs* examined on account of sickness, 398 were non-commissioned officers and men of the police and *ghafir* forces attending for treatment at the out-patient clinic, 662 were non-commissioned officers and men treated in the Police infirmary, 223 were non-commissioned officers and men sent to Qasr el 'Airi for treatment, and 310 non-commissioned officers and men sent to Fever Hospital for treatment or observation.

358 non-commissioned officers and men of the Police Force were vaccinated in 1915 as compared with 26 in 1914, and 4 were kept under observation on account of previous exposure to malarial infection, as against 9 in the previous year.

On the application of the Traffic Office, 2,624 cab-drivers, carters, and *chauffeurs* were examined as to their visual capacity in 1915 as compared with 1,964 in 1914.

Estimations of age were carried out, at the request of the Police, in 1915 in the case of 1,321 persons as compared with 1,346 in 1914.

132 shoeblacks were examined during the year, at the request of the Police, to decide on their physical suitability for the issue of permits, as against 102 in 1914.

334 sick members of the general public were examined for various reasons, against 260 in 1914, 150 being sent to Qasr el 'Aini Hospital, and 184 to the Government Fever Hospital.

In addition to those already mentioned, a further seventy-eight persons were examined, for various reasons, on the request of the Ministry of Finance, Parquet, or Police.

### (b) 1916.

During 1916, 13,913 medico-legal examinations were carried out by the District and Police Medical Officers as compared with 13,797 in the previous year.

Of these, 526 were examinations of persons for such slight injuries as to present no legal necessity for an expression of medical opinion as to the probable length of time involved in the treatment, 11,983 were examinations on account of injuries in which treatment for a longer period than twenty days did not seem likely to be required, and 313 were examinations on account of more serious injuries indicating a likelihood of a longer period of treatment than twenty days being necessary, 210 were autopsies of persons dying or found dead in the street, or whose death had been associated with circumstances of a suspicious character, or had occurred as the result of accidental or other violence, and 881 were re-examinations of injured persons on account of an undue continuance or a permanency of the effects of the original injury.



During the year, 183 lunatics were examined as against 182 in the previous year.

There were 853 *ghafirs* examined in 1916 as to their fitness to enter the service, as against 964 *ghafirs* and policemen in 1915. All were examined at the request of the Commandant's Office. No police were submitted by the Ministry for examination.

The number of police, *ghafirs*, and employés of the Governorate, Commandant's Office, and Police Qisms dealt with during 1916 on account of sickness was 3,360 as against 3,102 in 1915.

Of these, 514 were police officers, European constables, and clerical employés of the Governorate, Commandant's Office, and Police Qisms submitted for examination for sick leave, 1,094 were members of the *ghafir* force examined on account of illness, 480 were non-commissioned officers and men of the police and *ghafir* forces attending for treatment at the out-patient clinic, 758 were non-commissioned officers and men treated in the Police Infirmary, 337 were non-commissioned officers and men sent to Qasr el 'Aini Hospital for treatment, and 177 were non-commissioned officers and men sent to the Government Fever Hospital for treatment or observation.

There were 145 men of the police vaccinated in 1916 as against 358 in 1915, and 5 were kept under observation on account of previous exposure to malarial infection as compared with 4 in the previous year.

On the request of the Traffic Office, 2,884 cab-drivers, carters, and *chauffeurs* were examined in 1916 as to their visual capacity, as against 2,624 in 1915.

On the application of the Police, 1,267 examinations of persons were carried out in 1916 for the purpose of an estimation of age as compared with 1,321 in 1915.

There were 21 shoeblacks examined as to their suitability for permits as against 132 in 1915.

Examinations of 310 sick members of the general public were carried out in 1916 for various reasons, as compared with 334 in the previous year. Of these 153 were sent to Qasr el 'Aini Hospital, and 157 to the Government Fever Hospital.

During the year there were 813 persons, other than those detailed above, submitted for medical examination at the request of various Government offices, as compared with 78 in 1915. The increase was largely due to a large number of persons, male and female, arrested by the Police as undesirable characters and found suffering from venereal diseases.

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## IX.—PROSECUTIONS.

### (a) 1915.

Of the prosecutions instituted in 1914, 438 were stated in the report for that year to be still under consideration at the end of the year. To this total are to be added two of the 132 cases recorded in 1914 as filed, one of these being a prosecution at El Mûski for illegal practice of medicine, and the other a similar prosecution at El Darb el Ahmar, both of which were ultimately proceeded with. There were, therefore, 440 cases still pending at the end of 1914.

During the year 1915, 2,697 fresh prosecutions were instituted as compared with 2,115 in 1914, there being therefore a total of 3,137 cases under consideration in 1915.

Of this total, convictions were obtained in 2,600 or 82·8 per cent of the cases. In 78, or 2·4 per cent, the verdict was acquittal, whilst in 150, or 4·7 per cent, the case was filed, usually either on account of the evidence put forward being considered insufficient to make a conviction probable, or because the defendant had meanwhile put himself in a position of compliance with the law and the case did not call for further action.

In 309, or 9·8 per cent, the case was still under consideration at the end of the year.

Of the 2,697 fresh prosecutions in 1915, 553 were for contraventions against the vidange regulations as compared with 413 in 1914; 14 were for illegal practice of medicine and its branches, as against 39 in the previous year; 168 were offences against the vaccination laws, as compared with 248 in 1914; 33 for failure to fence vacant lands, as compared with 57 in 1914; 1 was for the illegal exhumation of a body; 69 were for failure to notify infectious disease or other offences against the infectious disease law, as compared with 178 in 1914; 42 for offences against the pharmacies and sale of poisons decree, as against 46 in 1914; 9 for transgressions of the assistant pharmacists' law, as compared with 5 in the previous year; 2 for contraventions of the excavations near habitations decree of April 26, 1900; 37 for failure to comply with the regulations of the births and deaths decree, as against 43 in 1914; 503 for infringements of the law and regulations for the control of unhealthy, inconvenient and dangerous establishments, as against 369 in 1914; 285 were general sanitary contraventions against the native and mixed penal codes, as against 210 in 1914; and 981 were prosecutions for the adulteration of milk under Article 302 of the Penal Code, as against 488 in 1914.

Compared with the 2,115 new prosecutions in 1914, the number instituted in 1915 shows therefore an increase of 27·5 per cent over the previous year.

This was largely due to the marked preponderance in 1915 in the number of prosecutions for offences against the unhealthy, inconvenient and dangerous establishments law and regulations, for general sanitary contraventions, and especially for adulteration of milk.

### (b) 1916.

During 1916, 1,887 fresh prosecutions were instituted for offences against the sanitary laws and regulations, compared with 2,697 in the previous year. These, added to the 309 cases left over from 1915, make a total of 2,196 cases dealt with in 1916. Of the cases included in this total, convictions were obtained in 1,766, or 80·4 per cent of the cases as compared with 82·8 per cent in 1915, 71·0 per cent in 1914, and 70·3 per cent in 1913. In 61, or 2·7 per cent, of the cases the verdict was acquittal as against 2·4 per cent in 1915, 2·0 per cent in 1914, and 1·4 per cent in 1913. The case was filed in 79, or 3·6 per cent, of the cases, generally speaking on account of the evidence being considered insufficient, or because of a subsequent compliance with the regulations, as compared with 4·7 per cent similarly disposed of in 1915, 6·2 per cent in 1914, and 7·5 per cent in 1913. There were 290 cases, or 13·2 per cent, awaiting disposal at the end of the year, as compared with 9·8 per cent in 1915, 20·7 per cent in 1914, and 20·6 per cent in 1913.

Of the 1,887 fresh prosecutions in 1916, 259 were against the vidange regulations, as against 553 in 1915; 72 were for illegal practice of medicine, as against 14 in 1915; 124 were for failure to comply with the vaccination decree, as against 168 in the previous year; 30 were contraventions against the regulations for the fencing of waste lands, as compared with 33 in 1915; 1 for failure to comply with the regulation of January 21, 1911,



imposing a control on passengers coming from cholera-infected countries; 52 were for offences against the infectious disease law, as against 69 in 1915; 4 were contraventions of the decree regarding excavations and *birkas* near habitations, as against 2 in 1915; 29 were cases of failure to comply with the pharmacy and sale of poisons laws, as compared with 42 such cases in 1915; 11 were contraventions of the assistant pharmacists' law, as compared with 9 in the previous year; 1 was for an offence against the law and regulation regarding the transport of rags during epidemics; 44 were for failure to comply with the births and deaths decree, as compared with 37 in the previous year; 387 were contraventions of the law and regulations governing unhealthy, inconvenient and dangerous establishments, as compared with 503 in 1915; 239 were general sanitary offences dealt with under various articles of the native and mixed penal codes, as compared with 285 in 1915; and 634 were prosecutions for the adulteration of milk, as compared with 981 in the previous year.

Compared with the 2,697 fresh prosecutions instituted in 1915, and the 2,115 in 1914, the figures for 1916 showed, therefore, a marked reduction, the 1,887 new prosecutions in that year being 30·0 per cent less than those of 1915, and 10·7 per cent less than those of 1914.

This result was somewhat unexpected in view of the circumstances.

Previous to 1914, in the absence of any regular inspecting staff, prosecutions mainly resulted from investigations into complaints lodged by the outside public, and from such occasional inspections of the more important public health conditions as circumstances permitted the existing personnel to undertake.

With the provision, however, of additional staff in 1914, arrangements were made for a more systematic and regular survey in certain directions where this was most urgently called for. In giving effect to this, however, it was not considered advisable, in view of the diverse elements composing the population of the city, and of other circumstances likely to influence the results, to assume at first any attitude towards existing conditions which might, by raising an undue opposition, defeat the object in view, and instructions were therefore given to limit the application of penalties largely at first to a use of these, as a means of enforcing essential conditions when circumstances demanded such action rather than as a punishment for past misdeeds and omissions.

Since then, however, the stringency of control has been gradually raised, with a consequent progressive extension of the field for the application of punitive measures, which has manifested itself in the gradually increasing frequency with which advantage was taken of such measures in the two succeeding years.

Thus the total of 1,401 prosecutions instituted in 1913 became 2,115 in 1914, and 2,697 in 1915. It was assumed, therefore, that a corresponding increase was to be expected in 1916, and the fact that this has not only not eventuated but has actually been replaced by a marked reduction calls for some examination of the circumstances attending this.

It is true that a gradual reduction in the occasions giving grounds for punitive measures might reasonably be expected, ultimately, to result from the more systematic control rendered possible by regular inspection, but there are other agencies at work likely to influence results, and it would be somewhat risky to assume, without further consideration, that a sufficient explanation of the position as regards 1916 was to be found in this.

Some scrutiny of the circumstances is therefore prudent, but it will be sufficient in giving effect to this to confine our probing for a cause to those groups of figures to which the reduction is chiefly due, and which, from their more regular derivation, lend themselves better to a precise appreciation of the influences which have been at work; that is to say, to those concerning offences against the vidange regulations, the unhealthy, inconvenient and dangerous establishments law, and the article of the penal code dealing with the adulteration of milk.

As regards the first of these, there existed in the past many cases in which a combination of a large house and a small cesspit imposed on the landlord a constant and serious expenditure for vidange. This incessantly-recurring expense was not, however, always incurred voluntarily, and the law had constantly to be invoked in many of such cases, as well for punitive purposes as for the enforcement of the regulations.

Obviously, under these circumstances, there existed the greatest inducement to take advantage of any alternative scheme of sewage disposal, and the recent provision of a system of public sewers in the city has permitted of the suppression of many of the more unsatisfactory cesspits, which, in the past, have constantly given occasion for the legal enforcement of the vidange regulations.



There is, therefore, as regards this class of cases, a natural tendency for a gradual elimination of the conditions furnishing grounds for legal action which, subject to accidental deviations depending upon the influence exerted by varying Nile floods on the subsoil water level, would be likely to show itself in a progressive decrease in the number of occasions calling for a recourse to legal proceedings.

Undoubtedly this influence, to some extent, must have at least helped towards these decreased prosecutions in 1916, but as this class of cases is not associated with any systematic general control but is dependent almost entirely on complaints received from outside sources, the supply of information upon which the prosecutions are based is not sufficiently constant to permit altogether of the figures for these being unreservedly accepted as a definite indication of the actual position of affairs.

On the other hand, the prosecutions under the law regulating unhealthy, inconvenient and dangerous establishments are almost entirely dependent on information derived by inspection, and the figures for these may be therefore considered as affording, with greater accuracy, some reflection of the actual conditions existing, provided that the inspections from which they have been derived have been conducted in a uniform and systematic manner.

Thus a relatively large number of prosecutions in 1914, as compared with the number of inspections held, might, with some reason, be taken as a probable indication of a less satisfactory position in that year as regards the conditions found than is shown by the figures for 1915 and 1916, whilst an ample explanation of the greater number of prosecutions in 1915 as compared with 1916 appears to be afforded by an increase in the number of inspections held in the former year, as a result of an accidental and temporary reinforcement of the inspecting staff.

Such assumptions are to some extent legitimate, but the prosecution figures of the three years under consideration have in reality been influenced in a less obvious and more complex manner than is at first apparent, so that a somewhat detailed examination of certain circumstances in connection with this class of prosecutions will be necessary before we can be justified in arriving at any conclusion as to the inferences which may legitimately be drawn from a consideration of the figures.

The influences more particularly associated in recent years with variations in the prosecution figures for this class of cases are so largely dependent upon the arrangements already referred to for the systematic and regular inspection of certain of the establishments included in this category, that it will be necessary for a proper understanding of the directions in which these have operated to refer briefly here to the results derived from the inspections in question, though these will subsequently be gone into, in more detail, when dealing specially with the work carried out in connection with such establishments.

In 1914, 9,038 visits of inspection were made under the arrangements for the systematic control of certain establishments instituted in that year, with the result that on 1,560 occasions fault had to be found with the establishment inspected. In 1915 it was necessary to call attention to the existence of unsatisfactory conditions at 7,322 of the 51,334 visits paid in that year, whilst in 1916 criticism was only called for at 2,736 of the 39,947 visits made.

Thus the 17·2 per cent of visits showing faulty conditions in 1914 was reduced to 14·2 per cent in 1915, and 6·8 per cent in 1916.

In the comparison of these figures it is to be remembered that in 1914, for the reasons already given, it was considered advisable to adopt a somewhat more liberal attitude towards minor faults than was subsequently the case and to confine our efforts primarily to the correction of the more essential grounds for censure.

The results of the inspections in that year are therefore likely to indicate a less unsatisfactory position relatively to the other years than would have been the case had these visits been made in the more critical spirit subsequently adopted.

It may be taken, therefore, that the result of these inspections has been a considerable amelioration in the unsatisfactory conditions existing before their institution, with a corresponding diminution in the number of cases calling for censure, to an extent even greater than is actually indicated by the figures.

Coincident with the diminished occasion for fault-finding resulting from the general improvement in the conditions observed on inspection, there has also been a lessened necessity for recourse to legal action when such faults are found, as a result of a readier compliance with the initial demands made for the rectification of these.



Thus, whilst legal action for the enforcement of the regulations was called for in 1914 in 369 cases of this nature, or in 23·6 per cent of the 1,560 occasions upon which unsatisfactory conditions were demonstrated, in 1915 the necessity for legal proceedings only arose in 503, or 6·8 per cent, of the 7,322 occasions for fault-finding in that year, and in 387, or 14·1 per cent, of the 2,736 visits showing unsatisfactory conditions in 1916.

The marked general tendency evidenced by these figures towards a relative reduction in the occasions calling for the legal enforcement of conditions is not to be considered as in any way discounted by the increased ratio of prosecutions in 1916 as compared with the previous year.

Such an increase, at the stage it has occurred, is only a natural incident in the process of improvement, and does not by any means indicate a lessened amenability to regulations as regards the year in question.

It is obviously to be expected, in dealing with such establishments, that the more costly and troublesome the rectification of any fault is likely to be, the less chance is there of the order for this being complied with until some form of pressure has been applied.

The residual defects therefore in any pilgrimage towards perfection are likely to be such as may be expected to call forth a growing resistance to demands for their correction, and thus to lead, eventually, to a temporary relative increase in the necessity for prosecution which can by no means be attributed to any added difficulty in the way of maintaining a general compliance with the regulations.

It is true that the same argument might with some apparent reason be claimed to apply to the position as regards 1914, when our efforts were directed primarily to the correction of the more important of the defects found, but this would not be altogether just.

Some of those dealt with undoubtedly involved a certain amount of trouble and expense for their amendment, but as regards this generally, it must not be taken that faults, important from a public health point of view, necessarily or usually connote any extensive modifications of structure or arrangement such as are more likely to be required for the rectification of those residual blemishes almost certain to be encountered, in increasingly larger proportions, in any advance towards improvement.

In point of fact, in 1914, as far as was consistent with public health necessities, every effort was made to avoid enforcing revolutionary changes at all likely to bear with sudden and undue harshness, and the larger ratio of cases calling for prosecution in 1914 was in consequence due more to a failure to apprehend the logical issue of systematic inspection than to any general active opposition to the measures insisted upon.

As, however, the figures generally for 1914, as regards this class of cases, are for obvious reasons, scarcely justly comparable with those of the two succeeding years, the question of the extent to which they may have been influenced by the various forces at work need scarcely be further discussed, a sufficient indication of the position being furnished by what has already been said.

As regards the following two years, however, a more equable application of measures of inspection, and a more uniform stringency of control, enable us to estimate to some extent the degree to which the various factors already mentioned have operated in the production of the results obtained.

The improved conditions of the inspected establishments in 1916, as evidenced by the results of the inspections, would have led us naturally to expect some diminution in the number of occasions calling for judicial enforcement, were it not that the faults dealt with in that year would appear, from the larger proportion of cases in which prosecution was necessary, to be more of a nature likely to call for legal action.

Excluding for the moment the intermediate details already given, the 51,334 inspections in 1915 resulted in the institution of proceedings in 503 or 0·979 per cent of the cases, as against 39,947 inspections with 387 prosecutions, or a percentage of 0·968 in 1916.

The two principal conditions therefore likely to affect the necessity for prosecutions under this class of cases, operating with varying force in the two years, have almost exactly neutralized each other and have thus left the result largely to be decided by the number of inspections.

If, therefore, the number of inspections in 1916 had been the same as 1915, the expectations of prosecutions would have been 497, or 110 more than were actually instituted.

The actual decrease in 1916, as compared with 1915, was 116, or only 6 more than the additional prosecutions which might have been anticipated from an equality of inspections.



It is reasonable to assume, therefore, that had the number of inspections in 1916 been equal to that of the previous year, there would not, in all likelihood, have been any definite decrease in the prosecutions.

This probable similarity of result, however, does not imply any equality of circumstances.

The presumption of 497 prosecutions in 1916 would, on the ratio of prosecutions to faulty conditions obtaining in that year, have corresponded to only 3,513 occasions for censure in 1916, as against the 7,322 which actually occurred in 1915.

Thus, though the reduced prosecutions in 1916 may appear to suggest nothing more than can be accounted for by the smaller number of inspections held, the equality of circumstances implied by this conclusion cannot be taken altogether as reflecting the actual position, since it must be assumed that, commensurate with the progressive improvement in the conditions shown on inspection, there should have been a still further reduction in prosecutions not to be accounted for in this way, had there not obtained in the year in question a generally greater tendency to await legal enforcement of the corrections required, as a result of the larger proportion of faulty conditions calling for more drastic modifications found in that year amidst the residuum of unsatisfactory conditions remaining from the previous year.

As regards the reduction in the number of prosecutions for the adulteration of milk in 1916, as compared with 1915 and also with 1914, if we take into account the shorter period during which a systematic examination of milk was in operation in 1914, the influences bearing on this have operated in a less complex manner.

At the end of August 1914, the promulgation of the law decreeing the establishment of maximum tariffs for foodstuffs and articles of prime necessity, by making it an offence to refuse to sell at the tariff price fixed, enabled us to deal more systematically with dishonest milk dealers who had hitherto been able to evade, to a great extent, the consequences of their dishonesty, as a result of the difficulties previously attending the obtaining of the samples required for examination.

Prior to the application of this law, the formalities of purchase necessary for a successful prosecution served as a warning to the vendor of the purpose for which the purchase was intended and resulted usually in a refusal to sell whenever the milk had been adulterated.

Under Article 4 of the new law, however, refusal to sell at the tariff price itself is an offence, and vendors of milk have therefore now to supply the sample required on the legal price being tendered, or render themselves liable to prosecution.

Taking advantage of this, on August 29, 1914, arrangements for a systematic examination of milk samples were put in operation.

During the last four months of that year, 990 samples of milk were taken for analysis, and out of this total adulteration was found in 475 cases.

In 1915, the number of adulterated samples was 979 out of a total of 2,980 samples examined.

In 1916, out of 2,708 samples examined adulteration was found in 692 cases.

The number of adulterated samples therefore in any year does not, it may be observed, exactly correspond with the prosecution figures for that year.

This result is due partly to the fact that it has not been thought justifiable to include the few fortuitously detected adulterations, leading to prosecutions, among the results derived from the more systematic arrangement for the examination of milk samples which furnishes the bulk of the cases, and partly to the fact that samples taken for analysis at the end of any year would only appear as prosecutions in the following year.

The discrepancy, however, is so unimportant that it has only been referred to here in explanation of what might otherwise suggest some inaccuracy of the figures presented, and whilst the comparative appraisal of the conditions in the different years is somewhat more accurately based upon the adulteration figures of these years, any conclusions founded on these are strictly applicable to the prosecution figures, which, for all practical purposes, are coincident with the adulterations.

The position, as shown by the results of the examination of milk samples, will therefore be referred to first, and the prosecutions subsequently considered on the facts thus presented.

In 1915, 2,980 samples of milk were taken for examination. Of these, 2,001 or 67.1 per cent were found to be genuine, whilst 979 or 32.8 per cent had been tampered with, 619 of these having been skimmed, 193 watered, and 167 skimmed and watered.



In 1916, 2,708 samples of milk were seized, and of these, 2,016 or 74·4 per cent were found to be genuine, whilst 692 or 25·5 per cent were found to have been qualified in composition, 434 having been skimmed, 155 watered, and 103 skimmed and watered.

The improvement evidenced by these figures has been fairly generally distributed, as may be seen by reference to Table XLVIII, where the district details of the samples examined are given for both years, though, broadly speaking, the results have shown a greater tendency towards amelioration in those districts where the sale of milk is conducted chiefly in shops, or by regular distributing agents, than is the case in localities supplied principally by casual ambulant vendors.

TABLE XLVIII.—Results of Milk Examination in the Various Districts.

DISTRICT.	1915					1916				
	Total Samples taken.	Number found genuine.	Percentage genuine.	Number adulterated.	Percentage adulterated.	Total Samples taken.	Number found genuine.	Percentage genuine.	Number adulterated.	Percentage adulterated.
			Per Cent.		Per Cent.			Per Cent.		Per Cent.
Bûlâq I ... ..	210	106	50·4	104	49·5	209	126	60·2	83	39·7
Bûlâq II... ..	208	107	51·4	101	48·5	169	112	66·2	57	33·7
El Mûski ... ..	234	125	53·4	109	46·5	190	139	73·1	51	26·8
El Zeitûn ... ..	119	71	59·6	48	40·3	170	141	82·9	29	17·0
‘Abdin ... ..	211	127	60·1	84	39·8	209	131	62·6	78	37·3
Bâb el Sha’riya ... ..	248	157	63·3	91	36·6	159	107	67·2	52	32·7
El Ezbekiya ... ..	210	144	68·5	66	31·4	197	134	68·0	63	31·9
Shubra ... ..	230	159	69·1	71	30·8	204	155	75·9	49	24·9
El Sayeda Zeinab ... ..	220	153	69·5	67	30·4	203	139	68·4	64	31·5
El ‘Abbâsiya ... ..	210	148	70·4	62	29·5	218	165	75·6	53	24·3
El Darb el Ahmar ... ..	210	153	72·8	57	27·1	194	151	77·8	43	22·1
El Gamâliya ... ..	220	173	78·6	47	21·3	162	145	89·5	17	10·4
El Khalifa ... ..	220	181	82·2	39	17·7	168	150	89·2	18	10·7
Old Cairo ... ..	230	197	85·6	33	14·3	186	163	87·6	23	12·3
Helwân ... ..	—	—	—	—	—	70	58	82·8	12	17·1
TOTALS FOR CAIRO ...	2,980	2,001	67·1	979	32·8	2,708	2,016	74·4	692	25·5

Comparing the above-mentioned adulteration figures of 1915 and 1916, therefore, with each other, and with the 475 adulterated samples in 1914 out of a total of 990 specimens examined in that year, it will be seen that a marked and steady improvement in the position has occurred since the attainment in 1914 of better facilities for a more systematic apprehension and examination of samples, the 47·9 per cent of adulterations in 1914 being reduced to 32·8 per cent in 1915, and 25·5 per cent in 1916.

The marked progress evidenced by these figures may naturally be expected in its turn to show itself in a dwindling number of prosecutions, and in this mainly lies the explanation of the diminished prosecutions in 1916 as compared with 1915, though a smaller number of inspections in 1916, as compared with the previous year, has naturally contributed to some slight extent towards this result.

Generally speaking, therefore, it may be said, as regards all those three classes of cases which have just been considered in detail, that the decrease in the number of prosecutions may, in the main, be taken as an indication of the marked improvement in the position which has resulted from an increased stringency of control, to which reason may also, to a great extent, be attributed the general diminution in other classes of prosecutions such as those dealt with under the vaccination and infectious disease laws, though these however, are more exposed to accidental influences rendering any assessment of the extent to which this might have occurred too open to criticism for discussion to serve any useful purpose.



The effect of a more centralized control, and an abated rawness of inspecting staff showing itself in a better preparation of cases and more enlightened discrimination in their selection, has considerably improved the position as regards the number of cases requiring to be filed on account of faulty presentation or insufficiency of supporting evidence.

Indications of this may be found in the figures already given to show the issues of the prosecutions calling for decision in each year, but as, in these, the ratios of results are based on totals which overlap in including the residues of undecided cases at the ends of the various years, a more accurate representation of the position is to be obtained from an interannual comparison of the figures of those cases which have actually been disposed of.

Thus, though the 440 cases originated in 1914 but still awaiting decision at the end of that year, when added to the 2,697 new cases instituted in 1915, supplied a total of 3,137 cases subject to disposal in the latter year, the actual number of cases upon which judgment was finally passed in that year was only 2,828, there being 309 cases still awaiting decision at the end of the year.

Similarly, from the 1916 total of 2,196 cases, composed of 309 left over from the previous year and 1,887 fresh cases instituted during the year, there falls to be deducted 290 cases still undecided at the end of the year, leaving a remainder of 1,906 cases as the number actually disposed of in 1916.

Estimated on these totals, the 2,600 convictions in 1915 are equivalent to a percentage of 91·9 of the cases, whilst the seventy-eight acquittals and the 150 cases in which the prosecution was filed show respectively percentages of 2·7 and 5·3 for those issues.

In 1916, the 1,766 convictions obtained in that year gave a percentage of 92·6, the 61 acquittals 3·2 per cent, and the 79 cases in which the prosecution was filed 4·1 per cent on the total cases disposed of in 1916.

In Table XLIX are shown the general results of prosecution for the years 1912, 1913, 1914, 1915, and 1916 in comparison with each other.

TABLE XLIX.—Results of Prosecutions for the Years 1912-1916.

YEAR.	Number of Cases disposed of.	CONVICTIONS.		ACQUITTALS.		FILED.	
		Number.	Percentage.	Number.	Percentage.	Number.	Percentage.
			Per Cent.		Per Cent.		Per Cent.
1912 ... ..	1,403	1,142	81·4	56	3·9	205	14·6
1913 ... ..	1,112	986	88·6	20	1·7	106	9·5
1914 ... ..	1,966	1,762	89·6	58	2·9	146	7·4
1915 ... ..	2,828	2,600	91·9	78	2·7	150	5·3
1916 ... ..	1,906	1,766	92·6	61	3·2	79	4·1

From this it will be seen that the percentage of cases filed has dropped from 14·6 per cent in 1912 to 9·5 per cent in 1913, 7·4 per cent in 1914, 5·3 per cent in 1915, and 4·1 per cent in 1916. There has therefore, since 1912, been a marked and progressive decrease in the number of cases filed in each year, and coincident with this a similarly progressive increase in the percentage of convictions obtained, this having risen from 81·4 per cent in 1912 to 88·6 per cent in 1913, 89·6 per cent in 1914, 91·6 per cent in 1915, and 92·6 per cent in 1916.



## X.—SANITARY CONTROL OF PUBLIC WOMEN.

As a result of special circumstances arising out of the war, certain alterations have been made in the arrangements for the registration and examination of prostitutes, which it will be desirable to refer to briefly before proceeding to a presentation of the position, as regards this subject, for the years 1915 and 1916.

Anterior to the war, under the powers conferred by the civil laws, all brothels were required to be licensed and their occupants, irrespective of nationality, registered and submitted to a weekly examination, either at the central *Bureau des Mœurs* in Bâb el Sha'riya, or at one of its two branches situated in El 'Abbâsiya and El Sayeda Zeinab respectively.

Thus far in the arrangements, no distinction was drawn between native and foreign prostitutes, save possibly such as might result from the general difficulties attending the free application of any regulations to foreigners. Beyond this point, however, differences occurred and the law ceased to be of uniform application.

In the case of native prostitutes, the control suggested by registration and periodical examination was carried to its logical conclusion, as a venereal prophylactic measure, by the segregation and treatment of their sick in the special Lock hospital at Hôd el Marsûd, under the direction of Qasr el 'Aini. As regards such women, therefore, the arrangements in force permitted of some practical effect being given to the general idea upon which a state control of vice is based.

On the other hand, the sanitary control of foreign prostitutes was merely nominal. It is true that a certain proportion of them, living in licensed brothels, were registered and submitted to a weekly examination, but the effect of this, in the prophylaxis of venereal disease, was almost entirely neutralized by the absence of powers of compulsory isolation and treatment in cases of disease. Attempts were made to curtail the activities of such diseased women by the withdrawal of their cards of registration, with the object of preventing them from frequenting recognized brothels. Apart, however, from the difficulties in actual practice of enforcing this prohibition, its object, from a health point of view, was almost entirely defeated by the existence of numerous low-class hotels and *maisons de passe*, affording such facilities for assignation as gave ample opportunity to diseased foreign prostitutes for an uninterrupted continuation of their usual mode of life.

In order to remove this anomalous situation, and to permit of the extension of control to the inmates of such houses of ill-fame as had previously escaped this under the shelter of a foreign nationality, towards the end of 1914 a meeting of the various Consuls in Cairo was convened by His Britannic Majesty's Consul, at the request of the Commandant of Police acting on instructions from the Military Authorities. This was held on December 23, 1914, when the request for the additional powers necessary was acceded to, and it was agreed that the same control as had previously been applicable to native prostitutes should be extended to foreigners, subject to the condition, however, that some consideration should be given to the differences of habit and mode of life as between the European and Egyptian women, by providing the former with special hospital accommodation in which treatment would be given by European doctors, and the living arrangements made such as would be more in conformity with European habits than would be the case in a native hospital.

In giving effect to this decision, arrangements were made for the establishment of a new *bureau des mœurs*, hospital, and medical examination room in El Ezbekiyya quarter for the purpose of dealing solely with foreign prostitutes, the old *bureau des mœurs* and examination rooms already mentioned being then reserved for work in connection with the examination and control of public women of Egyptian nationality.

The new hospital and examination room were started in February, 1915, with a provision of thirty-five beds for in-patients. This accommodation, however, proving insufficient, forty-nine more beds were added, subsequently bringing the in-patient capacity of the hospital up to eighty-four beds.

At first the hospital was administered under a somewhat complex arrangement with a military Medical Officer in charge of the medical work, expenses met from the Suspense Account of the Egyptian Government, and the Police Administration in general charge, whilst a vague and ill-defined responsibility rested on this office, through which the hospital accounts were passed.



This co-operative system, however, with its ill-defined spheres of activity, did not prove an administrative success, and the control of the hospital, as it stood, with the work of the examination rooms, was finally taken over by us at the end of 1916. Previous, however, to this assumption of definite control, this office, as the channel of financial communication, had of necessity been more or less in touch with all arrangements for the control of foreign prostitutes, and the review of the medical part of this control has therefore been included in the present report, though during the greater part of the time the work was not nominally under our charge.

With the extension of the scope of supervision of foreign prostitutes which resulted from the greater powers of control thus obtained, and with the administrative distinction between native and foreign women demanded by the extension, a necessary readjustment of the arrangements obtaining in previous years has rendered the figures for 1915 and 1916 scarcely comparable with those of antecedent records, unless certain allowances be made for the modifications introduced.

The special examination rooms for foreign women were not in existence in 1914, and the question of any comparison with previous years does not therefore arise as regards the numerical records of these.

The examination rooms at Bâb el Sha'riya, El 'Abbâsiya, and El Sayeda Zeinab have continued as before, except that the work in these has been now confined solely to the examination of native prostitutes, the names of all Europeans previously registered there having been removed from the books of these and transferred to El Ezbekiyya registers, in which they are shown without distinction with the names of the foreign women freshly registered under the new arrangement.

The native Lock hospital, being a branch of Qasr el 'Aini Hospital, is under the administration of the latter. El Ezbekiyya hospital has been taken over by us and is now definitely under the control of this office.

Coincident with the application of a more stringent control to all recognized public women, the desirability was suggested of imposing some sort of supervision over that large class of women, chiefly employed in connection with places of entertainment and for the most part residing in special "pensions," who submit themselves to occasional or partial prostitution. This desire was met at first by requiring the weekly submission, by each woman, of a certificate of good health from a private practitioner recognized by this office. Though absolute efficiency of control could scarcely be claimed for such a method, it had the certain advantage of affording information upon which individual action might have been based if this were called for.

In August 1916, however, it was decided to discontinue this arrangement and to substitute for it a more definite control by registration and weekly examination.

As was to be expected from a measure of such doubtful expediency as the fresh arrangement seemed likely to prove by its indiscriminate application to women submitting themselves to the practice of a merely casual prostitution, innate objections to its employment soon manifested themselves and wisely led to an early discontinuation of an inadvisable procedure. During the brief period, however, when the arrangement was in force, these women were submitted to a regular examination in no way differing from that imposed upon regular prostitutes, except that some allowance was made for the greater delicacy of feeling likely to be met with in the case of the occasional prostitute than is usually found in the more hardened habitual practitioner, by the provision of a separate centre for the examination of the former.

In deference to an undertaking given to the women by the authority concerned in making the arrangements, no definite medical records of the results of the examinations upon which any useful conclusions might be based are available for this report, though such women as were found diseased appear as in-patients of the European Lock Hospital in the registers of that institution.

In reviewing the general work of control in 1915 and 1916, it is proposed to discuss separately the positions as regards native and foreign prostitutes respectively, and as regards the former it is to be noted that, in view of the fact that the work of control of native prostitutes now is, in reality, a continuation of the work of the old *bureaux des mœurs* mentioned in previous reports, its figures have been compared with those of 1914, though in weighing this comparison the fact, mentioned already, must not be forgotten that the 1915 and 1916 figures include no foreign women, whilst those of 1914 do.



(a) EXAMINATION OF NATIVE PROSTITUTES.

Of the 921 women whose names were inscribed in the registers of the old *bureaux des mœurs* of 1914, 109 were struck off during that year. There were therefore remaining, at the end of 1914, 812 registered women to be carried over to the registers of the following year.

During 1915 there were 1,022 fresh registrations in the books of these *bureaux*, which, with the 812 names carried over from 1914, gave a total of 1,834 women inscribed in the registers in 1915.

There were 559 names struck off the registers during the year, either on account of death, departure, return to respectability, or successful evasion of supervision, whilst the names of 132 European women were transferred to the books of the new European *bureau des mœurs* instituted at the beginning of the year.

There remained, therefore, at the end of 1915, on the books of the old *bureaux des mœurs*, the names of 1,143 women to be carried on to the registers of the following year.

There were 36,800 examinations carried out in 1915 by the Medical Officer in charge of the old *bureaux des mœurs* as compared with 34,434 in 1914. In making this comparison, however, the fact, already mentioned, that the names of 132 European prostitutes had been removed to the registers of the new European *bureau des mœurs* early in the year has to be borne in mind.

Of this total of examinations held in connection with the old *bureaux des mœurs* in 1915, 17,147 were examinations of women belonging to the Bâb el Sha'riya district as compared with 23,736 in 1914; 14,782 to the El Ezbekiya district as compared with 7,068 in 1914, and 3,121 to the El 'Abbâsiya and 1,750 to the El Sayeda Zeinab districts as against 2,480 and 1,150 for these two districts respectively in the previous year.

During the course of the year, 1,513 women were found suffering from syphilis or gonorrhœa, as against 1,166 in 1914. Of this number, 1,117 were cases of gonorrhœa and 396 of syphilis. All were sent for treatment to the Lock branch of Qasr el 'Aini Hospital at Hôd el Marsûd.

During 1916, the names of 2,049 women were borne on the registers, including the 1,143 remaining from the previous year.

Of these, 670 were struck off, for reasons similar to those given above, during the course of the year, leaving 1,379 names on the books of the old *bureaux des mœurs* at the end of 1916 to be carried on to the following year.

There were 45,100 examinations held during the year as compared with 36,800 in 1915, 17,058 being examinations of women belonging to the Bâb el Sha'riya district as against 17,147 in 1915, 23,278 to the El Ezbekiya quarter as against 14,782 in 1915, 3,342 to El 'Abbâsiya as compared with 3,121 in 1915, and 1,422 to the El Sayeda Zeinab quarter as against 1,750 in the previous year.

During the year, 1,203 cases of syphilis and gonorrhœa were discovered and sent to Hôd el Marsûd for treatment, 795 of these being cases of gonorrhœa and 408 of syphilis.

In Table L is shown the residential distribution, together with the numbers of examinations held, and the recorded venereal incidences amongst the public women in the different quarters, for the years 1915 and 1916.

The comparative figures given in the table show that the general increase in the number of native prostitutes registered in 1916, as compared with the previous year, was derived from an increase in the prostitute population of the two quarters in closest proximity to military camps, or most frequented by soldiers, namely El 'Abbâsiya and El Ezbekiya, whilst an actual diminution took place in the other two quarters.

With the increase or diminution of the numbers of prostitutes in the several quarters there has been an increase or diminution in the number of examinations held in each.

This is as might be expected, though it is to be remembered that the number of examinations is far from depending merely on the number of prostitutes registered, being largely influenced by the position as regards regularity of attendance, by varying durations of the individual periods of registration, and by the amount of sickness and the resulting detention in hospital.

The venereal incidence in 1916, as indicated by the sickness figures, would appear to show some improvement over 1915, and might account, at least in part, for the increase in the average number of examinations to which each woman was submitted in 1916. The sources, however, of statistical error in connection with this subject are too numerous and complex to permit of any safe deductions being drawn from this.



TABLE L.—Results of the Examinations and Residential Distribution of Registered Native Women in 1915 and 1916.

District.	1915							1916						
	Number of Women on Register.	Number struck off during the Year.	Remaining at end of Year.	Total Number of Examinations held.	Average Number of Examinations per Woman.	Number of Cases of Disease discovered.	Percentage of Examinations exposing Diseased Conditions.	Number of Women on Register.	Number struck off during Year.	Remaining at end of Year.	Total Number of Examinations held.	Average Number of Examinations per Woman.	Number of Cases of Disease discovered.	Percentage of Examinations exposing Diseased Conditions.
Báb el Sha'riya ... ..	557	162	395	17,147	30.7	506	2.9	508	86	422	17,058	33.5	319	1.8
El 'Abbásiya ... ..	147	75	72	3,121	21.2	109	3.4	185	61	124	3,342	18.0	81	2.4
El Sayeda Zeinab ... ..	202	129	73	1,750	8.6	128	7.3	144	74	70	1,422	9.8	73	5.1
El Ezbekiya ... ..	928	325	603	14,782	15.9	770	5.2	1,212	449	763	23,278	19.2	730	3.1
TOTALS ... ..	1,834	691	1,143	36,800	20.0	1,513	4.1	2,049	670	1,379	45,100	22.0	1,203	2.6



(b) EXAMINATION OF EUROPEAN PROSTITUTES.

There were 706 women inscribed on the registers of the European *bureau des mœurs* in 1915, consisting of the 132 European prostitutes already referred to as transferred in the beginning of the year from the registers of the old *bureaux des mœurs*, and 574 women who had not been previously registered. During the year, the names of 237 of these women were struck off the registers, leaving 469 names to be carried over to the following year.

During 1916 there were 190 fresh registrations, giving a total of 659 women whose names appeared on the registers of the year. During the year there were 234 struck off, leaving 425 as the number appearing on the registers at the end of the year.

The number of examinations held in 1915 was 11,780, giving an average of 16.6 as the number of times on which each woman on the register during that year was submitted to examination. In 1916, with fewer women, the number of examinations was 24,934 or an average of 37.8 examinations per registered woman. As has been already indicated, however, the number of examinations depends on several factors other than a mere totality of registrations, and the comparative smallness of the average number of examinations in the former of the two years during which the new arrangements for dealing with European prostitutes have been in force is probably largely dependent on a comparative shortness of the individual periods during which each woman was registered in that year, as a result of the relative lateness of registration, such as must have occurred in many cases from delayed information regarding previously unregistered women.

Diseased conditions were found, upon examination, in 525 cases in 1915 and in 896 in 1916, giving a percentage of examinations exposing diseased conditions, in each year, of 4.4 per cent and 3.5 per cent respectively. The inferences, however, to be drawn from such figures are, equally with those concerning native prostitutes, so exposed to error as to render them unsafe as an absolute indication of relative conditions.

It may be mentioned, however, in this connection that, in 1915, obviously as a result of continued neglect and lack of ordinary cleanliness, the local conditions found on the examination of a very large proportion of the previously unregistered European prostitutes then brought on the register were truly deplorable, and compared very unfavorably with those found in the case of native and previously registered European prostitutes.

Associated with, and, to some extent, the indirect result of these unsatisfactory conditions, which in themselves constituted a deviation from health, were many neglected cases of actual disease, which, existing to a relatively much greater degree amongst the previously unregistered European prostitutes than was the case generally, contributed to an expectation of greater frequency of disease in the former case, subsequently justified by the numerical results.

The ultimately improved position in these cases, as regards the conditions found, furnished an interesting example of one of the few undoubted advantages which may be generally conceded to the control of prostitution in the prophylaxis of venereal disease. Apart altogether from the improvement which resulted from medical interference in those cases which actually called for this, a distinct general amelioration of the unsatisfactory conditions originally existing resulted from the weekly cleansing and preparation to which almost all the women had obviously submitted themselves before appearing for their examinations.

In Table LI the details of the examination of European women for 1915 and 1916 are compared.

TABLE LI.—Results of Examinations of Registered European Women in 1915 and 1916.

YEAR.	Number of Women on Register.	Total Number of Examinations held.	Average Number of Examinations per Woman.	Number of Cases of Disease discovered.	Percentage of Examinations exposing Diseased Conditions.
					Per Cent.
1915	706	11,780	16.6	525	4.4
1916	659	24,934	37.8	896	3.5



(c) EUROPEAN LOCK HOSPITAL.

During 1915, 525 European prostitutes were treated in the European Lock Hospital of whom 13 were suffering from syphilis, 357 from gonorrhœa, 58 from chancroid, and 11 from labial abscesses, whilst 86 under suspicion were admitted for observation.

Of the 13 cases of syphilis, 8 were in the primary stage and 5 in the secondary.

Of the 357 cases of gonorrhœa, only 4 were noted as acute, the remaining 353 being returned as cases of chronic gonorrhœa. Many of these latter, however, might have been more properly described as cases of vaginal discharge, largely resulting from neglect and want of ordinary cleanliness, but showing, on examination, the presence of gonococci. Such cases were found to clear up rapidly under appropriate treatment.

The average stay of each patient in hospital was 14·8 days for all cases.

For the syphilitic cases, the average period of detention was 49·3 days, that for the primary cases having been 32·3, and for the secondary 76·6 days.

The average period of detention of the patients suffering from gonorrhœa was 17·0 days, that for those suffering from the acute form having been 30·5, and that for those returned as chronic gonorrhœa 16·9 days.

For the cases of chancroid, the average stay in hospital was 12·2 days, whilst the period for patients admitted with small abscesses of the labia was 11·0 days.

TABLE LII.—European Lock Hospital.

NUMBER OF PATIENTS AND PERIODS OF DETENTION FOR THE DIFFERENT DISEASES.

DISEASE.		1915			1916		
		Number of Patients.	Total Number of Days.	Average Number of Days in Hospital.	Number of Patients.	Total Number of Days.	Average Number of Days in Hospital.
Syphilis ...	{ Primary ... ..	8	259	32·3	9	443	49·2
	{ Secondary ... ..	5	383	76·6	26	1,036	39·8
	Total Syphilis ... ..	13	642	49·3	35	1,479	42·2
Gonorrhœa...	{ Acute ... ..	4	122	30·5	15	456	30·4
	{ Sub-acute ... ..	—	—	—	34	731	21·5
	{ Chronic ... ..	353	5,965	16·9	680	13,477	19·8
	Total Gonorrhœa ... ..	357	6,087	17·0	729	14,664	20·1
Chancroid or Venereal Sore ... ..		58	709	12·2	43	524	12·1
Labial Abscess ... ..		11	121	11·0	53	524	9·8
Under Observation ... ..		86	258	3·0	36	108	3·0
TOTALS ... ..		525	7,817	14·8	896	17,299	19·3

Patients under observation, subsequently found free from venereal disease, underwent a period of detention of three days on an average.

The number of patients admitted to the European Lock Hospital in 1916 was 896. Of these, 35 were suffering from syphilis, 729 were cases of gonorrhœa, 43 had chancroid, 53 were cases of labial abscess, whilst 36 suspicious cases were detained under observation but subsequently discharged as free from disease.

Of the 35 cases admitted as syphilis, nine were in the primary stage and 26 in the secondary.



Of the 729 cases of gonorrhœa, 15 were returned as acute, 34 as sub-acute, and 680 as chronic.

The average stay of each patient in hospital in 1916 was 19·3 days for all cases.

For the cases of syphilis the average period of detention was 42·2 days, that for the primary cases being 49·2 and for the secondary 39·8.

The patients returned as gonorrhœa were detained on an average 20·1 days, the various periods of detention having been 30·4 days for the acute cases, 21·5 for the sub-acute, and 19·8 for the cases returned as chronic.

The average stay of the chancroid cases was 12·1 days and of the cases of labial abscess 9·8 days.

The average period of detention under observation for patients subsequently found free from disease was three days.

In Table LII are shown the details of the admissions in 1915 and 1916.

## TABLE LII



# **XI.—UNHEALTHY, INCONVENIENT, AND DANGEROUS ESTABLISHMENTS.**

Under the Law of August 28, 1904, and the *Arrêté* of the Ministry of the Interior of August 29 of the same year, 2,068 establishments coming under the control of this office were licensed during 1915, after the fact of compliance with the conditions of exploitation had been verified by inspection, as compared with the 2,199 similar establishments licensed in 1914.

Of the 2,068 establishments dealt with, 36 were establishments coming under Class I of the schedule attached to the law, as against 33 in 1914; 1,228 were establishments in Class II, as compared with 1,378 in 1914; and 804 establishments in Class III, as compared with 788 in the previous year.

Subjoined is a detailed list of the various establishments in each class licensed during 1915 :—

## **CLASS I.**

Soap factories ... ..	3
Iron foundries ... ..	4
Gypsum mills employing mechanical power ... ..	3
Artificial butter factories ... ..	2
Aerated water factories ... ..	3
Public baths ... ..	3
Flour mills ... ..	7
Cotton cake factory employing mechanical power ... ..	1
Barley and <i>durra</i> crushing mill... ..	1
Copper foundry using mechanical power ... ..	1
Pastry cook shop employing mechanical power ... ..	2
Public market ... ..	1
Carbonic acid factory ... ..	1
Glass-bevelling shop employing mechanical power ... ..	1
Macaroni factory employing mechanical power ... ..	1
Laundry employing mechanical power ... ..	1
Garage employing mechanical power ... ..	1
<b>TOTAL establishments of the first class licensed in 1915 ...</b>	<b>36</b>

## **CLASS II.**

Grocers' shops ... ..	722
Flour stores ... ..	99
Tinsmiths' shops ... ..	62
Public stables ... ..	57
Public kitchens ... ..	81
Blacksmiths' shops ... ..	42
Milk shops ... ..	31
Bakeries ... ..	30
Dye-shops ... ..	8
Copper-tinning establishments ... ..	12
Oil shops ... ..	16
Pea-roasting establishments ... ..	6
Cattle sheds ... ..	5
Sweet factories ... ..	9
Marble workshops ... ..	2
Simple distilleries... ..	2
Plaster mills (gypsum) ... ..	1
Starch factories ... ..	2
Wooden sheds used for trade purposes ... ..	3
Rice, sugar, soap, and candle stores ... ..	1
<i>Fisikh</i> stores... ..	1
Rag and bone stores ... ..	3
Vegetable pickle factories ( <i>turshis</i> ) ... ..	3



Cement-paving factories ... ..	3
Copper foundries... ..	7
Leather dye shop ... ..	1
Varnish factory and <i>eau de Cologne</i> distillery ... ..	1
Butter shops ... ..	10
Lupin-boiling establishment ... ..	1
Oil press... ..	1
Pigsties ... ..	2
Motor garages ... ..	2
Skin and hide store ... ..	1
Gypsum kiln ... ..	1

TOTAL establishments of the second class licensed in 1915 ... 1,228

### CLASS III.

Fish, meat, and vegetable frying shops... ..	332
Ironing shops ... ..	205
Butchers' shops ... ..	182
Bark and seed grinding establishments ... ..	8
Pastry cook shops ... ..	25
<i>Fisikh</i> shops ... ..	10
Poultry shops ... ..	30
Cement and gypsum stores ... ..	7
Fresh fish shops ... ..	5

TOTAL establishments of third class licensed in 1915 ... 804

The number of establishments obtaining licences in 1916 was less than in the previous two years, there being only 1,797 in this year as compared with 2,068 in 1915, and 2,199 in 1914. The total granted in 1916 more closely approximated as regards numbers the 1,765 establishments licensed in 1913.

Of the 1,797 licences issued in 1916, thirty-five were for establishments of the first class, as against thirty-six in the previous year; 1,081 were for establishments of the second class, as against 1,228 in 1915; and 681 were establishments of the third class, as compared with 804 in 1915.

The diminution in the number of establishments licensed in 1916 is, therefore, due to the smaller number of licences granted to establishments of the second and third classes.

Subjoined is a detailed list of the licences granted in each class during 1916 :—

### CLASS I.

Forges employing mechanical power ... ..	10
Flour mills ... ..	6
Weaving and spinning mills ... ..	1
Metal-polishing workshops employing mechanical power ... ..	1
Glass bracelet factory... ..	1
Iron foundry ... ..	1
Ice factory ... ..	1
Cigarette paper stamping and cutting factory ... ..	1
Sweet factory employing mechanical power ... ..	1
Oil press... ..	1
Beer-bottling establishments ... ..	2
Aerated water factory ... ..	1
Artificial butter factory ... ..	1
Soap factories ... ..	4
Tanneries ... ..	3

TOTAL establishments of first class licensed in 1916 ... 35



CLASS II.

Grocers' shops	611
Oil shops	23
Alcohol distilleries	4
Flour stores	68
Public stables	52
Blacksmiths' shops	44
Tinsmiths' shops	57
Public kitchens	62
Marble workshops	1
Syrup factories	12
Oil presses	4
Dye shops	15
Ice-cream shops	5
Bakeries	34
Grocery stores	2
Bean-crushing mills	2
Vegetable pickle ( <i>turshi</i> ) factories	3
Cattle sheds ( <i>zeriba</i> )	11
Pea-roasting establishments	6
Sweet factories	12
Copper-turning workshops	6
Copper-tinning establishments	6
Rice, sugar, coffee, and soap stores	1
Soap and coffee warehouses	3
Wooden shed for trade purposes	1
Butter shop	11
Copper foundries	4
Cement-paving factory	1
Markets for the sale of kitchen food-refuse	2
Laundry	1
Salted fish ( <i>fisikh</i> ) stores	1
Fermented milk shops	8
Motor garage	1
Pottery kiln	2
Leather stores	3
Plaster mill (gypsum)	1
Pigsty	1

TOTAL establishments of second class licensed in 1916 ... 1,081

CLASS III.

Ironing shops	137
Butchers' shops	128
<i>Ta'miya</i> and fish-frying shops	319
Poulterers' shops	27
Meat-roasting establishments	36
Pastry cook shops	17
Fresh fish shops	3
<i>Fisikh</i> shops	12
Bark and seed-grinding shop	1
Lime and gypsum store	1

TOTAL establishments of third class licensed in 1916 ... 681



Formerly, the chief difficulty experienced in dealing with the establishments licensed under the Law of August 28, 1904, resulted from the lack of a subsequent efficient control.

The powers conferred by law of laying down conditions, and the initial verification of their application before any issue of a licence, enabled us primarily to start these establishments with some approach to a satisfactory condition, but the absence of any provision for a regular systematic inspection to ensure subsequent compliance with the conditions imposed resulted in a gradual falling away from initial standards in the great majority of cases.

Spasmodic inspections at irregular intervals had, it is true, some slight effect, but the infrequency of the visits, combined with the smallness of the penalty for failure to observe the conditions, rendered efficient control impossible.

In 1914, however, the provision of a small staff, specially for the purpose of supplying means for a subsequent control, permitted of a start being made in this direction.

It was considered advisable, however, in taking advantage of this, to confine the activities of the new service to the control of those establishments which were of prime importance from a public health point of view, rather than to attempt to deal with the whole question and thus impair the efficiency of control by a diminution in the frequency or regularity of the visits.

Acting on this principle, it was decided, in 1914, to limit the inspections at first to such establishments as dealt in foodstuffs and drinks, and this arrangement was continued in 1915 and 1916.

In 1915, 51,334, and in 1916, 39,947 visits were paid to establishments of this nature, as compared with 9,038 in 1914.

The increase in the number of inspections carried out in 1915 and 1916, as compared with 1914, is in part attributable to the smoother working of the arrangement in the last two years than was possible in the year of its inception, and partly to the fact that the diminution in the amount of the work of passenger control which has resulted from the war, has permitted of the employment of certain of the personnel of that service in connection with the inspection of food establishments.

TABLE LIII.—Showing Relative Occurrence of Faulty Conditions in Food Establishments inspected in 1914, 1915, and 1916.

NATURE OF ESTABLISHMENT.	PERCENTAGE OF VISITS IN WHICH FAULTY CONDITIONS WERE FOUND.		
	1914	1915	1916
	Per Cent.	Per Cent.	Per Cent.
Grocers' shops ... ..	13·1	6·8	2·1
Butchers' shops ... ..	12·1	7·4	1·1
Bakeries ... ..	38·2	41·0	27·1
Restaurants with public kitchen ... ..	17·9	11·7	7·4
Confectionery establishments ... ..	14·2	18·5	14·3
Oilmen's shops ... ..	18·0	12·1	6·1
Poulterers' shops ... ..	30·0	22·2	10·4
Dairies and milk shops ... ..	24·5	28·9	9·3
Vegetable dealers' shops ... ..	—	2·5	1·8
Fish shops ... ..	27·4	16·6	5·5
Other establishments ... ..	23·0	22·4	15·5
GENERAL PERCENTAGE ... ..	17·2	14·2	6·8

In the course of the 51,334 visits paid in 1915, the conditions were found to be satisfactory in 44,012, or 85·7 per cent of the inspections as compared with 82·73 per cent in 1914. Of the 39,947 visits in 1916, satisfactory conditions were found in 37,211 or 93·1 per cent.

The figures for the three years, therefore, during which the inspections have been in force, show a gradual tendency towards improvement, the percentage of visits at which unsatisfactory conditions were found having diminished from 17·2 per cent in 1914 to 14·2 per cent in 1915, and 6·8 per cent in 1916.



This improvement is in reality even more marked than is shown by the figures, as, in 1914, the first year of the new arrangement, it was not considered politic that full advantage should be taken of this in any way such as would operate needlessly with sudden or undue harshness on the establishments concerned, and many faults not of a pressing nature were, for the time being, overlooked.

Table LIII shows the relative occurrence of faulty conditions discovered at the inspections of the various food establishments in 1914, 1915, and 1916.

From this it will be seen that the general improvement in the conditions found applied broadly to all the individual establishments, and, generally speaking, shows a marked advance in each year over that of its predecessor.

In the case of bakeries, confectionery establishments, and dairies, the exceptional increase in the percentage of inspections at which faulty conditions are noted as having been found in 1915 as compared with 1914, was entirely due to the greater stringency with which inspections were made in 1915, and not to any less satisfactory position as regards these establishments.

In all cases where conditions were found unsatisfactory, the proprietor of the establishment was warned, and a time limit fixed within which the necessary improvements had to be carried out, failure to comply being followed by legal proceedings. In 1915, 503, and in 1916, 387 cases called for prosecutions.

In 1915, the inspections were distributed over the various Qisms as follows: 5,081 Bûlâq I, 2,105 Bûlâq II, 5,209 El Gamâliya, 2,667 El Wâyli, 6,797 El Ezbekiyya, 4,425 Shubra, 3,518 'Abdîn, 2,919 El Mûski, 5,600 El Sayeda Zeinab, 2,635 El Khalifa, 3,761 El Darb el Ahmar, 1,641 Old Cairo, and 4,976 Bâb el Sha'riya.

In 1916, the distribution was: 3,107 Bûlâq I, 2,609 Bûlâq II, 4,657 El Gamâliya, 2,269 El Wâyli, 4,353 El Ezbekiyya, 8,455 Shubra, 1,011 'Abdîn, 1,516 El Mûski, 4,748 El Sayeda Zeinab, 564 El Khalifa, 2,858 El Darb el Ahmar, 990 Old Cairo, and 2,810 Bâb el Sha'riya.

In Table LIV are shown the number and results of the inspections in the various

TABLE LIV.—Results of Inspections of Food Establishments in the Various Wards of the City in 1915 and 1916.

DISTRICT.	1915					1916				
	Number of Inspections.	Number showing Satisfactory Conditions.	Percentage showing Satisfactory Conditions.	Number showing Unsatisfactory Conditions.	Percentage showing Unsatisfactory Conditions.	Number of Inspections.	Number showing Satisfactory Conditions.	Percentage showing Satisfactory Conditions.	Number showing Unsatisfactory Conditions.	Percentage showing Unsatisfactory Conditions.
			Per Cent.		Per Cent.			Per Cent.		Per Cent.
El Mûski ... ..	2,919	2,617	89·6	302	10·3	1,516	1,411	93·0	105	6·9
Bâb el Sha'riya ...	4,976	4,164	83·6	812	16·3	2,810	2,493	88·7	317	11·2
El Ezbekiyya ... ..	6,797	5,885	86·5	912	13·4	4,353	4,142	95·1	211	4·8
'Abdîn ... ..	3,518	2,983	84·7	535	15·2	1,011	954	94·3	57	5·6
El Sayeda Zeinab ...	5,600	4,553	81·3	1,047	18·6	4,748	4,123	86·8	625	13·1
El Khalifa ... ..	2,635	2,304	87·4	331	12·5	564	535	94·8	29	5·1
El Darb el Ahmar ...	3,761	3,369	89·5	392	10·4	2,858	2,710	94·8	148	5·1
El Gamâliya ... ..	5,209	4,375	83·9	834	16·0	4,657	4,418	94·8	239	5·1
Shubra ... ..	4,425	3,822	86·3	603	13·6	8,455	8,209	97·0	246	2·9
Bûlâq I ... ..	5,081	4,436	87·3	645	12·6	3,107	2,926	94·1	181	5·8
Bûlâq II ... ..	2,105	1,787	84·8	318	15·1	2,609	2,383	91·3	226	8·6
Old Cairo ... ..	1,641	1,275	77·6	366	22·3	990	806	81·4	184	18·5
El Wâyli ... ..	2,667	2,442	91·5	225	8·4	2,269	2,101	92·5	168	7·4
TOTALS ... ..	51,334	44,012	85·7	7,322	14·2	39,947	37,211	93·1	2,736	6·8

districts of the city in 1915 and 1916. In both years unsatisfactory conditions were found most commonly in the establishments of Old Cairo, with percentages of 22·3 and 18·5 of the inspections in 1915 and 1916 respectively, leading to the discovery of unsatisfactory conditions.



In 1915, the most satisfactory position was found in El Wâyli, where faulty conditions were found at only 8·4 per cent of the visits. In 1916, Shubra, with its small percentage of 2·9 per cent, occupied the foremost place.

In Tables LV and LVI are shown, for 1915 and 1916 respectively, the monthly distribution of the work and the results of the inspections in the various establishments. In both years, bakeries gave the most frequent cause for complaint, fault having to be found at 41·0 per cent of the visits in 1915, and at 27·1 per cent in 1916. In the greater number of these cases objection was taken to faulty arrangements for removal of smoke and insufficient frequency of whitewashing. The most satisfactory were, in 1915, vegetable dealers' shops with 2·5 per cent of faults found on inspection, and in 1916, butchers' shops with 1·1 per cent, and vegetable dealers' shops with 1·8 per cent.

In 1916, with the assistance of the Military Authorities, pressure was brought to bear on the proprietors of certain of the older soda-water factories in which the conditions of exploitation left much to be desired. A notice of the conditions generally applicable to mineral water factories was served on the proprietors of all such establishments, and a time limit fixed for each within which whatever alterations were necessary should be carried out, if such were called for.

A warning was sent at the same time to the effect that failure to comply would result in a prohibition of all supply of the mineral water concerned to troops, and would entail the putting out of bounds of any establishments selling or keeping such mineral waters.

This resulted in a considerable improvement, and an attempt has been made to preserve the higher standard thus attained by a bi-monthly inspection of each establishment.



TABLE LV.—Objectionable, Unhealthy and Dangerous Establishments. Previously existing Establishments inspected in 1915.

NATURE OF ESTABLISHMENT.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.		JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		TOTAL.		Percentage of Total Inspections showing Faulty Conditions.
	Conditions Satisfactory.	Conditions Faulty.	Conditions Satisfactory.	Conditions Faulty.	Conditions Satisfactory.	Conditions Faulty.	Conditions Satisfactory.	Conditions Faulty.	Conditions Satisfactory.	Conditions Faulty.	Conditions Satisfactory.	Conditions Faulty.	Conditions Satisfactory.	Conditions Faulty.	Conditions Satisfactory.	Conditions Faulty.	Conditions Satisfactory.	Conditions Faulty.	Conditions Satisfactory.	Conditions Faulty.	Conditions Satisfactory.	Conditions Faulty.	Conditions Satisfactory.	Conditions Faulty.	Conditions Satisfactory.	Conditions Faulty.	
Grocers' shops ... ..	643	131	601	89	1,056	31	1,327	81	1,387	202	1,621	102	1,621	117	1,123	81	1,581	159	1,661	96	1,928	59	1,413	27	15,962	1,175	6.8
Butchers' shops ... ..	111	24	209	21	343	9	287	21	354	51	356	54	386	33	308	27	356	24	413	24	475	24	395	10	3,993	322	7.4
Bakeries ... ..	99	25	75	35	166	76	150	71	102	139	81	142	99	138	96	104	154	121	148	53	175	93	160	52	1,505	1,049	41.0
Restaurants with public kitchen ... ..	233	37	266	80	400	29	503	32	557	130	674	103	637	81	457	95	794	92	796	105	996	112	679	37	6,992	933	11.7
Confectionery establishments ... ..	28	4	67	15	112	24	77	16	68	20	84	27	62	19	73	18	56	9	76	19	78	13	54	6	835	190	18.5
Oilmen's shops ... ..	93	11	100	17	133	12	183	20	213	47	183	35	241	36	205	34	272	51	255	46	392	29	231	9	2,501	347	12.1
Poulterers' shops ... ..	9	3	20	4	44	6	32	7	33	22	32	17	37	8	29	6	26	15	30	8	43	10	46	3	381	109	22.2
Dairies and milk shops	38	17	45	16	63	24	60	18	63	29	73	42	58	44	36	20	71	26	63	22	87	21	67	16	724	295	28.9
Vegetable dealers' shops	16	0	49	1	55	1	61	0	123	4	135	7	116	3	84	2	116	3	88	1	121	5	59	0	1,023	27	2.5
Fish shops ... ..	21	5	50	6	49	5	43	7	38	15	40	12	56	10	36	12	45	10	52	15	57	14	133	13	620	124	16.6
Other establishments ...	300	109	308	99	677	108	715	129	746	322	626	314	844	375	770	264	1,094	336	1,063	265	1,257	273	1,076	157	9,476	2,751	22.4
TOTALS ... ..	1,591	366	1,790	383	3,098	325	3,438	402	3,684	981	3,905	855	4,157	864	3,217	663	4,565	846	4,645	654	5,609	653	4,313	330	44,012	7,322	14.2



TABLE LVI.—Objectionable, Unhealthy and Dangerous Establishments. Previously existing Establishments inspected in 1916.

NATURE OF ESTABLISHMENT.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.		JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		TOTAL.		Percentage of Total Inspections showing Faulty Conditions.
	Conditions Satisfactory.	Conditions Faulty.	Conditions Satisfactory.	Conditions Faulty.	Conditions Satisfactory.	Conditions Faulty.	Conditions Satisfactory.	Conditions Faulty.	Conditions Satisfactory.	Conditions Faulty.	Conditions Satisfactory.	Conditions Faulty.	Conditions Satisfactory.	Conditions Faulty.	Conditions Satisfactory.	Conditions Faulty.	Conditions Satisfactory.	Conditions Faulty.	Conditions Satisfactory.	Conditions Faulty.	Conditions Satisfactory.	Conditions Faulty.	Conditions Satisfactory.	Conditions Faulty.	Conditions Satisfactory.	Conditions Faulty.	
Grocers' shops ... ..	1,633	20	1,080	21	1,320	29	798	17	1,010	44	870	16	1,021	19	1,154	13	443	5	457	39	809	20	777	9	1,372	252	2.1
Butchers' shops ... ..	329	17	200	13	248	10	227	9	2,750	21	1,074	13	847	10	828	6	605	0	774	2	905	6	524	4	9,311	111	1.1
Bakeries ... ..	153	62	97	66	168	50	89	55	103	4	75	39	115	26	106	21	40	7	51	15	61	14	63	17	1,121	417	27.1
Restaurants with public kitchen ... ..	800	47	477	57	540	74	413	35	442	54	411	19	372	17	364	4	107	2	125	23	250	21	207	9	4,508	362	7.4
Confectionery establishments ... ..	67	9	36	4	42	4	32	1	34	10	59	13	38	8	44	13	12	0	16	2	23	5	14	1	417	70	14.3
Oilmen's shops ... ..	234	9	115	16	194	9	123	10	141	16	143	5	101	7	127	7	36	1	31	8	138	7	108	3	1,491	98	6.1
Poulterers' shops ... ..	27	4	12	1	21	5	33	1	24	2	9	1	18	1	27	1	8	0	24	6	38	8	17	0	258	30	10.4
Dairies and milk shops	86	10	150	12	56	9	39	5	46	2	32	2	41	3	50	4	24	0	28	8	61	7	28	4	641	66	9.3
Vegetable dealers' shops	82	1	47	4	53	2	61	1	43	1	39	1	43	0	38	0	28	0	32	0	68	0	58	1	592	11	1.8
Fish shops ... ..	43	2	29	0	43	2	40	1	55	2	32	4	33	0	30	2	4	0	33	3	115	7	36	6	493	29	5.5
Other establishments ...	1,058	169	575	125	930	159	546	91	717	150	566	92	581	67	614	63	236	28	211	82	511	111	462	153	7,007	1,290	15.5
TOTALS ... ..	4,512	350	2,818	319	3,615	353	2,401	226	5,365	347	3,310	205	3,210	158	3,382	134	1,543	43	1,782	188	2,979	204	2,294	20	37,211	2,736	6.8



## XII.—PASSENGER AND PILGRIM CONTROL SERVICES.

(a) *Passenger Service*.—During 1915, there arrived in Cairo, 1,924 passengers coming from countries suspected to be infected with communicable disease, or requiring for other reasons to undergo a period of observation after their arrival, as compared with a total of 17,000 in 1914, and 17,982 in 1913.

The figures for 1916 are similarly low, the number of controlled passengers arriving in Cairo in that year being only 2,713.

An explanation of this decrease, in the last two years, is to be found almost entirely in the diminution of international communication resulting from the European war, which, by tending to curtail facilities of travel, has reduced to a minimum all civilian passenger traffic.

As a result, the amount of work undertaken by the service dealing with this has, especially in 1915, been so exceptionally small as to have enabled us to arrange for the application of those more extensive measures of inspection of food and drink establishments which have been referred to, and has permitted of an, at times, very necessary reinforcement of the other services of the Inspectorate in an allocation of passenger staff to such as have been unduly overtaxed by the additional duties required of them as a result of the war conditions.

In ordinary times, the countries from which arrivals are subject to observation necessarily vary with changing conditions, but at all times in the past the bulk of the controlled traffic came from Turkey, partly owing to the fact that its condition as regards infection was always open to suspicion, and partly as a result of the enormous passenger traffic normally occurring between that country and this.

Thus, in the year before the war the Turkish Dominions provided 17,244 of the 17,982 controlled passengers.

In 1914, the unsettled position resulting from the outbreak of war merely led to an earlier flow of returning passenger traffic from Turkey, so that in that year the work of passenger control was not diminished to any great extent, there having been in 1914 a total of 15,640 arrivals from Turkish ports, forming the bulk of the 17,000 controlled passengers in that year.

During 1915 and 1916, however, the cessation of all regular communication with Turkey, with the marked diminution of passenger traffic with other countries, resulted in an almost complete elimination of those passenger sources from which were formerly derived the bulk of the controlled passenger traffic, and a consequent diminution in the scope of passenger observation now called for.

In 1915, ninety-one controlled passengers arrived in Cairo from Smyrna, Dedeagatch, and Basra, and 491 from Jaffa and other Syrian ports.

In 1916, no arrivals from these sources were dealt with, though, as a result of the re-establishment of communication with the Hejaz, three passengers arrived from Jedda towards the end of the year.

In 1915, the bulk of the controlled passenger traffic came from Greece, there being 1,160 arrivals from Greek sources in that year, as against 748 observed passengers from Greek ports in 1914, and 279 in 1913. Of the remainder, 121 were returning labourers from Mudros, under observation specially for typhus and relapsing fevers, and twenty-seven passengers from El Tôr, and thirty-four from Far Eastern ports, under observation for various reasons.

In 1916, the greater part of the controlled passenger traffic was furnished by returning Egyptian labourers from Mudros, chiefly under observation for typhus and relapsing fevers. Of these, in this year, there were 1,842 as compared with 121 in 1914.

Arrivals from Greek ports supplied 719 passengers for observation as against 1,160 in 1915. Of the remainder, 113 were arrivals from other ports of Egypt and from the Sudan, only differentiated from the uncontrolled travellers within the limits of the country by the accident of their arrival by sea, whilst eighteen were from El Tôr, two from Rhodes, and, including the three arrivals from Jeddah already mentioned, nineteen were from Oriental ports.

Of the arrivals in Cairo under observation in 1915, 1,825 or 94·8 per cent came by way of Alexandria, seventy or 3·6 per cent were *viâ* Port Said, and twenty-nine or 1·5 per cent *viâ* Suez.



TABLE LVII.—Arrivals from Foreign Countries under Observation in Cairo in 1915.

MONTH.	VIA ALEXANDRIA.										VIA PORT SAID.					VIA SUEZ.											
	Number of Passengers.	PORT OF ORIGIN.							Observed.	Untraced.	Period of Observation completed.	Number of Passengers.	PORT OF ORIGIN.				Observed.	Untraced.	Period of Observation completed.	Number of Passengers.	PORT OF ORIGIN.		Observed.	Untraced.	Period of Observation completed.		
		Chios.	Salonica.	Smyrna.	Mudros.	Jaffa.	Other Syrian Ports.	Dedagatch.					Batavia.	Manilla.	Singapore.	Yokohama.					Syrian Ports.	El Tor.				Basra.	
January ... ..	404	39	—	—	14	311	40	397	6	1	15	—	—	—	15	14	—	1	22	22	—	—	21	1	—	—	—
February ... ..	173	123	—	—	—	50	—	170	3	—	13	—	—	—	13	13	—	—	—	—	—	—	—	—	—	—	—
March ... ..	106	60	—	—	—	3	43	106	—	—	3	—	—	—	3	3	—	—	—	—	—	—	—	—	—	—	—
April ... ..	77	42	—	—	—	35	—	74	3	—	10	1	—	6	3	9	1	—	—	—	—	—	—	—	—	—	—
May... ..	99	92	6	—	—	1	—	99	—	—	2	—	—	—	2	—	2	—	—	—	—	—	—	—	—	—	—
June ... ..	64	49	—	—	—	15	—	63	1	—	11	—	—	—	—	11	—	—	—	—	—	—	—	—	—	—	—
July ... ..	79	62	—	—	—	17	—	79	—	—	3	1	—	—	—	2	1	—	—	—	—	—	—	—	—	—	—
August ... ..	34	31	—	—	—	—	—	33	1	—	2	—	1	1	—	2	—	—	—	—	—	—	—	—	—	—	—
September ... ..	211	196	—	—	—	9	—	211	—	—	—	—	—	—	—	—	—	—	2	—	2	—	2	—	—	—	—
October ... ..	207	207	—	—	—	—	—	205	2	—	7	—	—	—	—	7	—	—	—	—	—	—	—	—	—	—	—
November ... ..	103	103	—	—	—	—	—	101	2	—	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—
December ... ..	268	147	—	121	—	—	—	262	6	—	3	—	—	3	—	3	—	—	5	5	—	—	—	—	5	—	—
TOTALS ... ..	1,825	9	1,151	6	121	14	441	83	1,800	24	1	70	2	1	21	10	36	65	4	1	29	27	2	23	6	—	—



TABLE LVIII.—Arrivals from Foreign Countries under Observation in Cairo in 1916.

MONTH.	VIA ALEXANDRIA.										VIA PORT SAID.						VIA SUEZ.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	PORT OF ORIGIN.					Number of Passengers.	Observed.	Untraced.	Departed before Full Period of Observation completed.	PORT OF ORIGIN.					Number of Passengers.	Observed.	Untraced.	Departed before Full Period of Observation completed.	PORT OF ORIGIN.					Number of Passengers.	Observed.	Untraced.	Departed before Full Period of Observation completed.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
	Salonika.	Mudros.	Marsa Matruh.	Piræus.	Kavalla.					Singapore.	Salonika.	Yokohama.	Rhodes.	Bombay.					Port Sudan.	El Tor.	Abyssinia.	Singapore.	Jeddah.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
January ... ..	31	1,192	—	—	—	1,223	993	211	19	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	



Of the passengers arriving in 1916, 2,638 or 97·2 per cent travelled *viâ* Alexandria, forty-four or 1·6 per cent *viâ* Port Said, and thirty-one or 1·1 per cent *viâ* Suez.

In Tables LVII and LVIII are shown, month by month, the details of origin of observed passengers for Cairo, arriving at the various ports in 1915 and 1916 respectively, whilst in Table LIX are given comparative figures for 1913, 1914, 1915, and 1916, of passengers for Cairo disembarking under observation each month at the different ports.

Of the 1,924 arrivals requiring observation in 1915, 1,888 or 98·1 per cent completed the full period of observation required, whilst two or 0·1 per cent underwent a partial observation, departing for another destination before the completion of the full period, and thirty-four or 1·7 per cent were lost. The best results were obtained as regards the passengers notified from Alexandria, of whom only twenty-four of the 1,825 arrivals from that port or 1·3 per cent failed to be traced. Of the seventy arrivals from Port Said, four or 5·7 per cent were lost, whilst six or 22·2 per cent of the twenty-seven passengers disembarking at Suez were never found.

Of the 2,713 passengers for Cairo to be submitted to observation in 1916, 2,447 or 90·1 per cent were traced and completed the full period of observation necessary, whilst twenty-four or 0·9 per cent were traced, but departed to re-embark for other destinations before the completion of their observation.

The number of persons untraced was 242 or 8·9 per cent.

Of the 2,638 passengers to be put under observation in Cairo and disembarking at Alexandria, 239 or 9·0 per cent could not be traced, as compared with the one person untraced or 2·2 per cent of the forty-four Port Said passengers, and two untraced or 6·4 per cent in the case of the thirty-one Suez passengers.

During 1916, circumstances arose rendering it desirable that certain labourers from the Canal Zone should be submitted to periods of observation, principally for relapsing fever, and 6,504 names were notified to us as of persons to be controlled. Of these, however, only 5,137 or 78·9 per cent could be traced, whilst the remaining 1,367 or 21·0 per cent disappeared and could not be discovered on the incomplete information furnished to us. There were strong grounds for believing, however, that a very large number of the labourers whose names were notified did not actually belong to the district assigned as their residence in the notification.

(b) *Pilgrim Service*.—The interruption of communication with the Turkish dominions resulting from the war with Turkey rendered the 1915 pilgrimage impossible. No work, therefore, in connection with this is to be recorded for that year. With the re-establishment of access to the Hejaz, however, in the following year, a limited pilgrimage was enabled to accompany the *Mahmal* in 1916, though the actual number of pilgrims who availed themselves of the opportunity was small.

As regards Cairo, there were only fifty applications for pilgrim passports in 1916, and of these no use was made in the case of two. The number of Cairo pilgrims who actually left for Mecca was therefore forty-eight, and these, with the 120 officials of the *Mahmal*, constituted the entire pilgrim traffic for the year as far as this city was concerned. Of the total departures, five pilgrims had not returned by the end of the year, whilst two returned to the country but not to Cairo, one proceeding directly to Qalyûb and the other to Zifta. The remaining forty-one pilgrims, with the staff of the *Mahmal*, returned and underwent their period of observation without incident. In addition, three returning pilgrims unprovided with passports, and eight with passports from other localities in Egypt, passed their period of observation in this city.



TABLE LIX.—Showing Comparative Numbers of Passengers under Observation arriving in Cairo during 1913, 1914, 1915, and 1916.

MONTH.	ALEXANDRIA.				PORT SAID.				SUÉZ.				TOTAL.			
	1913	1914	1915	1916	1913	1914	1915	1916	1913	1914	1915	1916	1913	1914	1915	1916
January ... ..	331	642	404	1,223	571	523	15	—	35	118	22	—	997	1,283	441	1,223
February ... ..	494	679	173	68	444	506	13	—	60	128	—	—	998	1,312	186	68
March ... ..	817	1,524	106	92	510	537	3	36	89	85	—	—	1,416	2,146	109	128
April ... ..	668	902	77	7	660	1,231	10	1	80	74	—	5	1,178	2,208	87	13
May ... ..	460	571	99	5	592	619	2	—	54	231	—	2	1,106	1,421	101	7
June ... ..	294	435	64	101	589	589	11	—	70	57	—	—	952	1,081	75	101
July ... ..	462	892	79	769	696	1,014	3	—	49	49	—	2	1,207	1,955	82	771
August ... ..	429	822	34	188	500	795	2	—	1	28	—	—	930	1,645	36	188
September ... ..	1,064	893	211	84	1,474	1,036	—	—	18	23	2	—	2,556	1,952	213	84
October ... ..	1,444	567	207	84	1,182	619	7	—	31	32	—	—	2,657	1,218	214	84
November ... ..	1,119	386	103	16	959	156	1	—	27	9	—	20	2,105	551	104	36
December ... ..	994	186	208	1	578	39	3	7	77	3	5	2	1,649	228	276	10
TOTALS ... ..	8,636	8,499	1,825	2,638	8,755	7,664	70	44	591	837	29	31	17,982	17,000	1,924	2,731



### XIII.—ANTI-MOSQUITO SERVICE.

The arrangements for dealing with mosquitoes in 1915 and 1916 remained the same as before, that is to say, measures for the destruction of mosquito larvæ were applied in certain selected areas in which a sufficient bulk of the inhabitants had agreed to grant access to their houses and gardens for the purpose of dealing with any breeding grounds existing therein, and to pay the small voluntary tax imposed for the purpose of defraying the expenses.

The optional character, however, of the acceptance of the application of measures renders these of limited utility, as the occurrence of a comparatively few untreated houses and grounds in any treated area may be sufficient to provide a supply of mosquitoes such as will infect the whole area.

As regards this, there seems to be a very general misconception on the part of the public as to the possibilities of remedying a pest of mosquitoes. Frequent applications are received for the treatment of individual houses, or even single flats, in untreated localities.

It might be expected to be more generally recognized, that, as far as any obvious effect was likely to result from such a limited application of measures, it would serve no practical purpose to initiate these, but it would seem, on the contrary, to be the general expectation that a total disappearance of all mosquitoes in any place, and under any circumstances, is the natural corollary of the payment of the small tax and the signature of the permit of entry.

To the logical acceptors of this creed the obvious inference to be made from any persistence of mosquitoes is that such a condition could only be due to some neglect on the part of the person responsible for carrying out the measures of larval destruction, with the result that every new extension of the work serves to provide an additional source of complaint.

It would be of considerable advantage, therefore, if it were more clearly understood that no public health authority can possibly eliminate mosquitoes from any locality under such conditions, and that the most that can be expected is that the application of measures is likely to be followed by an evident diminution in numbers of mosquitoes, provided that the area is sufficiently separated and does not contain an undue proportion of untreated houses.

No great improvement, however, is likely to occur until the onus of prevention of mosquito-breeding is legally placed upon the occupier, and the right of entry for inspection granted to the Public Health Authority.

The exceptionally high Nile of 1916, by enormously increasing the breeding areas, led to a serious plague of mosquitoes in that year. This occurred principally in the more suburban areas, in most of which there appeared enormous numbers of anopheles in addition to the stegomyia and culex usually found. This naturally proved a source of some anxiety in view of the presence of large bodies of troops, of which some were likely to have been recent arrivals from malaria-infected countries.

By arrangement with the Military Authorities, malarial sick were kept out of the anopheles-infected areas, whilst special observation was kept on the conditions of health of the residents of these areas with the object of obtaining early information of any malarial infection.

A few cases actually did occur, but the number of these was very small, and with the fall of the Nile and the disappearance of the anopheles the danger ceased to exist for the time being.

It is to be remembered, however, that such a situation may return again, and though the conditions which arose were unusual and resulted from a Nile flood of exceptional height, the possibility of a repeated annual sequence of high floods, leading to a return of similar conditions in a series of years, might result in a grave malarial infection of the localities concerned.

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#### XIV.—NEW LAWS AND REGULATIONS.

The difficulty constantly experienced in this city in dealing with isolated small outbreaks of typhoid fever in the lower-class quarters of the town, without powers of compulsory removal to hospital, led the Inspectorate, early in 1915, to apply to have this disease transferred from Part 2 of the Schedule attached to the Infectious Disease Law and placed in Part I of that schedule, with the object of obtaining the powers desired.

No provision for such modification had, however, been made in the original Infectious Disease Law (Law No. 15 of 1912), and it became necessary, before this could be done, to make such alterations of the law as would permit of it.

A law (No. 18 of 1915), dated May 8, was therefore passed, modifying Article 1 of the original law by deleting the last five words in the Article and placing the word "autre" before "maladie infectieuse" at the end thereof. To the article thus amended an additional paragraph was added, conferring on the Ministry of the Interior the power to modify the classification and determine the nature of the scheduled diseases.

On the day following the publication of the modifying law, an *arrêté* of the Ministry of the Interior was signed transferring typhoid fever to Part I of the schedule.

At the beginning of 1915, circumstances suggested the advisability of obtaining further powers of protecting the river from pollution upstream of the Rôd el Farag water intake, and an *arrêté* of the Governorate of Cairo, granting the powers asked for, was obtained on January 26, 1915.

Similar additional powers for the protection of the intakes of the Helwân and El Ma'âdi town water supplies were confirmed by an *arrêté* of the Cairo Governorate dated May 8, 1915, whilst another Governorate *arrêté* of the same date facilitated the protection from direct pollution of those portions of the river from which is derived the water used by the villages of Deir el Tin, Ma'âdi el Balad, Tura, El Ma'sara, Helwân el Balad, and Kafr el 'Elwa.

An *arrêté* of the Ministry of the Interior, imposing regulations on itinerant hawkers, which had been in preparation for some time, was actually published on January 31, 1915, but has not so far been applied in Cairo, it having been considered advisable by the services interested to delay its application until circumstances permitted of a more satisfactory enforcement of the conditions imposed than would have been easy under the circumstances prevailing at the time of its promulgation.

Three *arrêts* of the Ministry of the Interior modifying the "Inconvenient, Unhealthy, and Dangerous Establishments" Law were enacted in 1915, dated respectively January 31, June 8, and October 16.

The first of these adds to Class I, Category A, of the schedule of establishments attached to the law, all stores of pitch, resins, wax, acetone, bisulphide of carbon and of their derivatives, of products of petrol, alcohol, ether, or fat, and of all substances containing 10 per cent or more of any of the aforementioned products.

The second includes, in Class II, Category A, of the schedule, all industrial establishments employing animal power within enclosed places; whilst the last adds ice factories and beer-bottling establishments to Class I, Category A; and ice-cream factories or stores, and factories of manufactured drinks other than aerated waters and alcohol or fermented drinks to Class II, Category B.

In 1916, a law (Law No. 18 of 1916) imposing upon the proprietors of ponds or marshes an obligation to fill these in, or drain them, whenever their continued existence constituted a danger to public health, was promulgated on August 8, 1916, whilst an *arrêté* of the Ministry of the Interior modifying the second schedule attached to the Pharmacy Law was issued on February 22 of that year.



## XV.—VACCINATION.

During 1915, 31,695, and during 1916, 39,174 vaccinations were carried out by the Medical Officers of the Inspectorate and districts, as compared with 89,449 in 1914.

Of the 31,695 vaccinations in 1915, 27,928 were primary vaccinations of children under the Vaccination Decree, 27,672 of these being vaccinations of native children as compared with 28,082 in 1914, and 256 of children of foreign parentage as compared with 267 in the previous year.

Of the 39,174 vaccinations in 1916, 27,947 were primary vaccinations in accordance with the Vaccination Decree, 27,679 of them being vaccinations of native children and 268 of foreigners.

The remaining 3,767 of 1915 and 11,227 of 1916 were either re-vaccinations of smallpox contacts under the powers granted by the Infectious Disease Law, or of persons voluntarily applying for this. The number of similar re-vaccinations in 1914 was high compared with either of the years under consideration, having been 61,100 in that year. An ample explanation of the differences between the three years will be found in a reference to the figures of the morbidity rate for smallpox in these years, this having been 1·354 per thousand in 1914, 0·080 in 1915, and 0·374 in 1916.

Of the 3,767 re-vaccinations in 1915, 3,690 were carried out by the District Medical Officers, and seventy-seven were carried out by the Medical Officers of the Inspectorate, 3,356 being vaccinations of natives and 411 of foreigners.

Of the 11,227 re-vaccinations in 1916, 11,147 were vaccinations of natives and 80 of foreigners. The vaccinations were performed by the District Medical Officers in 11,162 cases and by the Inspectorate Medical Officers in 65.



## XVI.—MISCELLANEOUS.

In 1915, 178, and in 1916, 179 permits were granted for the transport of dead bodies as compared with 161 in 1914.

Of the 178 permits issued in 1915, three were for bodies to be embalmed and removed abroad, eight were for exhumation and transference from one cemetery to another in Cairo, seventy-nine were for the removal from Cairo to other localities in Egypt of bodies either of persons recently deceased or after exhumation, sixty were bodies received in Cairo from other localities for burial, and twenty-eight were permits to remove bodies from one grave to another in the same cemetery.

Of the 179 permits granted in 1916, one was for removal abroad, ten for exhumation and transference from one cemetery to another in Cairo, eighty-five were for the transport of exhumed or recently deceased bodies from Cairo for burial in other localities in Egypt, forty-nine were bodies accepted for burial in Cairo, and thirty-four were for exhumation and transference to other graves in the same cemetery.

Of the permits for embalmment and removal abroad issued in 1915 and 1916, in two cases the embalmment has been carried out but no effect has been yet given to the permit for removal.

In 1915 there were 430, and in 1916, 994 complaints received from the public regarding matters of public health as compared with 313 in 1914, and 1,115 in 1913.

Of the 430 complaints received in 1915, action was taken in 416 cases, whilst of the 994 in 1916 action was taken in 980. In fourteen cases in each year no action could be taken, either on account of the complaint being unjustified or as a result of an absence of any power to deal with the condition complained of.

Either as a result of complaints or inspections, action was taken, in 1915, in the interests of public health, in fifty-eight cases, and in 1916 in fifty-three cases for the fencing of waste lands as compared with 109 cases in 1914, and 190 in 1913.

In view of the cost of material and other circumstances resulting from the war it has not been considered advisable, in 1915 and 1916, however, to enforce the law regulating the fencing of waste land with too great stringency, and in twelve cases in 1915, and twenty cases in 1916 in which complaints were received, the matter was not considered of sufficient urgency to call for action.

Vidange notices were served upon the proprietors of 7,721 houses in 1915 and of 5,818 in 1916. The notice was complied with in 7,168 cases in 1915 and 5,559 in 1916, legal action being called for in 553 or 7.1 per cent of the cases in 1915, and 259 or 4.4 per cent in 1916 as compared with percentages calling for legal enforcement of 5.7 in 1914, and 2.8 in 1913.

On behalf of the Medical Commission, or at the request of various Government Departments, 574 sick employés were examined by the District Medical Officers in 1915 and 551 in 1916, as compared with 469 in 1914.

During 1915, 244, and during 1916, 272 mosques were examined as to their sanitary conditions. The existence of faults were notified in seventy-seven or 31.5 per cent of the cases in 1915, and 106 or 38.9 per cent of the cases in 1916, as compared with a percentage of 84.2 of faults in 1914.

In 1915 circumstances arose which suggested a possibility that certain of the public drinking-fountains in the city were supplied with the crude Nile water from the unfiltered river supply instead of with filtered water.

The many obvious disadvantages of the co-existence of an unfiltered with a filtered water supply in the city constantly call for a close scrutiny of any circumstances pointing to a dubiety of supply, and in the cases in point the possibility of errors of connection could not altogether be put out of count.

It was therefore considered advisable to submit this possibility of an impropriety of supply to further examination, and, for the purpose of tracing the origin of the water distributed at the suspected points, to make use of the old Rôd el Farag deep-well supply, the water from which can be easily differentiated from river water by the presence of manganese. The ordinary town drinking supply of filtered river water was, therefore, temporarily cut off and the old well supply substituted for a few days. Analysis of the water collected from the various suspected fountains during this period showed manganese in every case, and established thus their uniform connection with the filtered supply mains.



Appended will be found tables showing the weekly weather states for the city during the period covered by the report, compiled from the meteorological statements issued by the Physical Service of the Ministry of Public Works (Appendices A and B) and a note on the observed characters of the unidentified fever of 1915 already referred to in the body of the report (Appendix C).

J. FERGUSON LEES,

*Medical Officer of Health,  
Cairo City.*

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# APPENDIX A.—Cairo City Weekly Weather State for 1915.

(Compiled from the reports issued by the Physical Department, Ministry of Public Works.)

Number of Week.	WEEK.	TEMPERATURE (°C.)						HUMIDITY PER CENT.		RAINFALL mm.		SUNSHINE (Hours).		CLOUD.		WIND.		NILE GAUGE.	
		Maximum.	Difference from Normal.	Minimum.	Difference from Normal.	Mean.	Difference from Normal.	Mean.	Difference from Normal.	Weekly Total.	Difference from Normal.	Mean.	Per Cent of Possible.	0-10.	Difference from Normal.	Force.	Direction.	Mean.	Difference from Normal.
1	January 1-7	20.7	+1.7	7.7	+0.7	12.3	-0.9	81	+9	0.0	-1.6	7.9	77	2.4	-1.9	2	N	15.03	+0.01
2	" 8-14	17.8	-0.8	7.3	+0.1	11.3	-1.4	77	+5	2.5	+0.7	8.2	79	1.7	-2.7	3	S	14.79	-0.13
3	" 15-21	19.0	+1.7	6.2	+0.2	11.3	-1.0	73	+1	0.0	-1.8	7.7	74	2.7	-1.7	2	Var.	14.83	+0.02
4	" 22-28	19.6	+1.6	8.2	+2.2	13.0	+0.2	76	+5	0.0	-1.8	4.8	45	4.6	+0.4	2	Var.	14.72	+0.04
5	" 29-4 February	24.3	+5.5	12.8	+6.4	16.6	+3.4	57	-12	0.0	-1.5	5.4	50	6.3	+2.2	4	S	14.78	-0.02
6	February 5-11	18.1	-1.9	6.7	-1.3	10.8	-2.9	79	+11	0.0	-1.3	7.4	68	2.3	-1.7	3	N.W.	15.67	+0.68
7	" 12-18	21.0	+1.0	7.5	-0.4	13.0	-1.0	71	+4	0.0	-1.3	8.0	72	1.9	-2.0	4	N	15.82	+0.83
8	" 19-25	23.5	+2.5	8.8	+0.8	14.8	+0.1	69	+3	0.0	-1.3	9.0	80	0.7	-3.1	2	N.W.	15.79	+0.79
9	" 26-4 March	22.5	+1.0	9.8	+1.3	15.0	-0.3	64	0	0.0	-1.1	9.6	83	0.9	-2.9	4	N	15.82	+0.78
10	March 5-11	27.5	+5.5	12.3	+3.8	19.0	+3.0	44	-19	0.0	-0.9	9.4	80	0.7	-3.0	4	S	15.78	+0.73
11	" 12-18	23.0	-0.5	11.9	+2.4	15.6	-1.2	79	+17	4.0	+3.1	7.4	62	4.0	+0.4	3	N	15.79	+0.72
12	" 19-25	24.3	+1.3	10.7	+0.7	16.0	-1.7	73	+13	0.0	-0.9	8.1	66	3.6	0.0	4	N	15.74	+0.75
13	" 26-1 April	26.3	+0.8	13.4	+2.4	18.5	-0.3	66	+8	0.2	-0.7	7.6	61	3.0	-0.6	3	W	15.77	+0.80
14	April 2-8	27.8	+0.8	13.8	+2.3	19.4	-0.5	60	+3	0.0	-0.9	6.9	55	4.9	+1.4	4	W	15.76	+0.84
15	" 9-15	29.2	+1.2	14.1	+2.1	20.1	-0.7	62	+7	0.0	-0.9	7.6	59	3.7	+0.2	4	N	15.75	+0.88
16	" 16-22	26.2	-2.3	12.2	-0.8	17.9	-3.7	67	+14	0.0	-0.9	9.9	76	1.6	-1.8	5	N	15.72	+0.85
17	" 23-29	28.1	-1.9	15.3	+1.3	20.7	-1.5	64	+12	0.0	-0.9	6.5	49	6.6	+3.3	3	Var.	15.59	+0.74
18	" 30-6 May	27.5	-2.5	13.3	-0.7	19.5	-3.5	62	+10	0.0	-0.5	11.5	86	2.0	-1.1	5	N	15.56	+0.71
19	May 7-13	30.3	+0.3	13.7	-0.3	21.1	-2.7	58	+7	1.0	+0.8	12.4	91	1.1	-1.8	5	N	15.50	+0.70
20	" 14-20	30.3	-2.1	17.0	+1.0	22.4	-1.9	63	+13	0.0	-0.2	10.9	80	2.4	-0.3	3	W	15.54	+0.77
21	" 21-27	35.5	+2.0	19.3	+2.3	26.8	+1.7	45	-5	0.0	-0.2	11.7	85	2.1	-0.2	4	N	15.44	+0.70
99	98-3 June	35.9	+1.7	20.7	+2.7	27.9	+1.9	42	-7	0.0	0.0	10.1	87	1.7	0.0	1	S	15.42	+0.68



23	June	4-10	...	...	...	34.8	+0.3	20.6	+2.6	26.3	-0.4	63	+12	0.0	0.0	0.0	12.3	89	1.9	+0.3	3	N.W.	15.43	+0.56
24	"	11-17	...	...	...	38.0	+2.5	22.1	+3.1	29.4	+2.1	48	-3	0.0	0.0	0.0	12.1	86	2.6	+1.4	4	N.W.	15.49	+0.59
25	"	18-24	...	...	...	33.5	-1.0	21.3	+2.3	27.4	-0.3	49	-3	0.0	0.0	0.0	12.6	89	1.0	-0.1	4	N	15.49	+0.50
26	"	25-1 July	...	...	...	35.1	+0.1	21.9	+2.9	27.3	-0.7	61	+8	0.0	0.0	0.0	12.6	89	1.1	-0.1	4	W	15.66	+0.56
27	July	2-8	...	...	...	35.3	+0.3	21.2	+1.2	27.3	-0.7	55	+1	0.0	0.0	0.0	12.7	91	1.6	+0.3	5	N	15.79	+0.59
28	"	9-15	...	...	...	35.6	-0.4	21.5	+1.5	27.5	-0.7	62	+8	0.0	0.0	0.0	12.8	91	0.7	-0.7	3	W	15.82	+0.44
29	"	16-22	...	...	...	37.6	+1.6	22.2	+1.2	28.8	+0.6	56	0	0.0	0.0	0.0	11.8	93	0.9	-0.5	3	N	15.83	+0.17
30	"	23-29	...	...	...	35.2	-0.8	22.3	+0.8	27.3	-0.8	62	+5	0.0	0.0	0.0	12.1	86	1.0	-0.5	4	W	15.81	-0.08
31	"	30-5 August	...	...	...	36.9	+1.9	22.5	+1.5	28.3	+0.4	63	+4	0.0	0.0	0.0	12.0	89	1.3	-0.2	3	W	15.85	-0.39
32	August	6-12	...	...	...	34.1	-0.9	21.7	+0.7	26.8	-1.0	63	+2	0.0	0.0	0.0	11.7	90	1.0	-0.6	3	N	16.12	-0.89
33	"	13-19	...	...	...	35.8	+1.3	22.4	+1.4	28.0	+0.3	66	+4	0.0	0.0	0.0	11.7	89	1.3	-0.3	3	N.W.	16.80	-0.82
34	"	20-26	...	...	...	36.7	+2.7	21.3	+0.3	27.6	+0.5	63	-1	0.0	0.0	0.0	11.1	90	0.1	-1.5	4	N	17.05	-1.01
35	"	27-2 Sept.	...	...	...	33.1	-0.9	21.3	+1.3	26.0	-0.7	69	+4	0.0	0.0	0.0	10.6	86	1.0	-0.6	3	N.W.	17.13	-1.09
36	September	3-9	...	...	...	34.4	+1.4	20.4	-0.6	25.9	-0.2	72	+6	0.0	0.0	0.0	10.4	83	0.3	-1.3	3	N	17.22	-1.27
37	"	10-16	...	...	...	31.2	-0.8	19.2	+0.2	24.2	-1.5	68	0	0.0	0.0	0.0	9.6	84	0.7	-0.9	4	N	17.62	-0.88
38	"	17-23	...	...	...	29.9	-2.1	18.3	-0.2	22.8	-2.2	76	+8	0.0	0.0	0.0	9.2	82	1.6	-0.1	4	N.W.	17.83	-0.58
39	"	24-30	...	...	...	29.1	-1.9	16.6	-1.9	21.6	-2.7	74	+5	0.0	0.0	0.0	8.9	80	0.3	-1.6	4	N	17.74	-0.60
40	October	1-7	...	...	...	31.7	+0.7	18.0	0.0	23.1	-0.7	80	+10	0.0	0.0	0.0	8.9	81	1.3	-0.8	3	N	17.63	-0.77
41	"	8-14	...	...	...	29.7	-0.3	17.6	+0.6	22.3	-0.7	75	+4	0.0	0.0	0.0	9.1	81	1.3	-1.0	3	N	17.74	-0.62
42	"	15-21	...	...	...	29.2	+0.2	16.3	-0.7	21.3	-1.0	77	+6	0.0	0.0	0.0	8.9	81	2.3	-0.2	3	N	18.05	+0.12
43	"	22-28	...	...	...	28.8	+0.8	16.4	+0.9	21.0	-0.3	77	+5	0.0	0.0	0.0	8.9	83	2.7	+0.1	3	N	17.97	+0.47
44	"	29-4 Nov.	...	...	...	30.1	+3.1	15.8	-0.2	21.2	+0.7	72	0	0.0	0.0	0.0	8.9	85	1.7	-1.1	3	N.W.	17.54	+0.46
45	November	5-11	...	...	...	26.2	+0.2	14.2	+0.2	19.0	-0.6	76	+3	0.0	0.0	0.0	7.7	85	2.7	-0.3	2	N	17.20	+0.48
46	"	12-18	...	...	...	26.0	+2.0	13.7	-1.7	18.5	-0.2	79	+6	0.0	0.0	0.0	7.7	85	2.0	-1.2	4	N	16.85	+0.42
47	"	19-25	...	...	...	25.3	+2.3	13.6	+2.6	18.3	+0.5	78	+5	0.0	0.0	0.0	7.7	84	1.0	-2.4	4	N	16.46	+0.30
48	"	26-2 Dec.	...	...	...	20.1	-1.4	11.7	+0.7	14.9	-1.8	70	-3	0.0	0.0	0.0	7.9	77	2.0	-1.6	4	S.W.	16.20	+0.23
49	December	3-9	...	...	...	21.4	+0.4	8.4	-1.6	13.3	-2.3	86	+13	0.0	0.0	0.0	5.4	53	1.0	-2.8	3	N	15.59	-0.03
50	"	10-16	...	...	...	21.7	+1.7	8.9	-0.1	13.5	-1.0	91	+18	0.0	0.0	0.0	7.9	77	2.9	-1.1	2	N	15.59	-0.03
51	"	17-23	...	...	...	23.2	+4.2	11.5	+3.5	15.9	+2.0	83	+10	0.0	0.0	0.0	7.9	77	4.6	+0.6	3	N	15.59	-0.03
52	"	24-31	...	...	...	19.8	+0.8	10.3	+2.3	13.5	-0.1	85	+13	0.0	0.0	0.0	7.9	77	3.1	-1.0	2	S	15.59	+0.36



### APPENDIX B.—Cairo City Weekly Weather State for 1916.

(Compiled from the reports issued by the Physical Department, Ministry of Public Works).

Number of Week.	Week.	TEMPERATURE (°C.)						HUMIDITY PER CENT.		RAINFALL mm.		SUNSHINE (Hours).		CLOUD.		WIND.		NILE GAUGE.	
		Maximum.	Difference from Normal.	Minimum.	Difference from Normal.	Mean.	Difference from Normal.	Mean.	Difference from Normal.	Weekly Total.	Difference from Normal.	Mean.	Per Cent of Possible.	0-10.	Difference from Normal.	Force.	Direction.	Mean.	Difference from Normal.
1	January 1-7	17.3	-1.7	9.7	+2.7	13.2	+0.6	80	+8	7.1	+5.7	3.6	36	5.1	+0.8	5	S	15.43	+0.38
2	" 8-14	18.2	-0.4	6.5	-0.7	11.1	-1.3	84	+12	0.0	-1.6	5.6	55	4.9	+0.5	2	S	15.26	+0.31
3	" 15-21	17.0	-0.3	8.6	+2.6	11.6	-0.4	81	+10	0.5	-1.1	6.2	60	4.1	-0.3	3	S.W.	14.98	+0.10
4	" 22-28	15.6	-2.4	6.0	0.0	10.1	-2.4	82	+11	5.7	+4.1	5.8	55	3.3	-0.9	3	S	14.75	-0.10
5	" 29-4 February	18.5	-0.3	4.5	-1.9	10.4	-2.6	80	+10	0.0	-1.4	9.3	86	1.4	-2.7	3	N	15.06	+0.12
6	February 5-11	19.5	-0.5	7.9	-0.1	12.5	-0.5	85	+17	6.6	+5.7	6.8	62	3.4	-0.6	2	S	15.53	+0.30
7	" 12-18	19.5	-0.5	9.1	+1.1	13.4	-0.1	77	+10	1.7	+0.7	7.2	65	2.9	-1.0	3	S.W.	15.79	+0.54
8	" 19-25	20.6	-0.4	10.1	+2.1	14.0	-0.1	74	+9	0.0	-1.0	7.5	66	3.9	+0.1	3	Var.	15.73	+0.48
9	" 26-4 March	23.9	+2.4	11.3	+2.8	16.7	+1.7	69	+5	0.0	-0.9	5.5	48	5.2	+1.5	4	N.N.W.	15.79	+0.50
10	March 5-11	24.3	+2.3	11.9	+3.4	15.9	+0.4	79	+17	0.0	-0.7	7.1	60	3.9	+0.2	4	N	15.80	+0.51
11	" 12-18	24.9	+1.4	11.8	+2.3	17.0	+0.2	69	+7	15.7	+15.0	7.9	66	2.6	-1.0	3	S.W.	15.72	+0.42
12	" 19-25	24.4	+1.4	12.3	+2.3	17.3	-0.5	69	+8	0.0	-0.6	9.2	76	2.4	-1.2	3	Var.	15.74	+0.50
13	" 26-1 April	29.2	+3.7	14.7	+3.7	20.7	+2.1	61	+2	0.0	-0.8	9.4	76	2.6	-1.0	3	N.W.	15.66	+0.47
14	April 2-8	25.4	-1.6	12.7	+1.2	18.1	-1.4	61	+3	0.0	-0.9	9.0	71	3.9	+0.4	3	W	15.57	+0.43
15	" 9-15	27.0	-1.0	14.3	+2.3	19.0	-1.3	65	+9	0.5	-0.4	7.3	57	3.9	+0.4	4	W	15.46	+0.34
16	" 16-22	28.9	+0.4	14.7	+1.7	20.6	-0.7	51	-4	0.0	-0.9	10.6	82	2.1	-1.3	4	W	15.39	+0.29
17	" 23-29	33.6	+3.6	16.3	+2.3	23.8	+1.8	53	-1	0.0	-0.9	9.6	73	3.4	+0.1	4	N	15.40	+0.30
18	" 30-6 May	31.5	+1.5	15.1	+1.1	22.1	-0.8	54	+2	0.0	-0.4	11.5	86	1.7	-1.4	4	N	15.51	+0.40
19	May 7-13	34.4	+4.4	17.8	+3.8	25.3	+1.8	48	-3	0.0	-0.2	11.6	85	1.9	-1.1	3	N	15.51	+0.42
20	" 14-20	37.6	+4.6	21.5	+5.5	28.2	+4.2	50	0	0.0	-0.2	10.8	79	3.4	+0.6	3	S.W.	15.52	+0.45
21	" 21-27	29.9	-3.6	15.4	-1.6	21.5	-3.4	57	+7	0.0	-0.2	12.2	88	1.4	-1.0	4	N	15.47	+0.43
22	" 28-3 June	34.6	+1.1	18.3	+1.3	25.4	0.0	48	-3	0.0	-0.1	12.5	90	0.3	-1.7	4	N	15.43	+0.40



24	"	11-17	...	...	39.1	+3.6	20.3	+1.3	28.2	+1.3	52	+1	0.0	0.0	13.0	92	0.0	-1.2	4	N	15.55	+0.46
25	"	18-24	...	...	41.4	+6.9	23.1	+4.1	31.0	+4.0	52	0	0.0	0.0	12.0	85	1.4	+0.2	4	N	15.51	+0.38
26	"	25- 1 July	...	...	38.0	+3.0	22.6	+3.6	29.0	+1.6	58	+6	0.0	0.0	12.6	89	0.3	-0.9	3	N	15.69	+0.51
27	July	2- 8	...	...	37.6	+2.6	22.5	+2.5	28.7	+0.9	55	+2	0.0	0.0	12.6	90	0.6	-0.7	4	N	15.57	+0.31
28	"	9-15	...	...	38.5	+2.5	22.8	+2.8	29.3	+1.3	59	+5	0.0	0.0	12.6	90	0.4	-0.9	3	N.W.	15.73	+0.40
29	"	16-22	...	...	35.5	-0.5	22.8	+1.8	27.8	-0.2	60	+5	0.0	0.0	12.1	87	0.9	-0.5	3	N	15.65	+0.22
30	"	23-29	...	...	35.0	-1.0	22.0	+0.5	27.3	-0.7	61	+4	0.0	0.0	12.3	90	1.3	-0.1	3	N	15.72	+0.08
31	"	30- 5 August	...	...	35.6	+0.6	22.1	+1.1	27.6	-0.4	61	+2	0.0	0.0	12.2	90	0.6	-0.9	3	N	16.49	+0.65
32	August	6-12	...	...	33.2	-1.8	21.8	+0.8	26.2	-1.8	66	+6	0.0	0.0	11.7	87	2.1	+0.6	3	N.W.	18.15	+1.95
33	"	13-19	...	...	34.3	-0.2	21.0	0.0	26.6	-1.4	61	-1	0.0	0.0	12.1	91	0.7	-0.9	3	N.W.	18.84	+1.85
34	"	20-26	...	...	34.6	+0.6	20.7	-0.3	26.5	-1.3	60	-4	0.0	0.0	11.9	91	0.3	-1.3	5	N	19.06	+1.41
35	"	27- 2 Sept.	...	...	33.4	-0.6	21.4	+1.4	26.2	-0.8	68	+3	0.0	0.0	11.5	89	1.3	-0.3	3	W	19.38	+1.35
36	September	3- 9	...	...	31.5	-1.5	20.6	-0.4	24.9	-1.4	71	+4	0.0	0.0	11.0	86	2.0	+0.4	3	N	19.46	+1.23
37	"	10-16	...	...	33.5	+1.5	20.1	+1.1	25.7	-0.1	69	+1	0.0	0.0	10.1	81	0.4	-1.2	3	N	19.83	+1.47
38	"	17-23	...	...	31.5	-0.5	19.9	+1.4	24.6	-0.4	70	+1	0.0	0.0	10.0	82	0.6	-1.1	2	N	20.15	+1.69
39	"	24-30	...	...	27.6	-3.4	17.9	-0.6	21.6	-2.7	72	+2	0.0	0.0	9.5	79	1.1	-0.8	1	N	20.19	+1.66
40	October	1- 7	...	...	27.5	-3.5	15.9	-2.1	20.9	-3.1	70	-1	0.0	-0.4	9.5	80	1.0	-1.1	1	N	19.95	+1.48
41	"	8-14	...	...	26.8	-3.2	15.5	-1.5	20.6	-2.6	73	+2	0.0	-0.4	9.2	79	0.4	-1.8	2	N	19.81	+1.42
42	"	15-21	...	...	28.4	-0.6	17.1	+0.1	21.3	-1.4	80	+8	0.0	-0.5	9.2	81	1.0	-1.4	3	N	20.04	+1.57
43	"	22-28	...	...	28.3	+0.3	15.8	+0.3	20.5	-1.3	82	+10	0.0	-0.4	9.2	82	0.6	-2.0	4	N	20.13	+1.67
44	"	29- 4 Nov.	...	...	25.5	-1.5	15.0	-1.0	18.7	-2.1	85	+13	2.5	+1.9	8.2	74	3.3	+0.6	3	N.W.	20.00	+1.87
45	November	5-11	...	...	25.7	-0.3	14.3	+0.3	18.9	-1.0	80	+7	0.0	-0.7	8.7	80	2.7	-0.2	3	N	19.20	+1.59
46	"	12-18	...	...	28.0	+4.0	16.1	+4.1	20.3	+1.4	76	+3	0.0	-0.7	8.1	76	3.7	+0.6	3	N	18.34	+1.14
47	"	19-25	...	...	27.2	+4.2	15.5	+4.5	19.6	+1.9	81	+8	0.0	-0.7	7.8	74	3.1	-0.2	3	N	17.82	+0.97
48	"	26- 2 Dec.	...	...	24.6	+3.1	11.7	+0.7	16.2	-0.5	85	+12	0.0	-0.8	7.5	72	2.4	-1.1	3	N	17.43	+0.85
49	December	3- 9	...	...	22.7	+1.7	11.2	+1.2	15.4	-0.4	83	+10	0.0	-1.1	8.3	80	2.9	-0.9	2	N	17.04	+0.73
50	"	10-16	...	...	22.8	+2.8	11.3	+2.3	15.4	+0.6	80	+7	0.0	-1.1	8.5	83	1.6	-2.4	2	W	16.70	+0.62
51	"	17-23	...	...	23.0	+4.0	10.2	+2.2	14.8	+0.9	77	+4	0.0	-1.2	8.8	86	2.7	-1.5	2	N	16.50	+0.80
52	"	24-31	...	...	19.9	+0.9	12.0	+4.0	14.8	+1.7	84	+12	1.5	+0.3	5.3	52	4.5	+0.2	4	S	15.98	+0.68



## APPENDIX C.

### Notes on the Unidentified Fever of 1915.

As has already been described, the year 1915 was marked by the occurrence in a grave epidemic form of a fever presenting such clinical contradictions as to render inadvisable the adoption of any nomenclature which might tend to indicate a possibly erroneous appreciation of its characters. Under the circumstances, therefore, it was decided to adopt throughout this report the unsuggestive term given above for the purpose of distinguishing the disease, and to put on record a short description of the characteristic points observed during the epidemic. This has been largely based on the notes made on those 1,547 cases treated in the Government Fever Hospital and is supported by the facts observed in the Kafr el 'Elwa and El Ma'sara cordons.

The disease in its most typical form presented itself as a fever of variable duration, characterized by clinical manifestations strongly suggestive of typhoid fever, but giving negative results to laboratory tests for the latter disease.

*Incubation Period.*—This could not be determined with any accuracy, as no definite conclusions could be justifiably based on the indifferent histories supplied by the patients and their friends. Experimentally, in monkeys, it was found to vary from four to eighteen days, but, as will be subsequently indicated, these results are open to certain criticisms, attaching to all the experiments on monkeys carried out in connection with this epidemic.

*Transmission.*—The disease was of a highly-infectious character, with a high attack rate amongst those in close association with the sick, and spread rapidly in the localities in which it broke out.

The actual method of conveyance of the infection was not, however, determined.

*Mode of Onset.*—In the majority of the cases the onset of the disease was gradual, with a history of *malaise* for several days before the patient took to bed or even, in some cases, ceased his work. A certain number of cases, however, gave a history of sudden onset of illness attributed frequently by the patient to the effects of the sun. Of the cases treated in hospital, 78 per cent give a history of a gradual onset, whilst 22 per cent stated that the disease had commenced suddenly.

*General Symptoms.*—The most prominent early symptoms were headache and fever. In no case was any clear history given of an invasion marked by rigors or vomiting. The mental condition was quite clear, and even with temperatures of 40°C. the patients were inclined to sit up in bed and talked brightly. General body pains, aching in limbs, or abdominal pains were occasionally complained of. Backache was more rarely noted. The eyes were bright and clear, or showed various degrees of injection though never very intense, or were watery. The pupils were unaltered. There was no coryza or complaints of sore throat, though the latter occasionally showed marked dryness of its mucous membrane. The tongue was in the majority of cases quite early covered with a thick white fur. The pulse was full and bounding. Various skin rashes were observed in a certain proportion of the cases.

As the disease progressed, the patient became content to remain lying, though the mental condition usually remained clear, except in some very bad cases, when delirium and restlessness were noted. In the great majority of cases severe headache was the symptom most complained of. Most commonly no rash appeared, but occasionally petechiæ of the limbs and trunk were to be seen, whilst in a few cases a roseolous body rash was noted.

The duration of the disease was variable, being only seven days in some cases, whilst in others it lasted several weeks. Most of the cases varied from nineteen to twenty-four days. In the majority of the cases the fever terminated by lysis, but the condition of the patient did not always improve with the cessation of the fever, an asthenic condition with dry tongue and feeble pulse frequently persisting for many days after the defervescence. Relapses were not infrequent, though but few relapsed twice.



Fatal results occurred in 22·38 per cent of the cases. In those, hyperpyrexia, with gradually increasing coma and heart failure, usually occurred.

*Tongue.*—This, in about two-thirds of the cases observed, was moist and covered with a thick white fur. In the remaining cases the tongue was found dry and red, or covered with a brown fur. In such cases, the dirty condition frequently was inclined to persist even after the fall of the temperature.

*Digestive System.*—As a general rule the appetite was bad, gastric pain was occasionally complained of, whilst nausea and vomiting occurred in some of the cases. Pain in the lower part of the abdomen, with intestinal gurgling, was almost always present. Diarrhœa occurred in only about a tenth of the cases, but never to any troublesome extent. In the remainder the functions of the bowels were usually regular, though showing occasionally a tendency towards constipation. The spleen was enlarged in about 40 per cent of the cases, varying from a condition of being just palpable under the ribs to that of extending to about two finger-breadths beyond the costal margin. The liver showed signs of enlargement in about 5 per cent of the cases. Abdominal pain at times seemed chiefly centred in the splenic region. The abdomen was usually full and tympanitic, with acute tenderness in those cases which complained of abdominal pain.

*Circulatory System.*—The pulse was invariably fast, and occasionally showed a tendency to be dicrotic, or irregular and intermittent. Associated with the rapid heart action, accentuation of the second sound was occasionally met with, whilst hæmic murmurs were to be noted in some cases. Blood taken for examination showed a marked tendency to rapid coagulation.

*Respiratory System.*—No special manifestations of the disease occurred in connection with the respiratory system, but signs of pulmonary congestion, or of mild bronchitis, were not infrequently to be detected, whilst definite patches of pneumonia were occasionally met with as complications.

*Nervous System.*—The most marked nervous symptom was the persistent and severe headache usually complained of. In the majority of the cases this was very pronounced.

The mental condition was generally good, though stupor and prostration were at times to be met with. In some cases delirium occurred, mostly of the muttering variety, with diminution of the acuteness of vision; there was one case of actual amaurosis. Stammering speech, *subsultus tendinum*, and tremors were occasionally seen. In fatal cases, coma for a day or two usually preceded the death. Varying degrees of deafness were noted in a large number of the cases. The deafness and tremors at times persisted for several days or even weeks after recovery. No cases of otorrhœa were encountered. No hiccough, muscular rigidity, or alteration of the knee jerks were noted. Incontinence of urine and fæces at times occurred. Aching of the limbs was not infrequently complained of as the fever abated.

*Urinary System.*—No symptoms of any special interest affecting the urinary system were noted. A few cases of slight fever albuminuria were seen, whilst cystitis and retention of urine were met with in a few cases.

*Cutaneous Appearances.*—In 72·0 per cent of the cases no indication whatever of any rash occurred.

In the 27·9 per cent in which signs of skin change were observed, it presented itself in the form of a cutaneous mottling or of a roseolous or petechial rash. In the earlier stages of the epidemic the petechial rashes sometimes developed into large subcuticular hæmorrhages. No eruption, however, typical of the disease, could be said to occur.

*Temperature.*—In the relatively few cases which came under observation at the commencement of the illness the temperature chart invariably showed a gradual rise (see Chart A).



That this was the usual mode of onset is borne out by the histories of the majority of the cases admitted in the later stages of the disease, whilst in none of the cases seen sufficiently early to permit of conclusions being derived from the progress of the case were any indications of other than a gradual invasion. As against this, however, are definite histories of sudden onset in almost a fifth of the cases. These, however, rest solely on the statements of the patients or their friends, and are to be discounted to some extent by the possibility in some of these cases that the less obtrusive initial symptoms of the disease have been masked by the racial tendency towards a symptomatic insensibility. Such histories may possibly in some cases, therefore, indicate more a sudden obtrusion of the fact of illness than an actual sudden onset.

In the majority of cases the temperature dropped gradually to normal, the disease terminating by lysis in 77·2 per cent of the cases which recovered. An example of this is shown in Charts A and B. In 22·8 per cent the fever ended by crisis (*see* Chart C).

In the cases terminating by lysis the period of defervescence varied from two to nine days, or even longer, and was frequently accompanied by profuse sweating.

The mode of onset bore no relation to the manner in which defervescence took place.

*Relapses.*—Relapses, at intervals after the defervescence, varying from three to ten days, were not infrequent. Thus, of the 1,546 cases treated in hospital, 146 or 9·4 per cent relapsed. This percentage, however, does not exactly express the probabilities of relapse in this disease. Of the 1,546 cases, 346 died, of which only six occurred during relapse. From the total 1,546, therefore, there should be deducted 340 cases from which death had removed the potentialities of relapse. Calculated, therefore, on the remainder of 1,206 cases exposed to the chances of relapse, the 146 which actually occurred gives a percentage of 12·1 as a truer expression of probability. The relapses varied considerably, being in some cases exactly similar to the original attacks in their duration and severity, whilst in other cases the second attack was markedly milder and of shorter duration. The temperature curve of a relapse is shown in Chart D, whilst Chart E shows that of a case in which death occurred during the relapse. Second relapses were rare. They only occurred in seven of the hospital cases. Of these seven, two of the cases relapsed a third time. In Chart F also is shown the temperature curve of a relapsing case.

*Mortality.*—There were 346 deaths in hospital from the 1,546 cases admitted. The percentage of deaths was, therefore, 22·38. The European deaths were thirteen out of a total of twenty-eight cases admitted, giving a hospital case mortality for Europeans of 46·42 per cent. The number of Egyptian admissions was 1,518, of which 333 died, giving a percentage of 21·93 as the Egyptian case mortality.

In Table A the hospital deaths and cases are shown by age groups and sex, with the case mortalities of each.

TABLE A.—Distribution of the Hospital Cases and Deaths of the Unclassified Fever of 1915, by Age Groups and Sex, showing the Case Mortalities of Each Group.

AGE GROUPS.	MALE.			FEMALE.			TOTAL.		
	Cases.	Deaths.	Case Mortality	Cases.	Deaths.	Case Mortality.	Cases.	Deaths.	Case Mortality.
			Per Cent.			Per Cent.			Per Cent.
0- 5 Years ... ..	40	6	15·0	21	4	19·0	61	10	16·3
6-10 " ... ..	34	2	5·8	35	5	14·2	69	7	10·1
11-15 " ... ..	52	2	3·8	43	4	9·3	95	6	6·3
16-20 " ... ..	176	20	11·3	57	2	3·5	233	22	9·4
21-25 " ... ..	131	25	13·8	105	12	11·4	286	37	12·9
26-30 " ... ..	155	41	26·4	132	28	21·2	287	69	24·0
31-40 " ... ..	187	64	34·2	115	40	34·7	302	104	34·4
Over 40 Years ... ..	153	66	43·1	60	25	41·6	213	91	42·7
TOTAL ... ..	978	226	23·1	568	120	21·1	1,546	346	22·3



Judged by this, the occurrence of the disease would seem to give rise to the least risk to life between the ages of eleven and twenty for both sexes, the mortality being lowest in the group eleven to fifteen years in the case of the male, and in that of sixteen to twenty years in the case of the female. Above this, each group shows a gradually increasing case mortality, which is high for both sexes in patients over forty years of age. The case mortality amongst young children is below the average rate. It is highest as regards those in the youngest group of zero to five years, and gradually diminishes to the ages of least case mortality.

In these hospital cases the female case mortality is somewhat lower than the male.

*Duration.*—Independently of relapses, the disease was of variable duration, though as a rule it lasted about three weeks. Occasionally, milder cases, with a duration of as little as seven days, were met with, whilst cases which dragged on considerably beyond the usual three weeks were not uncommon, many cases of protracted fever with slow lysis lasting for five or six weeks.

*Complications.*—The complications most generally met with were pulmonary and bronchial abnormalities, which in mild forms constituted not infrequent concomitants of the disease. The most common of these was bronchitis, but broncho-pneumonia was not infrequent. Parotitis, phlebitis, gangrene of both lower extremities, laryngitis, epididymitis, nephritis, insanity, and abortion were all met with.

*Diagnosis.*—The distinction of the disease from typhoid fever was mostly based on laboratory tests consisting in the negative Widal reaction and the absence of typhoid bacilli from the blood, urine, and stools in the disease under consideration, though clinically the marked prominence of the headache in this disease raised suspicions of its nature.

The mental condition, the absence of the characteristic smell, the full abdomen associated with acute tenderness and pain, the general absence of any characteristic rash, the tendency usually to a prolonged lysis, and the frequency of relapses served to differentiate this disease from typhus fever.

*Experimental Investigations.*—For the reasons already given in the report, the experimental investigations into the nature of the disease were somewhat handicapped by the circumstances obtaining at the time of the occurrence of the epidemic, and by the difficulties attending post-mortem examination in this country. In the few cases, however, in which limited autopsies were possible, no appearances were found throwing any light on the nature of the disease, though in this connection it must be remembered that no very extensive examinations could be carried out, as circumstances only permitted of a somewhat unsatisfactory inspection of the abdominal organs in these cases through a small incision made in the abdominal wall. This, however, was sufficient to show the absence, at least in the cases examined, of any pathological condition of the intestine beyond an occasional slight congestion.

Numerous attempts were made during the course of the epidemic to isolate a causal organism, and efforts were directed towards obtaining cultures of such, on various media, under both aerobic and anaerobic conditions, but without success.

No organism was isolated from either the blood, urine, or faeces, or from splenic smears from a few fatal cases in which a partial post-mortem was permissible, which justifiably could be considered the causal agent. The negative Widal results were naturally based on a series of trials in each case, made at different periods, both during the course of the illness and after the defervescence, and not on single attempts.

Owing to circumstances resulting from the war, monkeys were not obtainable for experimental purposes in the initial stages and during the height of the epidemic. Later, a few animals were received and inoculated with blood from patients suffering from the disease. All developed an illness clinically indistinguishable from that which would have been produced in monkeys by the inoculation of typhus blood. On this alone, however, it would be unjustifiable to presume identity with typhus, as the clinical features upon which was based the distinction in the human cases were not such as would clearly indicate themselves in a monkey.



One of the inoculated monkeys was kept and was subsequently inoculated with blood from the heart of a monkey suffering from typhus, and thirty days later with blood taken straight from a human case of typhus, without result. The same monkey was again tried this year with a large quantity of virulent blood taken from a fresh case of typhus but no disease developed.

The few inoculation experiments, therefore, which it was possible to make would seem to suggest a suspicion of the identity of the disease with typhus. As opposed to this, however, it is to be remembered that monkeys only became available when typical cases of the human disease were not available. During the height of the epidemic the disease differentiated in this report showed itself in a form which enabled a distinction to be drawn between it and those cases which were obviously typhus. With the termination of the epidemic, however, as has been already mentioned in the report (*see* page 28) dropping cases of disease still continued to be diagnosed as cases of the unidentified fever, though such as were so diagnosed did not present any features which would have been likely to raise any suspicion that they were other than somewhat atypical cases of typhus, had not the previous epidemic tended to supply grounds for diagnostic suspicion. Moreover, the desire to obtain material for investigation was so inclined to prejudice the diagnosis that, though it is but right that the results of these inoculation experiments should be put on record, they can scarcely be accepted as throwing any conclusive light on the nature of the epidemic. Unfortunately, no cases could be obtained, after monkeys became available, presenting the diagnostic distinction from typhus which would have been provided by a relapse, and, under the circumstances it must be taken that there is not sufficient evidence to show that the material for investigation was not obtained from probably atypical cases of typhus instead of from the disease which it was desired to investigate.

In two cases attempts were made to transmit the disease through the agency of lice, and 245 lice from four patients considered to be suffering from this disease were fed on one monkey, and 350 from two other patients on another. These experiments were unsuccessful, but, in any case, they would have been open to the same criticisms as were attached to the inoculation experiments.

Whilst leaving the question open, therefore, I am inclined to the belief that the disease was truly the result of some new infection, probably introduced into this country through the agency of those troops of varied races, and of the most diverse origin, which were then being poured into this country, and to attribute the high infectivity shown by the disease to the absence of any racial insusceptibility such as would have existed had the disease been previously prevalent in this country.

J. F. L.

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Fig. 1.

**ZYMOTIC DISEASE**  
(8 Principal diseases)  
Case and death rates in Cairo Districts  
in 1915 per 1,000 of population.

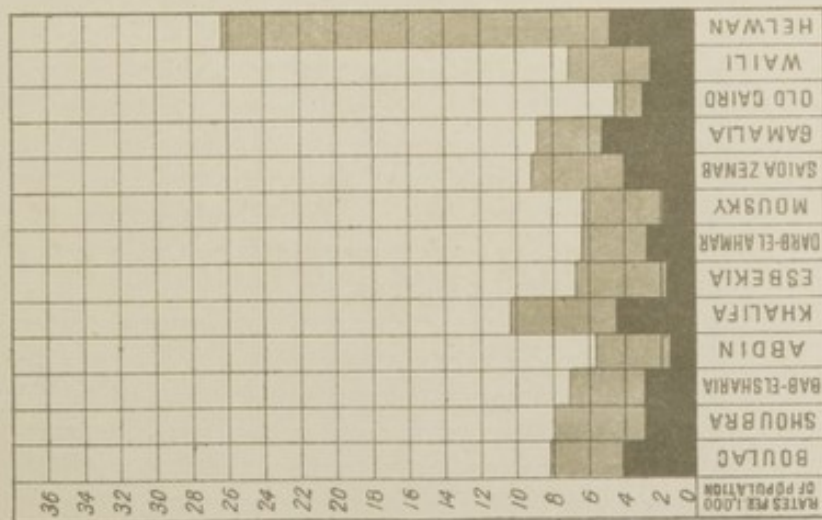


Fig. 2.

**TYPHOID NOTIFICATIONS**  
Case and death rates in Cairo Districts  
in 1915 per 1,000 of population.

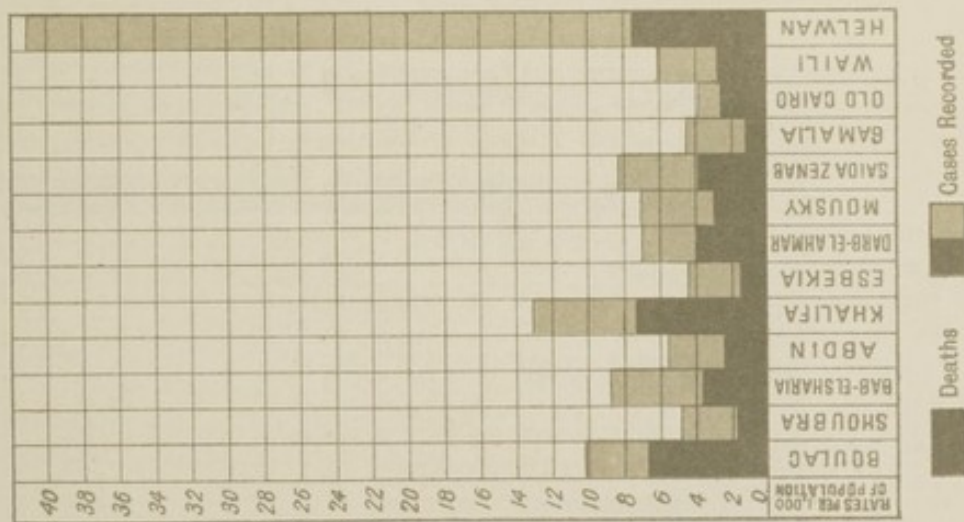
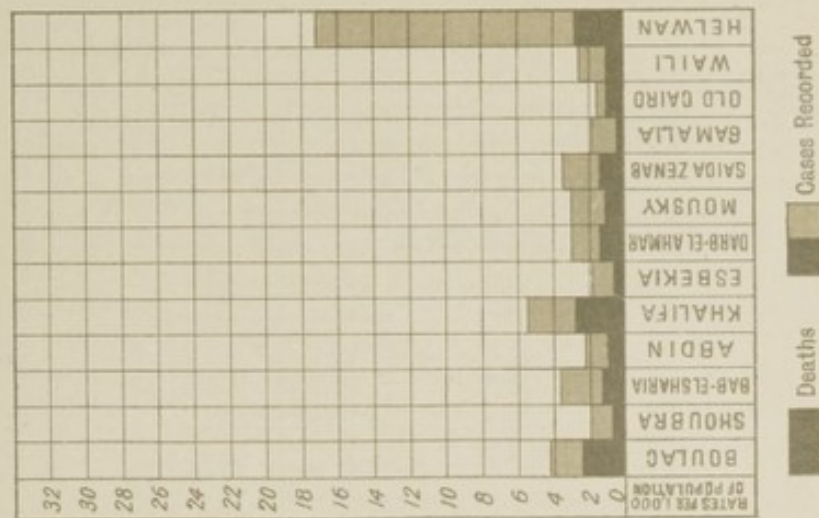


Fig. 3.

**TYPHOID FEVER**  
Case and death rates in Cairo Districts  
in 1915 per 1,000 of population.





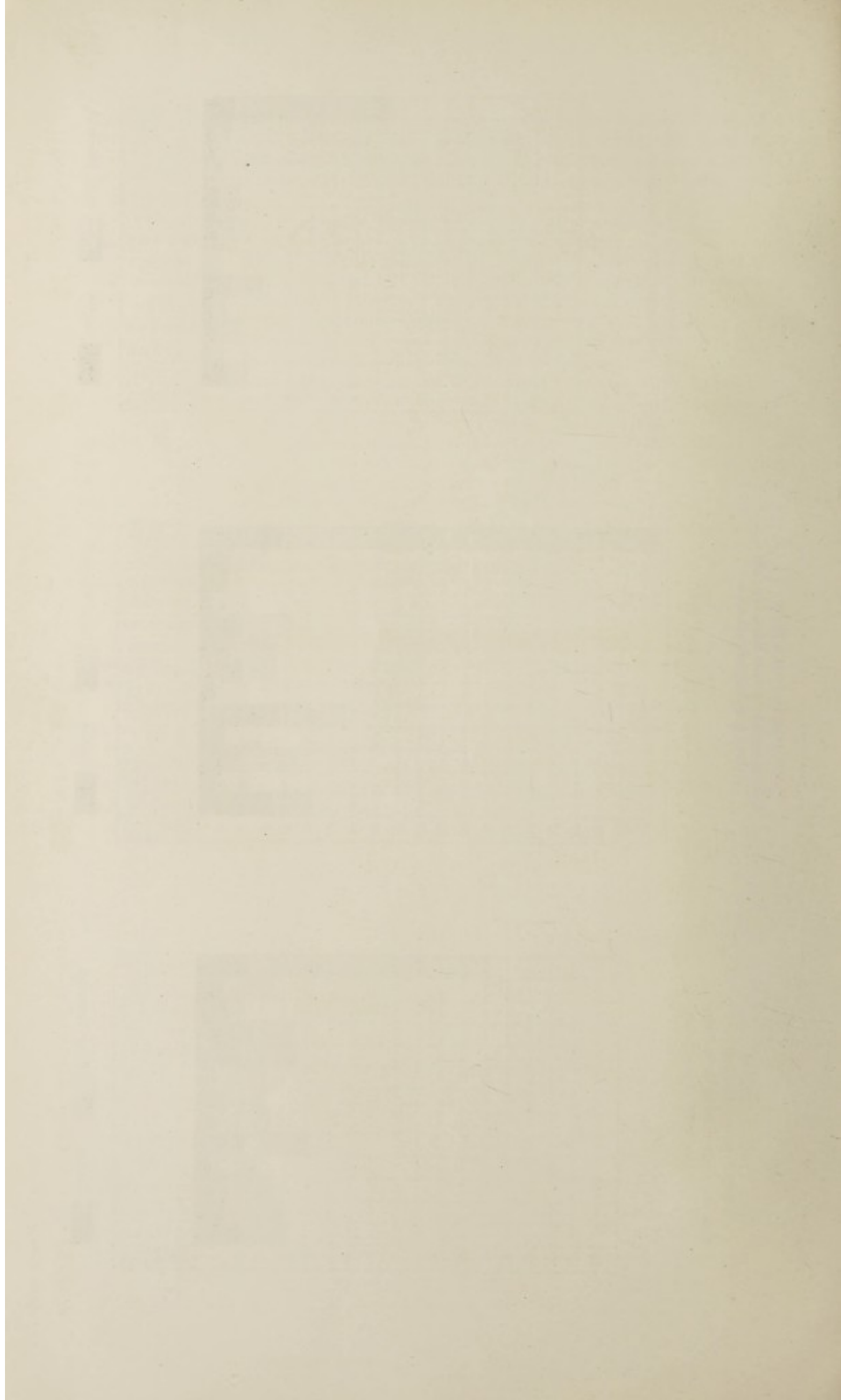




Fig. 4.

UNIDENTIFIED FEVER OF 1915  
Case and death rates in Cairo Districts  
per 1,000 of population.

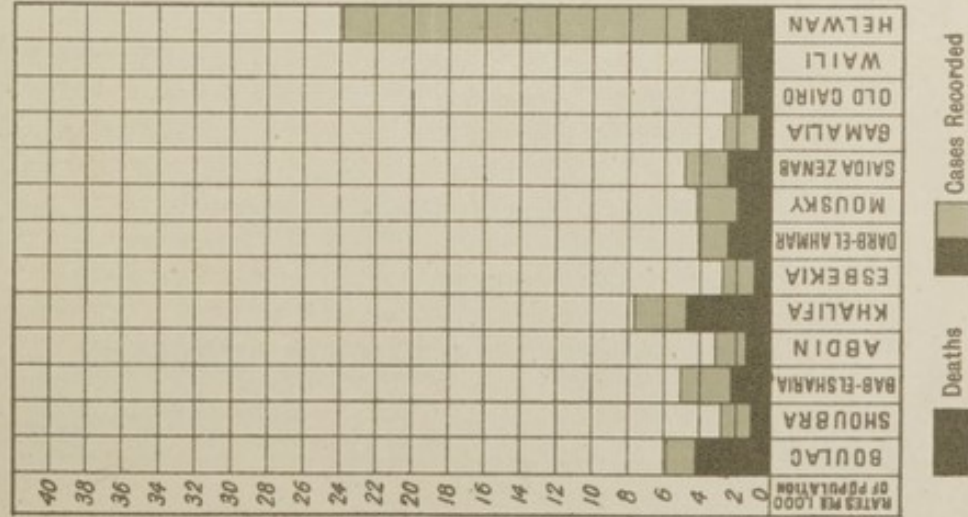


Fig. 5.

TYPHUS FEVER  
Case and death rates in Cairo Districts  
in 1915 per 10,000 of population.

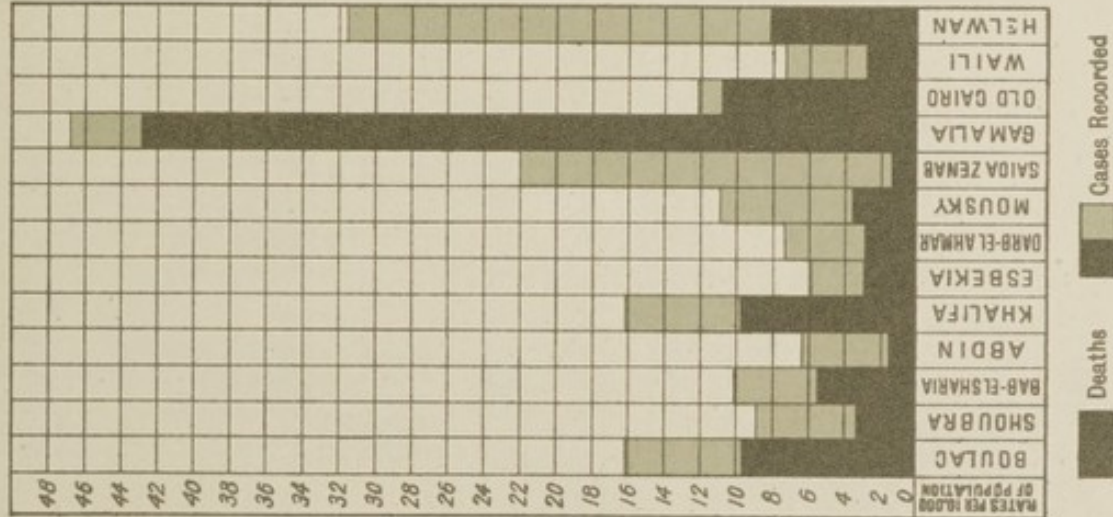
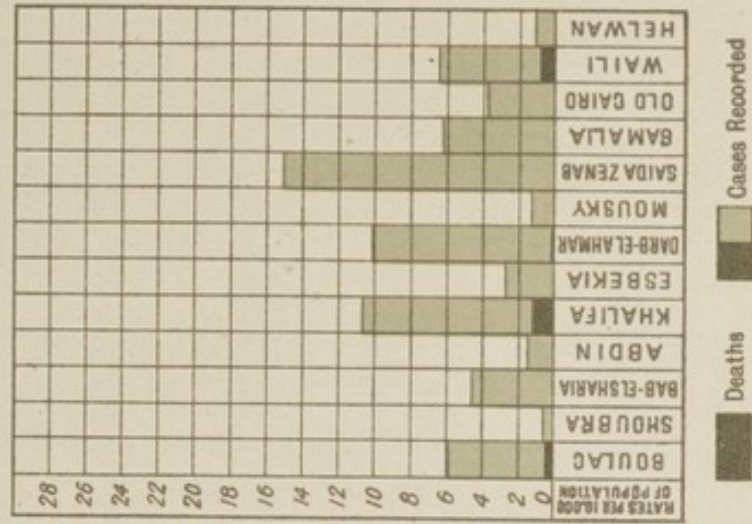


Fig. 6.

RELAPSING FEVER  
Case and death rates in Cairo Districts  
in 1915 per 10,000 of population.





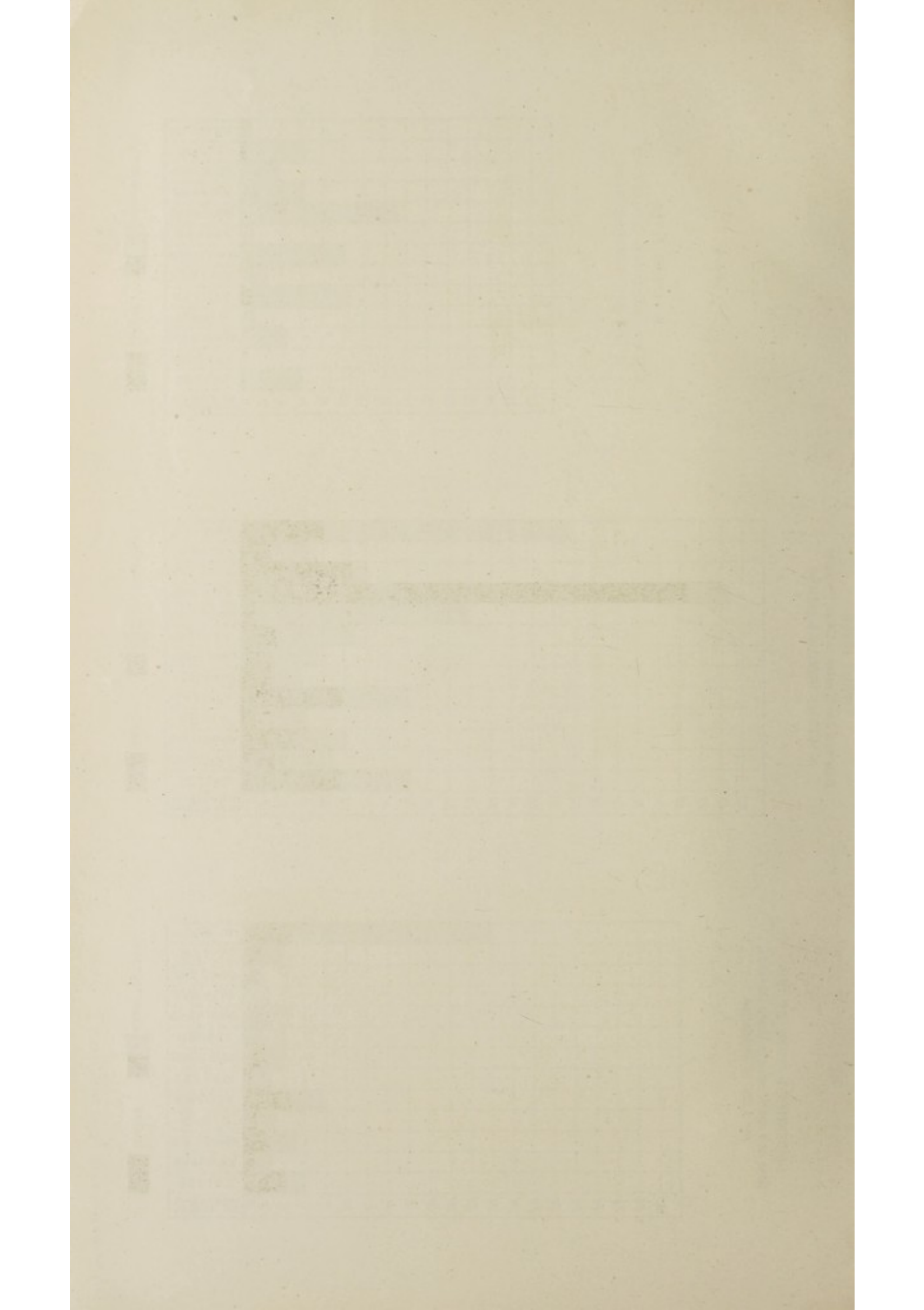




Fig. 7.

### DIPHTHERIA

Case and death rates in Cairo Districts in 1915 per 10,000 of population.

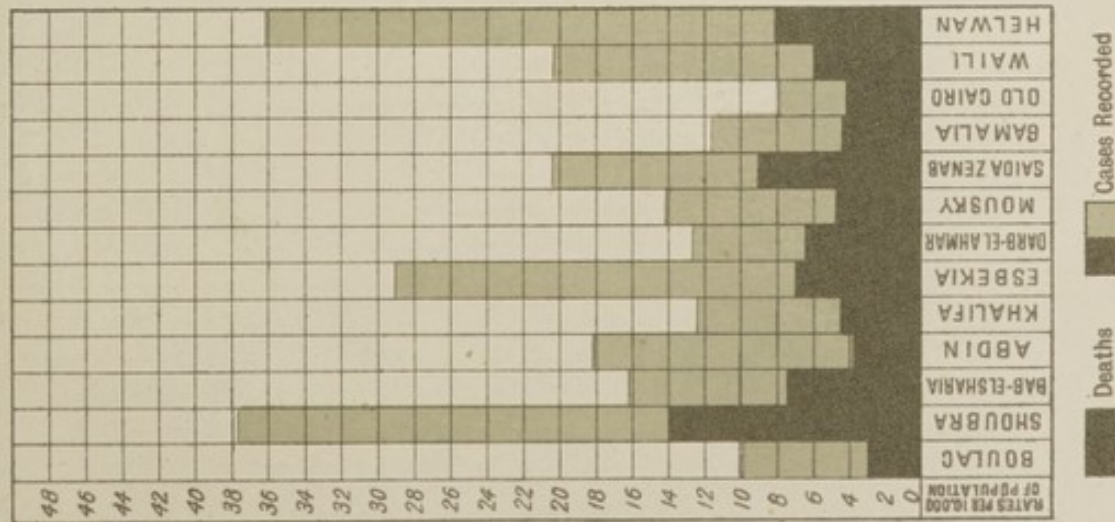


Fig. 8.

### MEASLES

Case and death rates in Cairo Districts in 1915 per 10,000 of population.

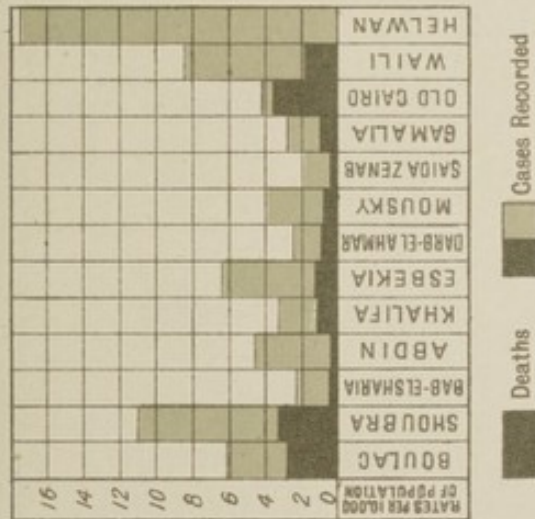


Fig. 10.

### CEREBRO-SPINAL FEVER

Case and death rates in Cairo Districts in 1915 per 10,000 of population.

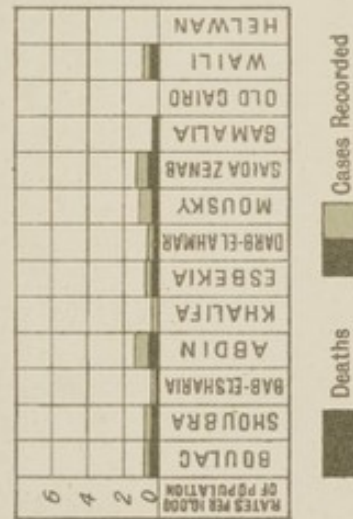


Fig. 9.

### SMALL POX

Case and death rates in Cairo Districts in 1915 per 10,000 of population.

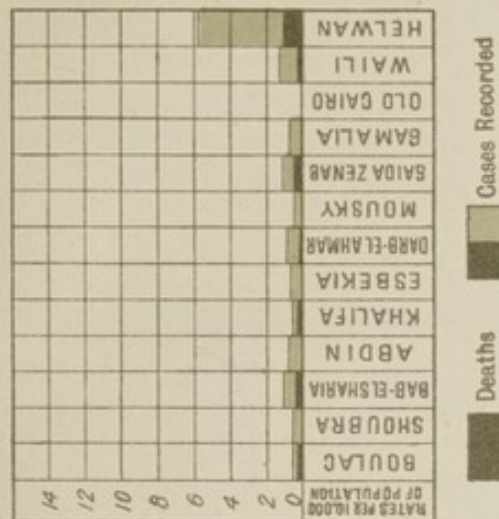
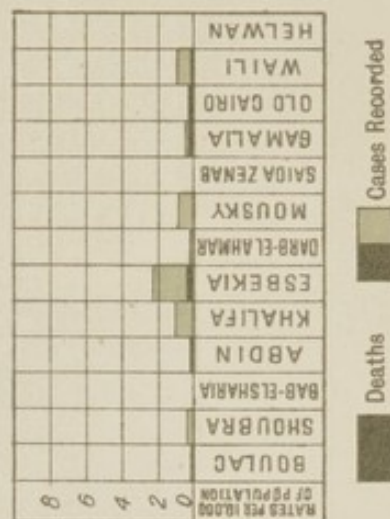


Fig. 11.

### SCARLET FEVER

Case and death rates in Cairo Districts in 1915 per 10,000 of population.





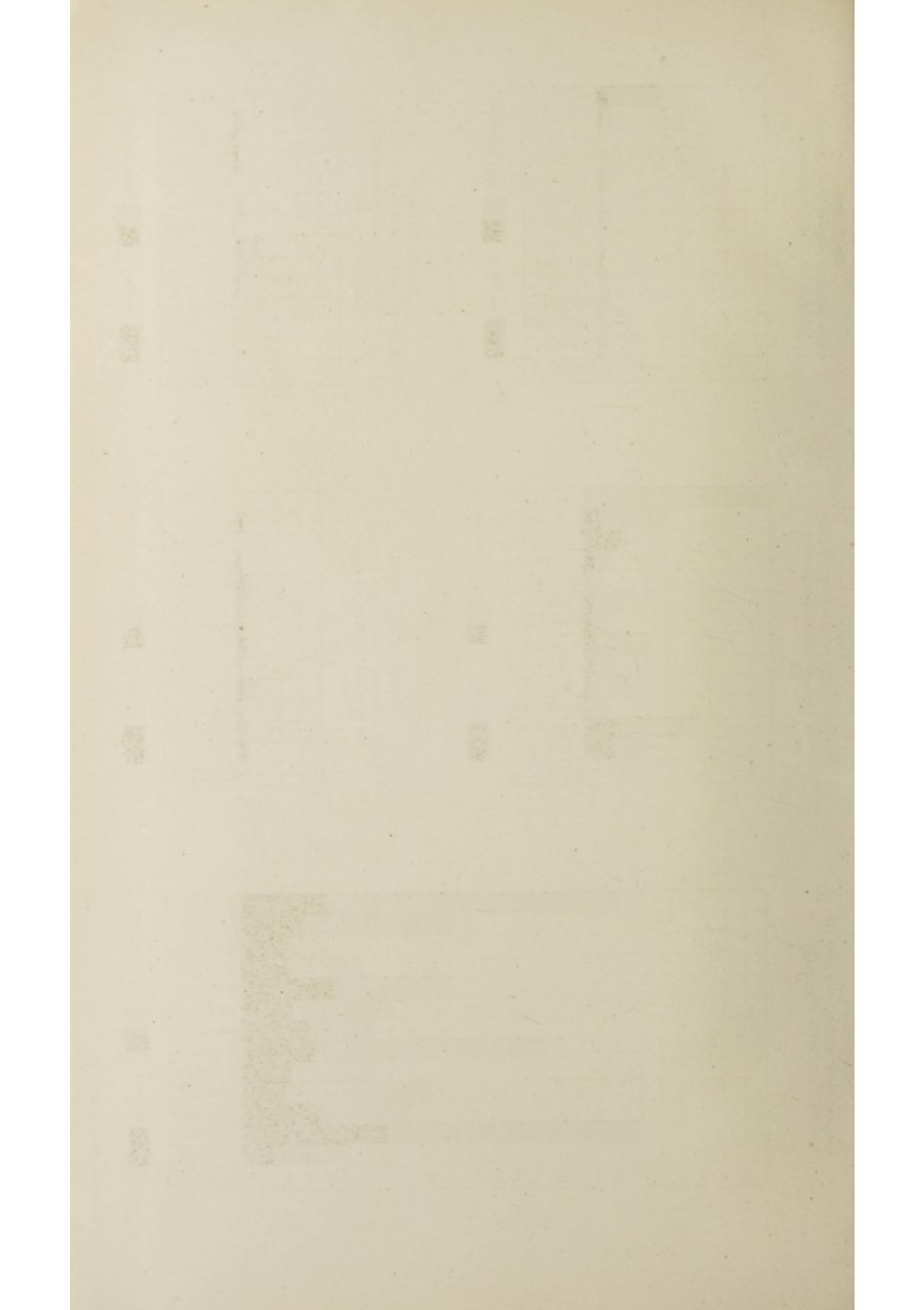




Fig. 12.

**ZYMOTIC DISEASE**  
(8 Principal diseases)  
Case and death rates in Cairo Districts  
in 1916 per 1,000 of population.

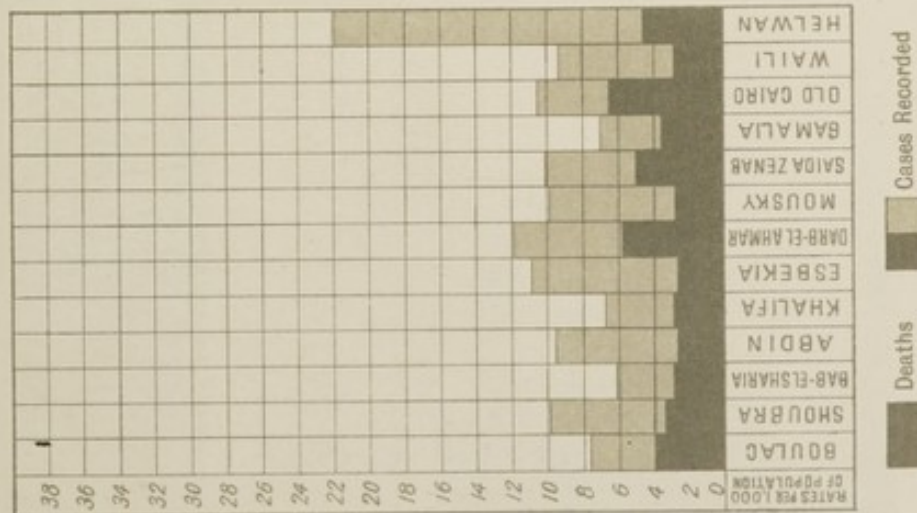
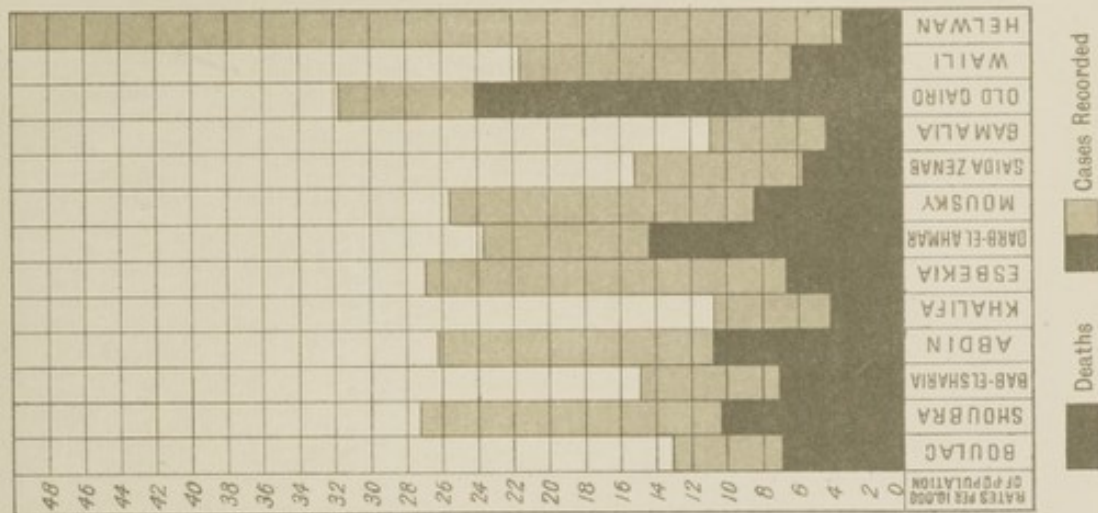


Fig. 13.

**TYPHOID FEVER**  
Case and death rates in Cairo Districts  
in 1916 per 10,000 of population.





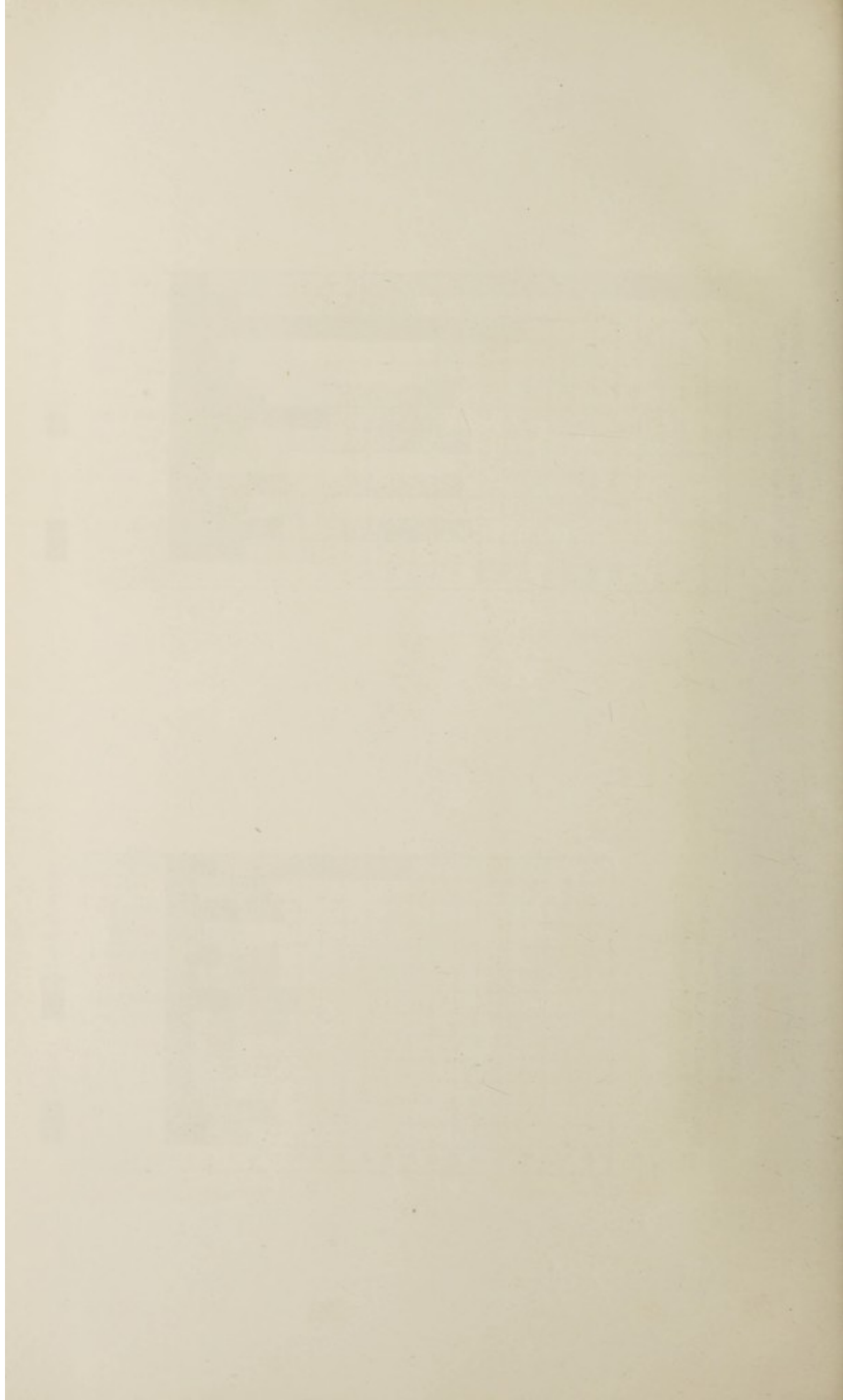




Fig. 14.

## TYPHUS FEVER

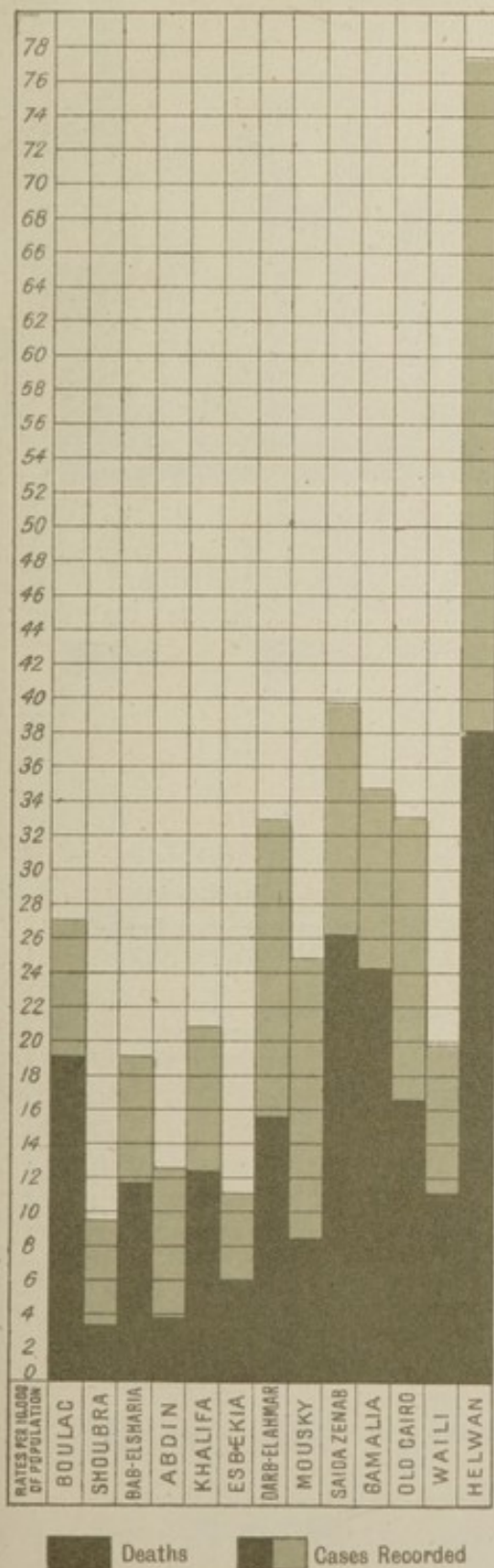
Case and death rates in Cairo Districts  
in 1916 per 10,000 of population.

Fig. 15.

## RELAPSING FEVER

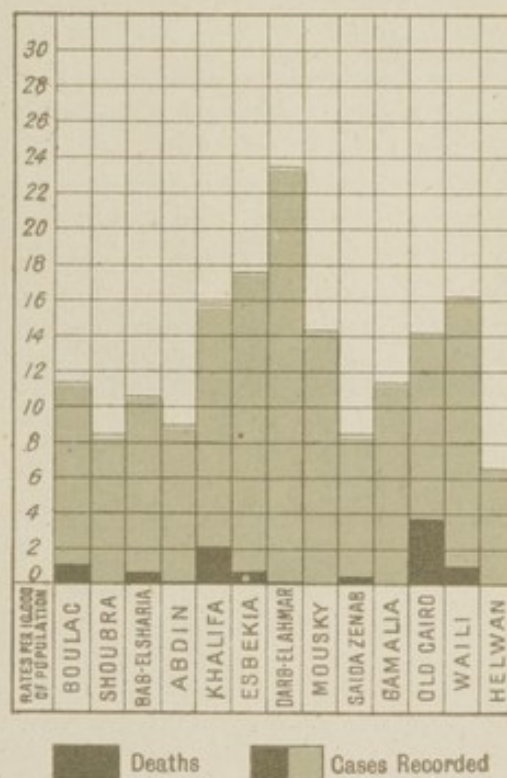
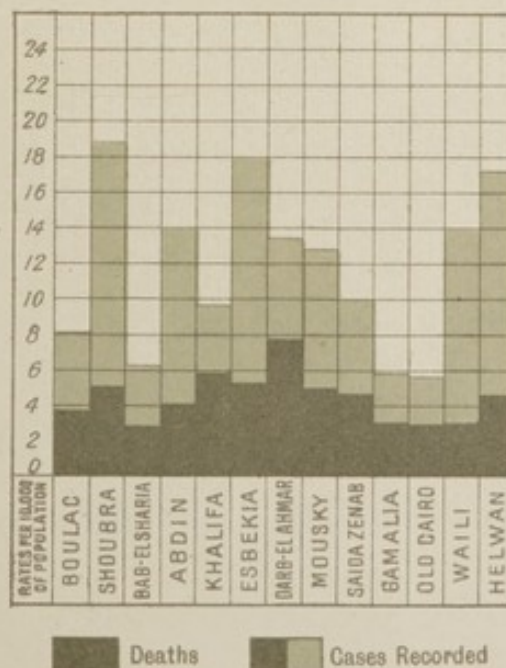
Case and death rates in Cairo Districts  
in 1916 per 10,000 of population.

Fig. 16.

## DIPHTHERIA

Case and death rates in Cairo Districts  
in 1916 per 10,000 of population.



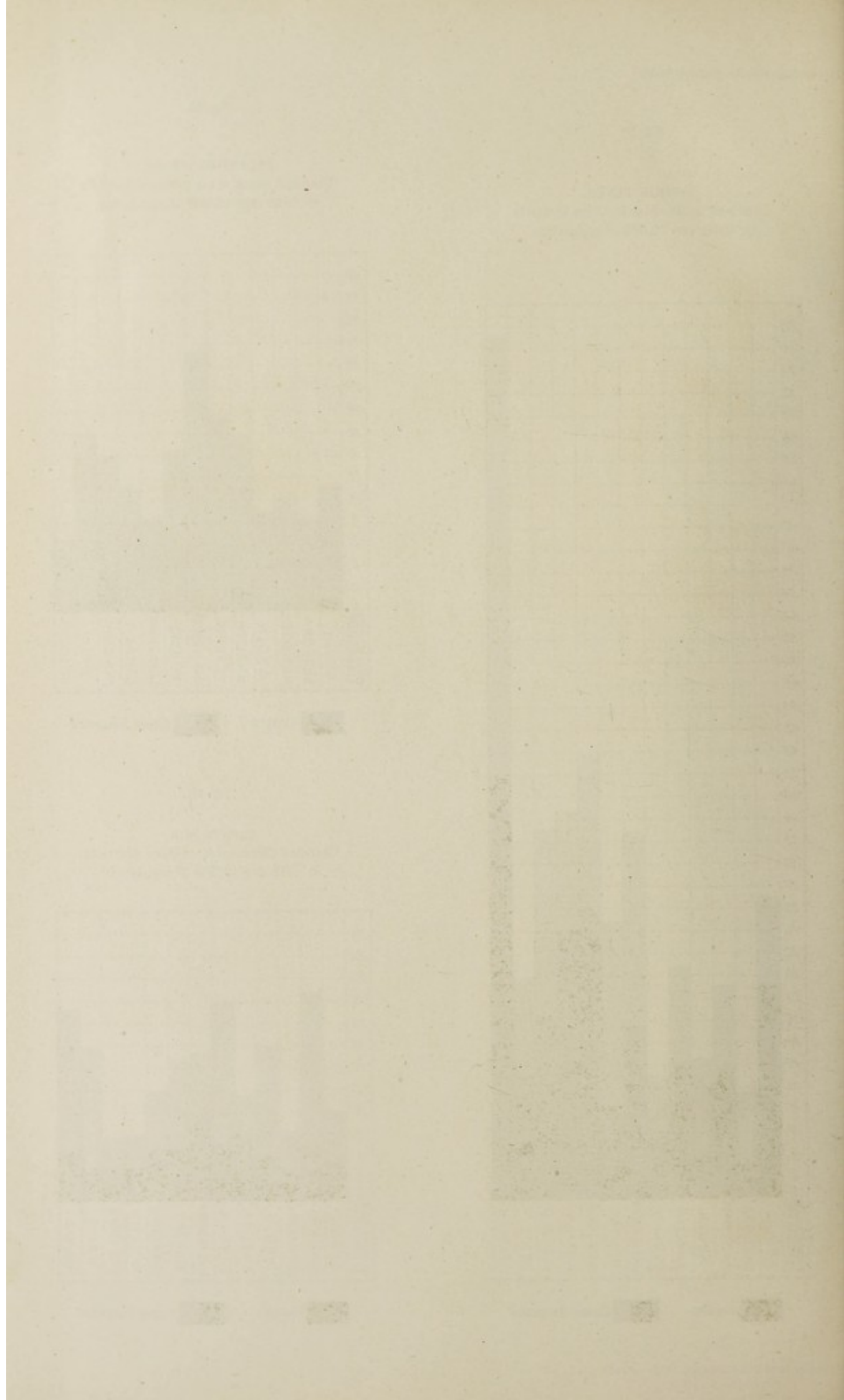




Fig. 17.

**MEASLES**  
Case and death rates in Cairo Districts  
in 1916 per 10,000 of population.

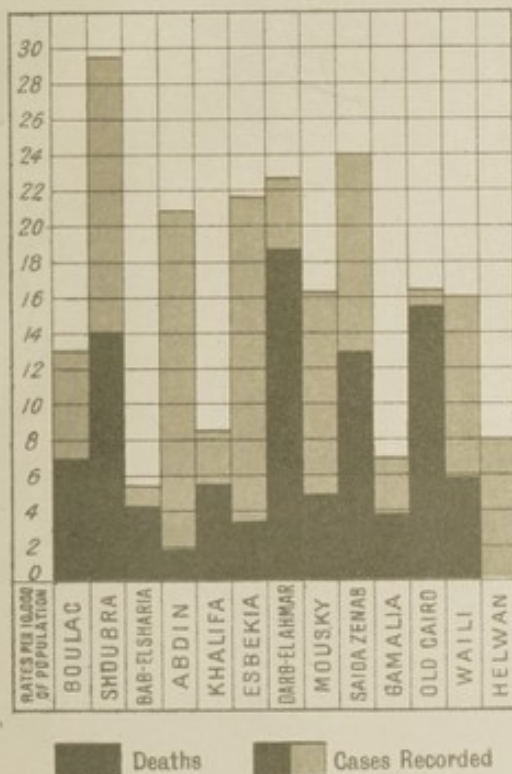


Fig. 19.

**CEREBRO-SPINAL FEVER**  
Case and death rates in Cairo Districts  
in 1916 per 10,000 of population.

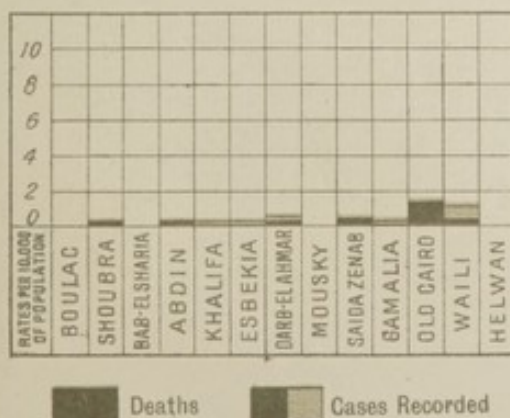


Fig. 18.

**SMALL POX**  
Case and death rates in Cairo Districts  
in 1916 per 10,000 of population.

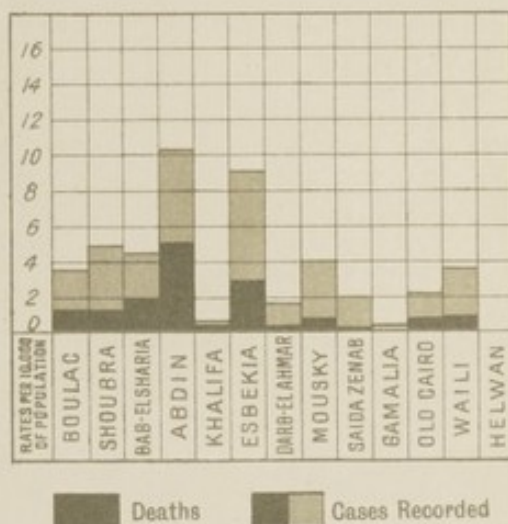
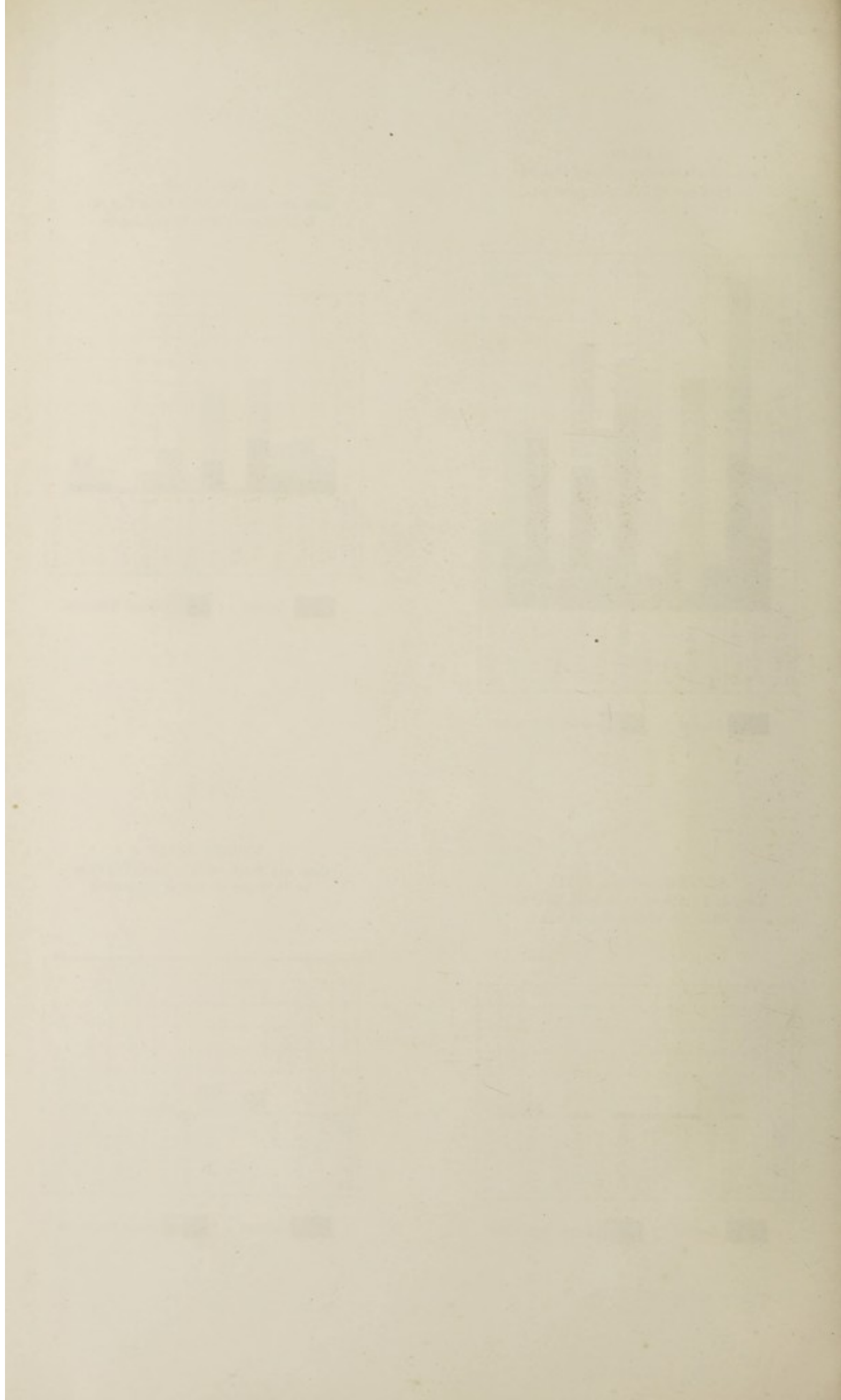


Fig. 20.

**SCARLET FEVER**  
Case and death rates in Cairo Districts  
in 1916 per 10,000 of population.

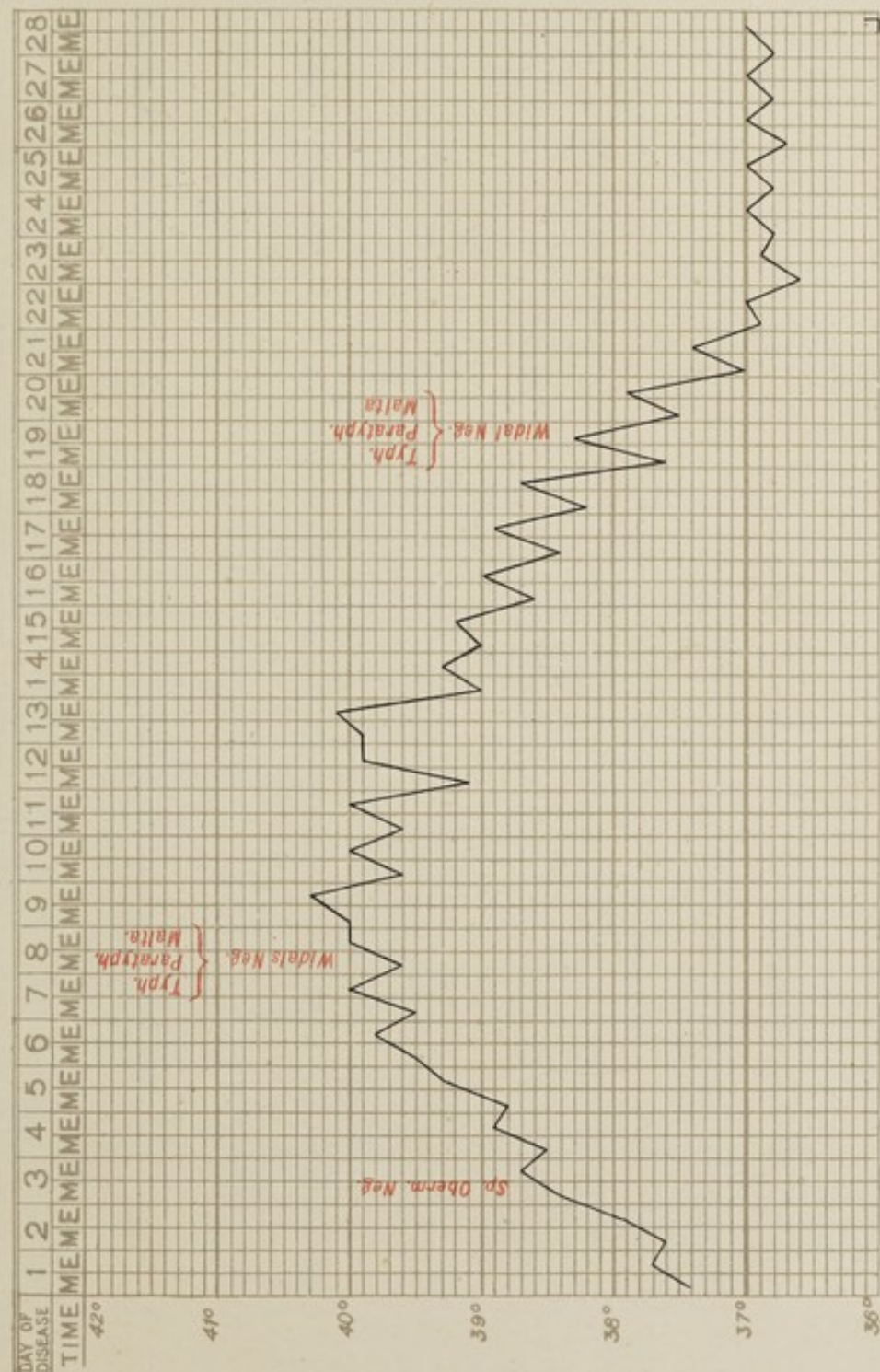




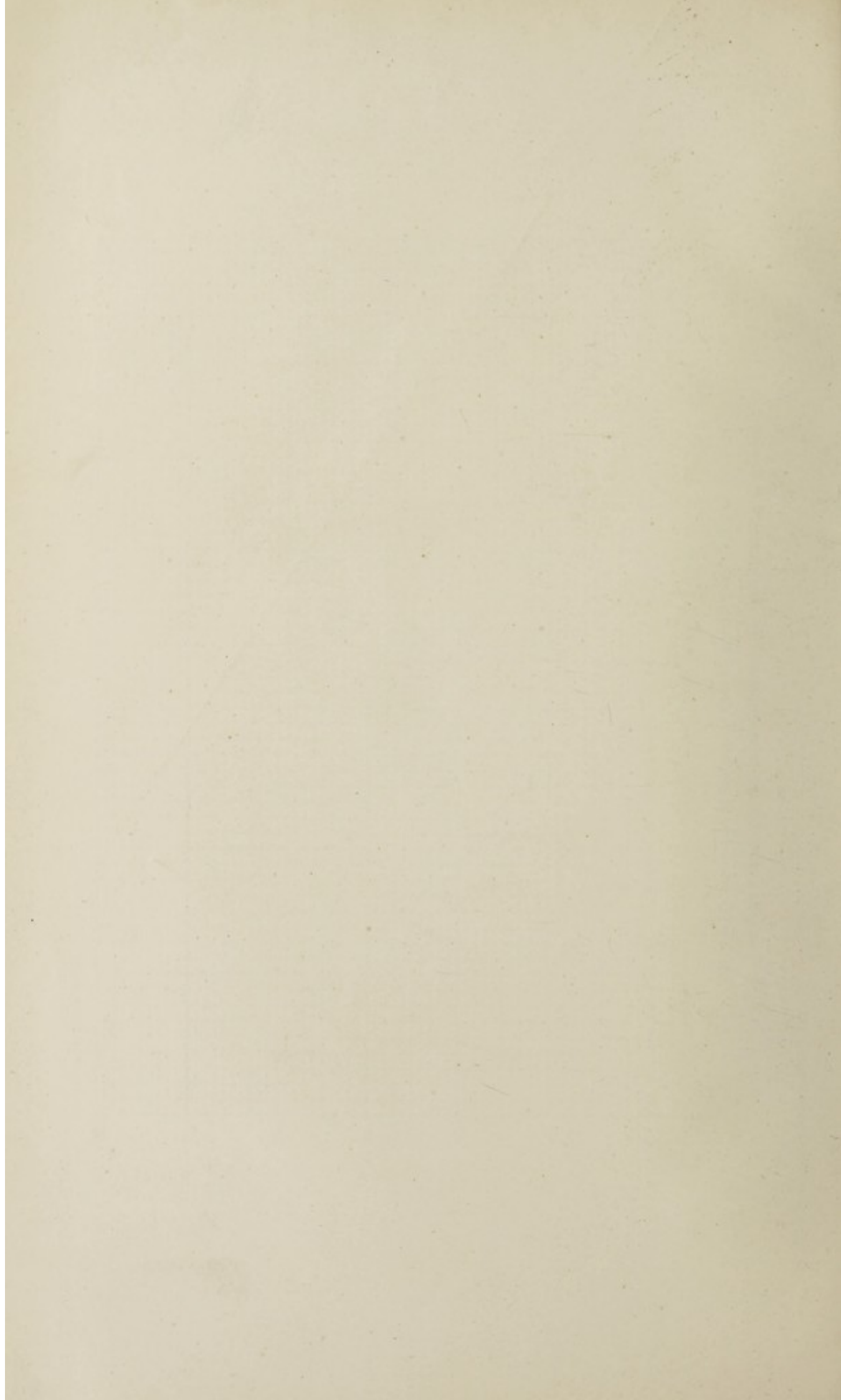




Temperature Chart of a case of the Unidentified Fever of 1915 showing a gradual onset and termination by lysis.



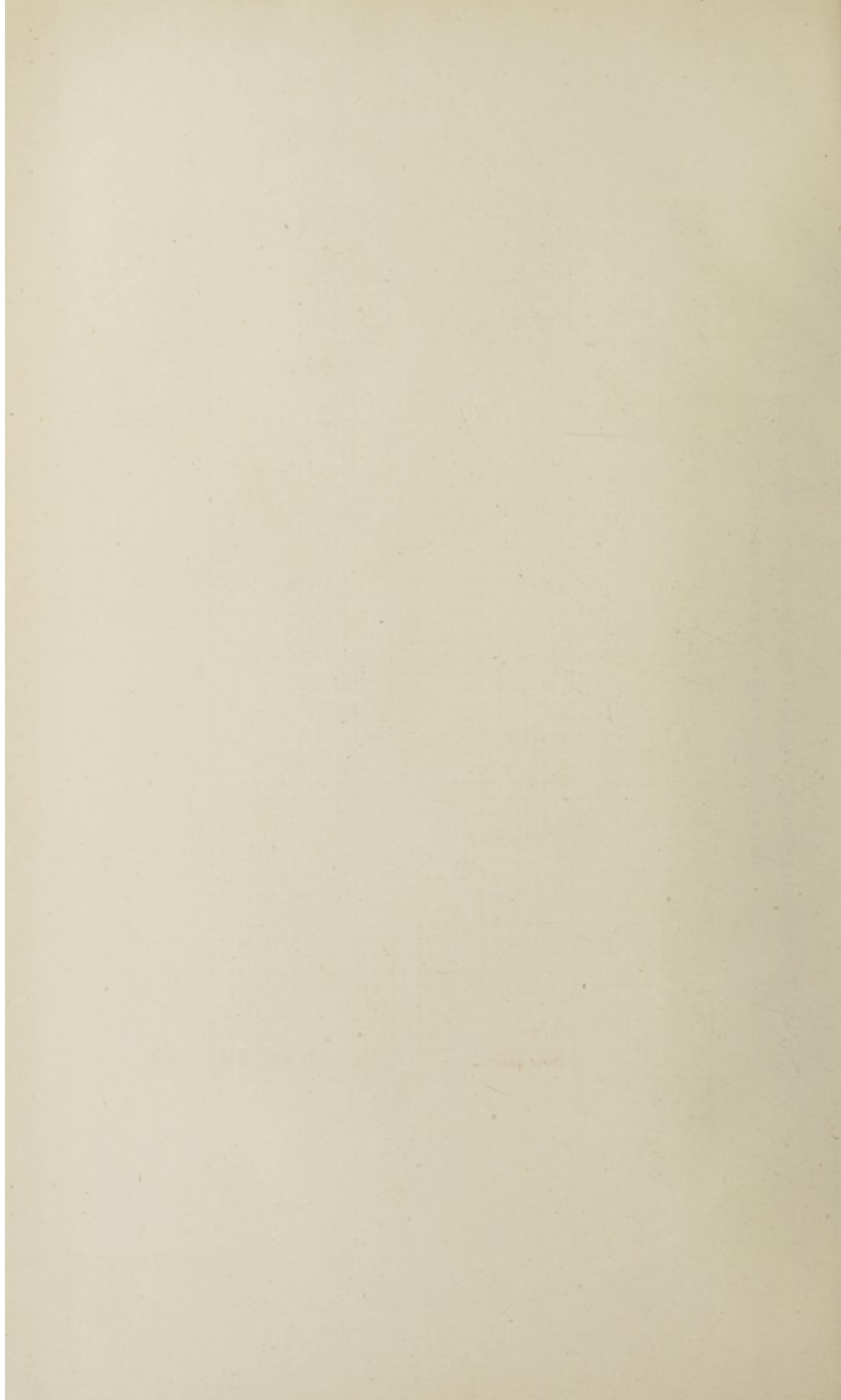






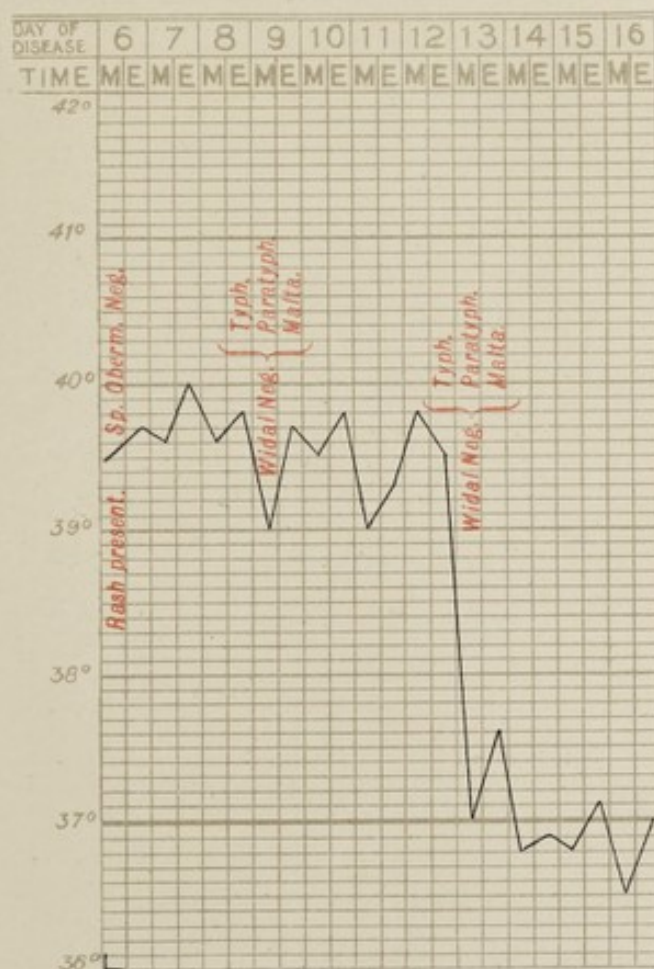






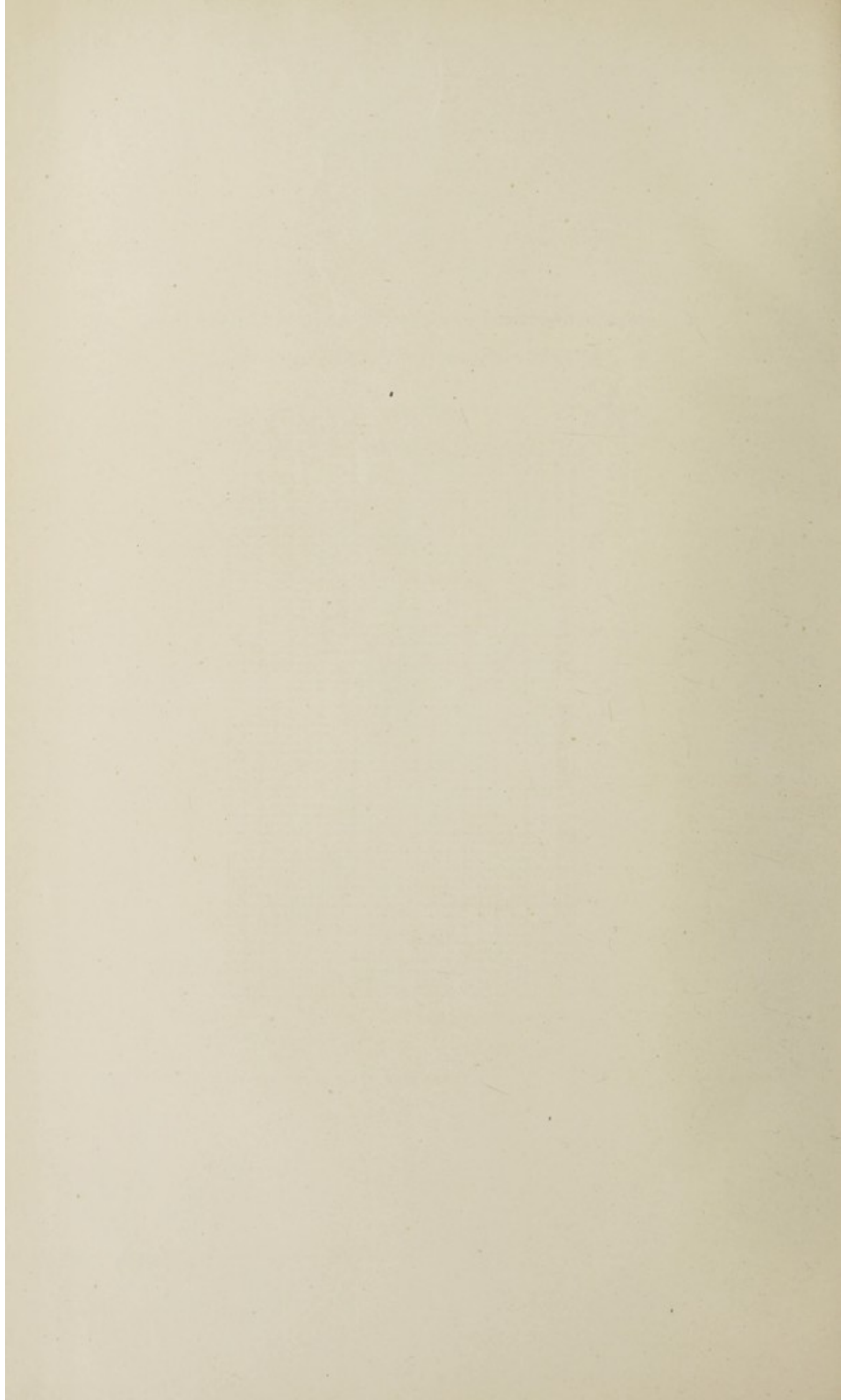


Temperature Chart of a case of the Unidentified Fever  
of 1915 showing termination by crisis.



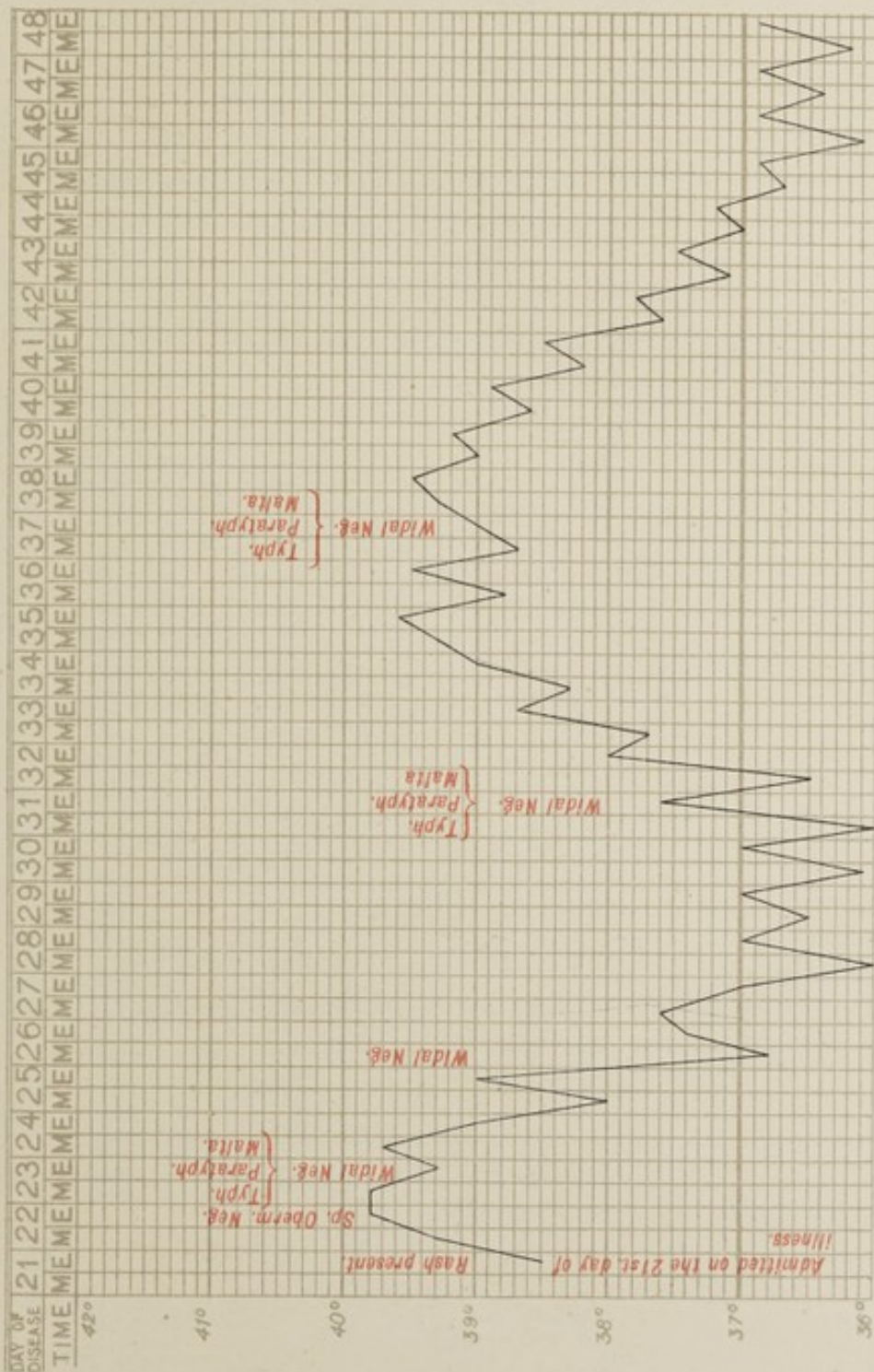
Printed by the Survey of Egypt, 1915. (1348)







Temperature Chart of a case of the Unidentified Fever of 1915  
showing end of attack and a relapse.





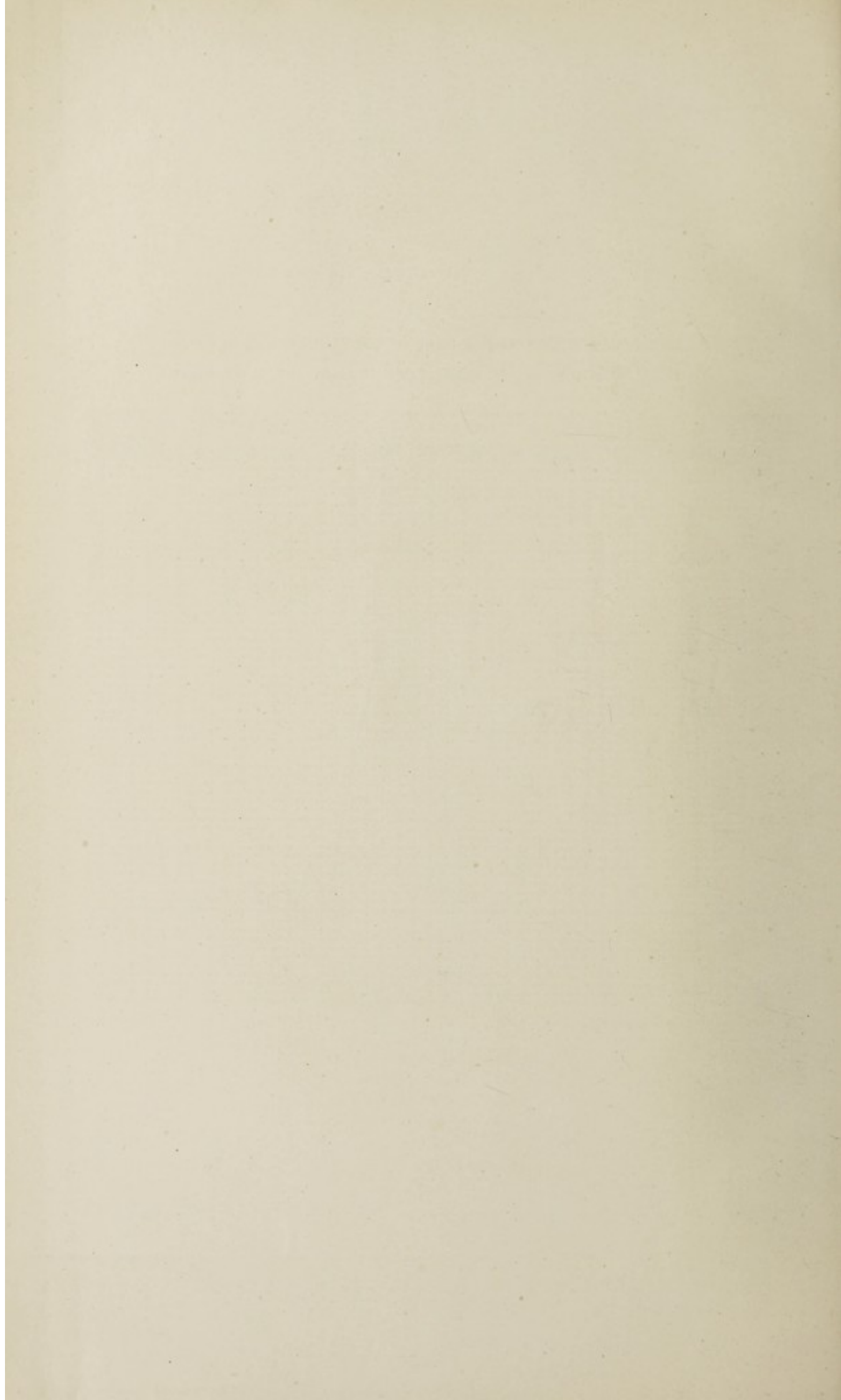




Temperature Chart of a case of the Unidentified Fever of 1915 showing a fatal termination of a relapse.

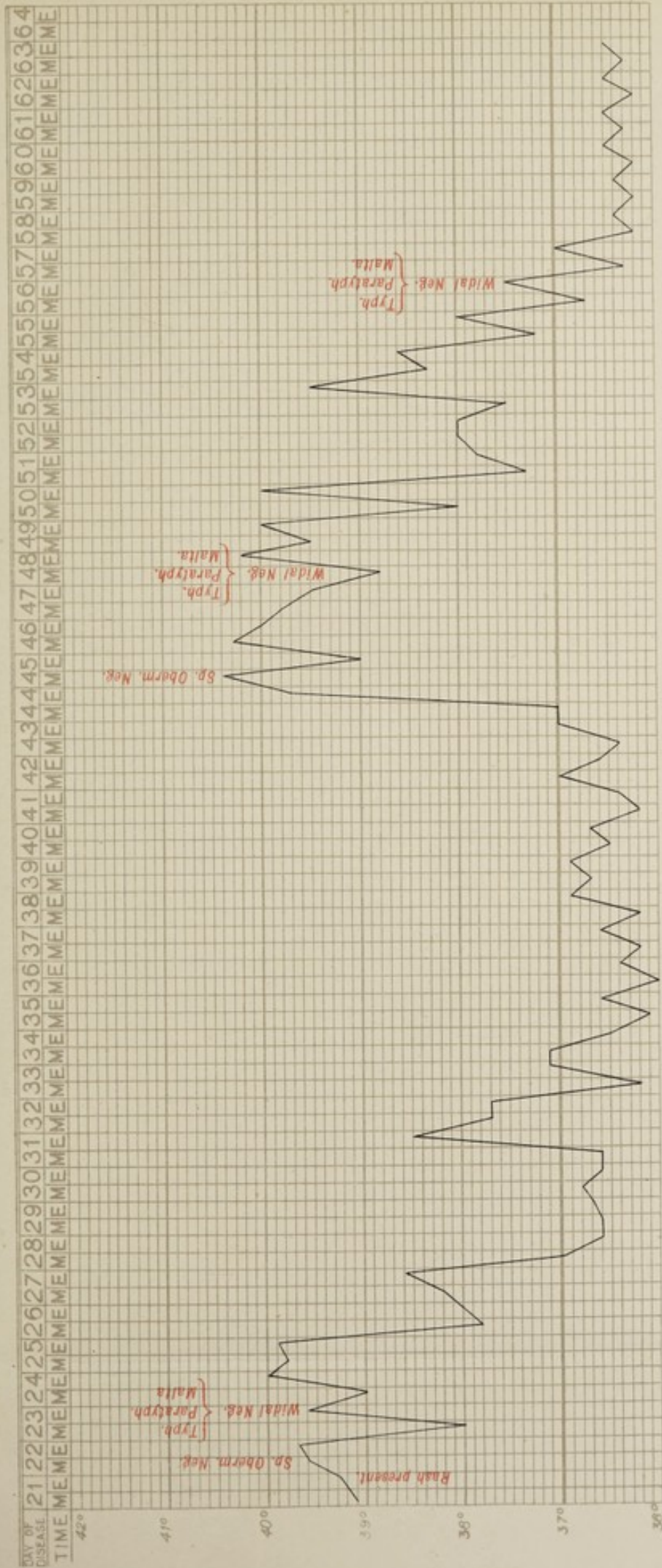








Temperature Chart of a relapsing case  
of the Unidentified Fever of 1915.

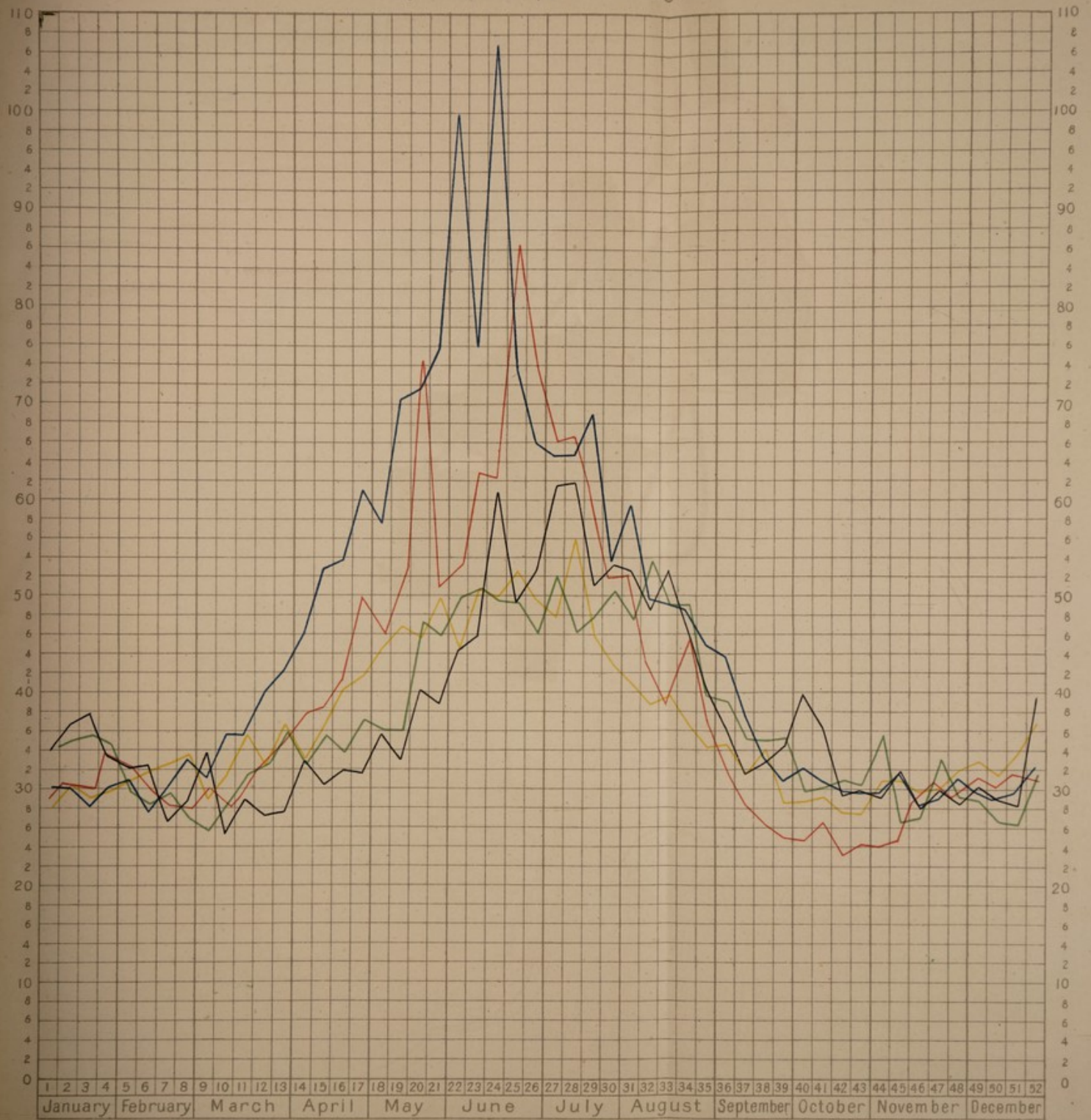








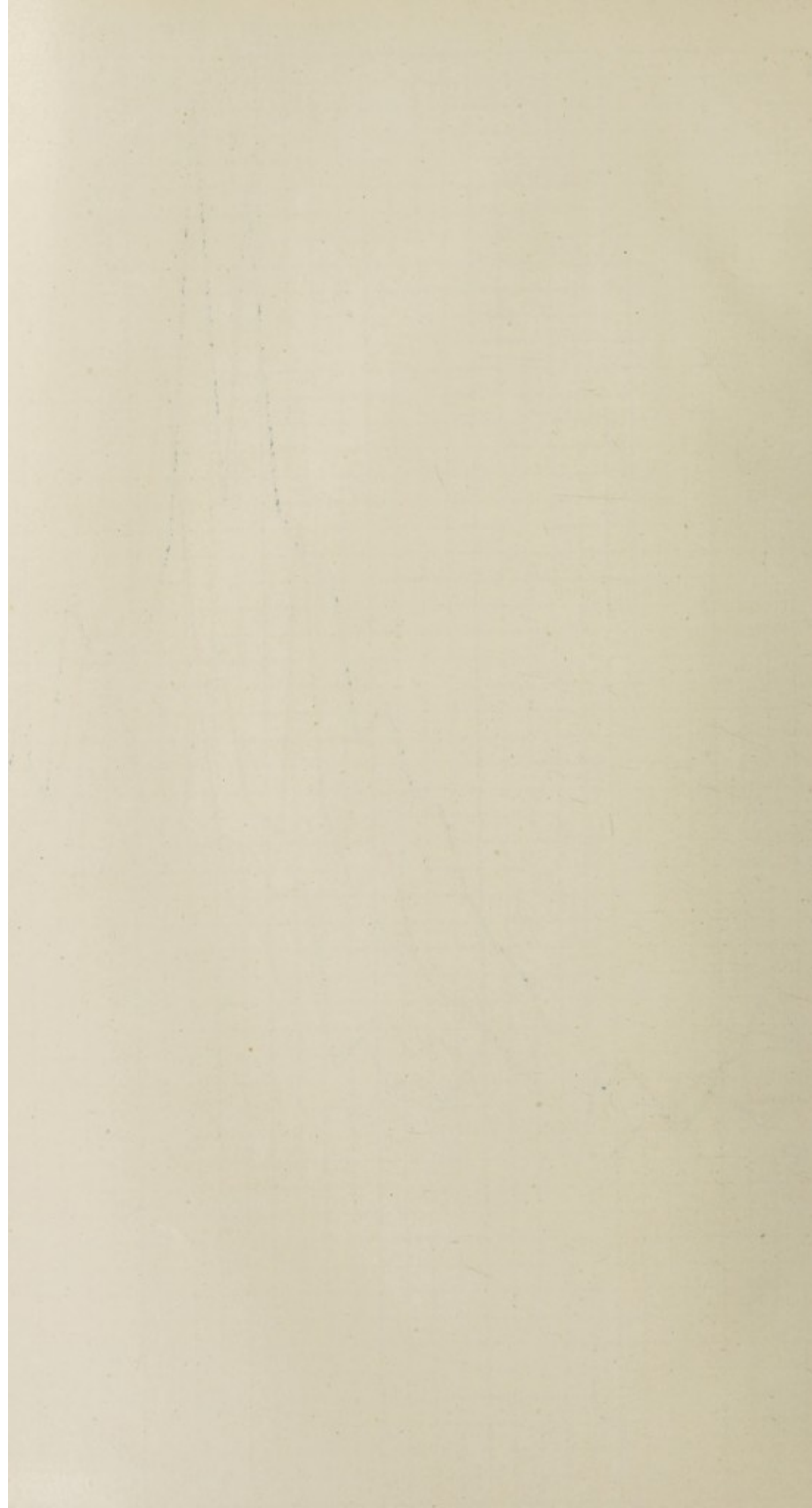
Weekly Death Rates per 1000 Living Cairo.



Printed by the Survey of Egypt, 1916. (1348)

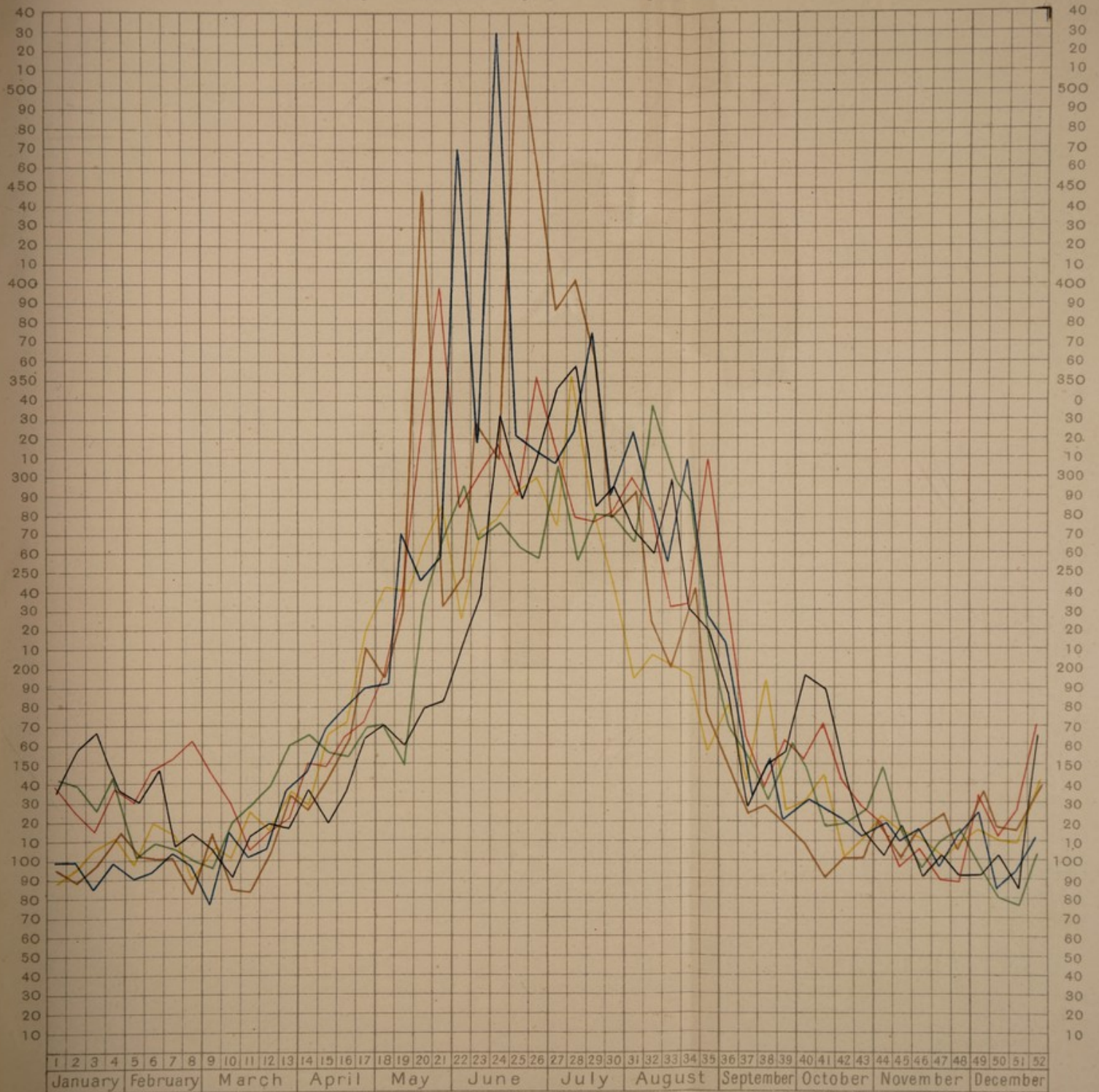
Year	Estimated Population	Year	Estimated Population	Year	Estimated Population
1912	704956	1914	725670	1916	740000
1913	715609	1915	733423		







Weekly Infantile Mortality Children 0-1 year, Cairo



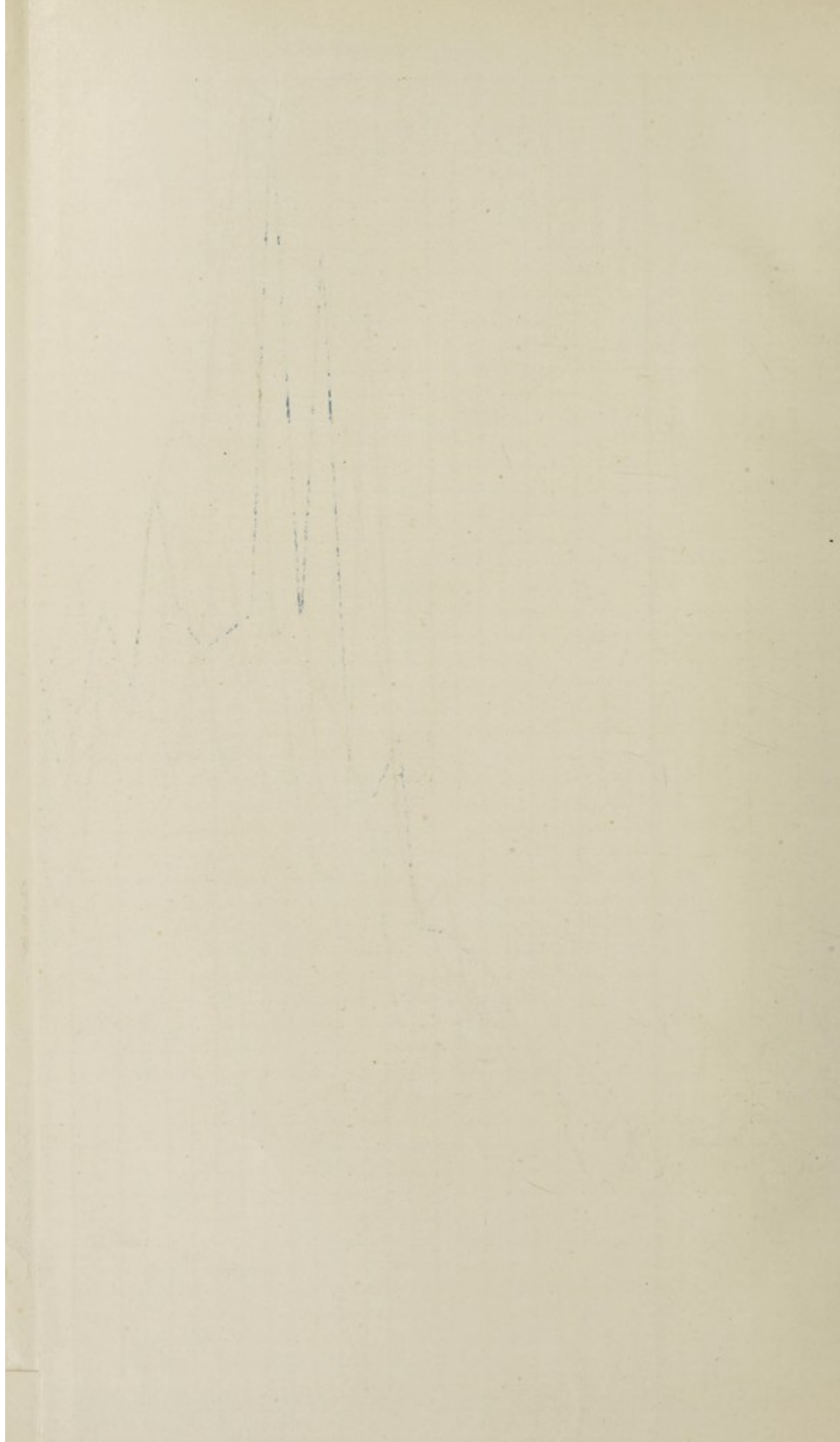
Printed by the Survey of Egypt, 1918. (1340)

— 1911  
— 1912

— 1913  
— 1914

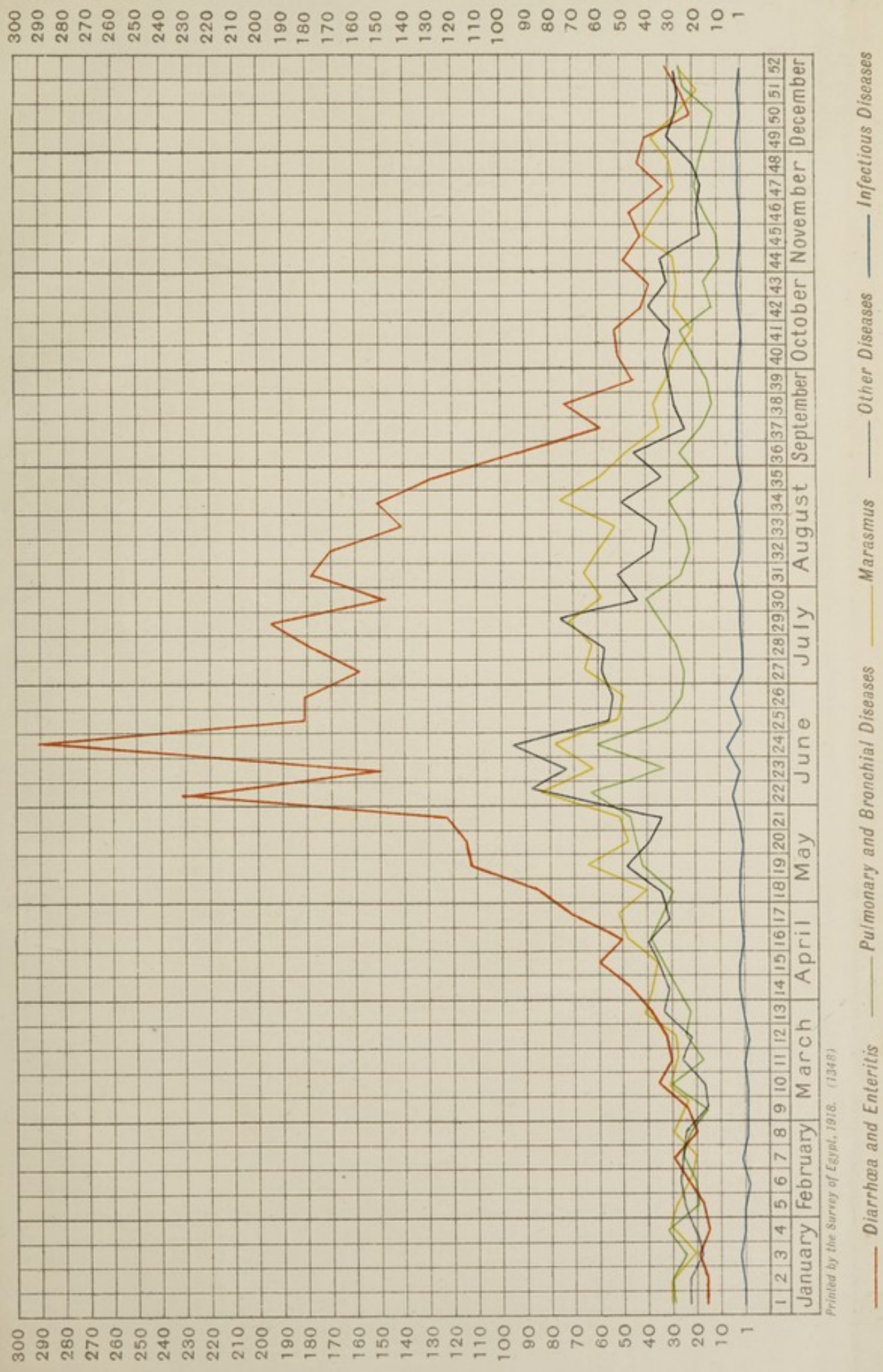
— 1915  
— 1916







Weekly Infantile Mortality Children 0-1 year 1915. Cairo

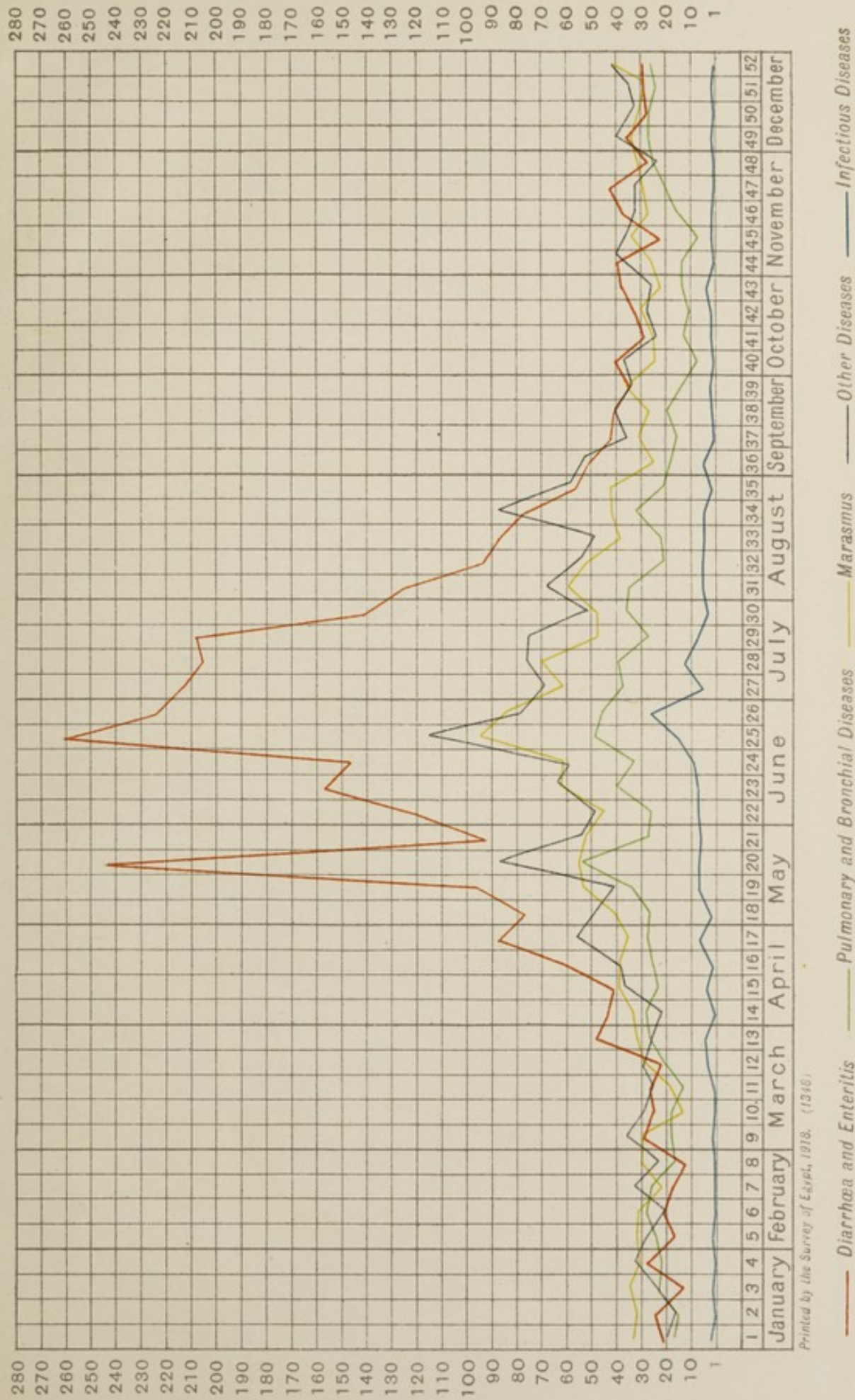






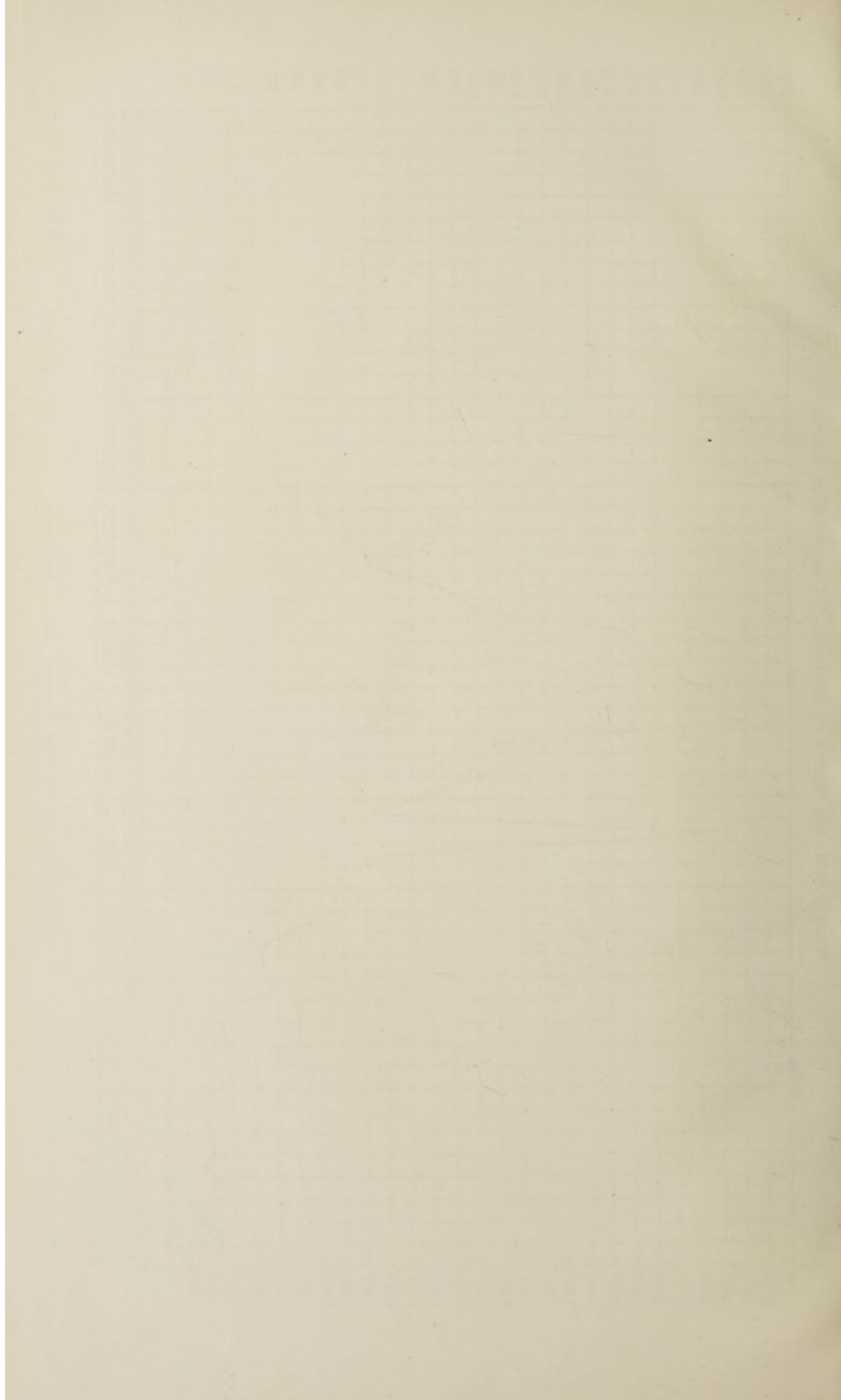


Weekly Infantile Mortality Children 0-1 year 1916. Cairo



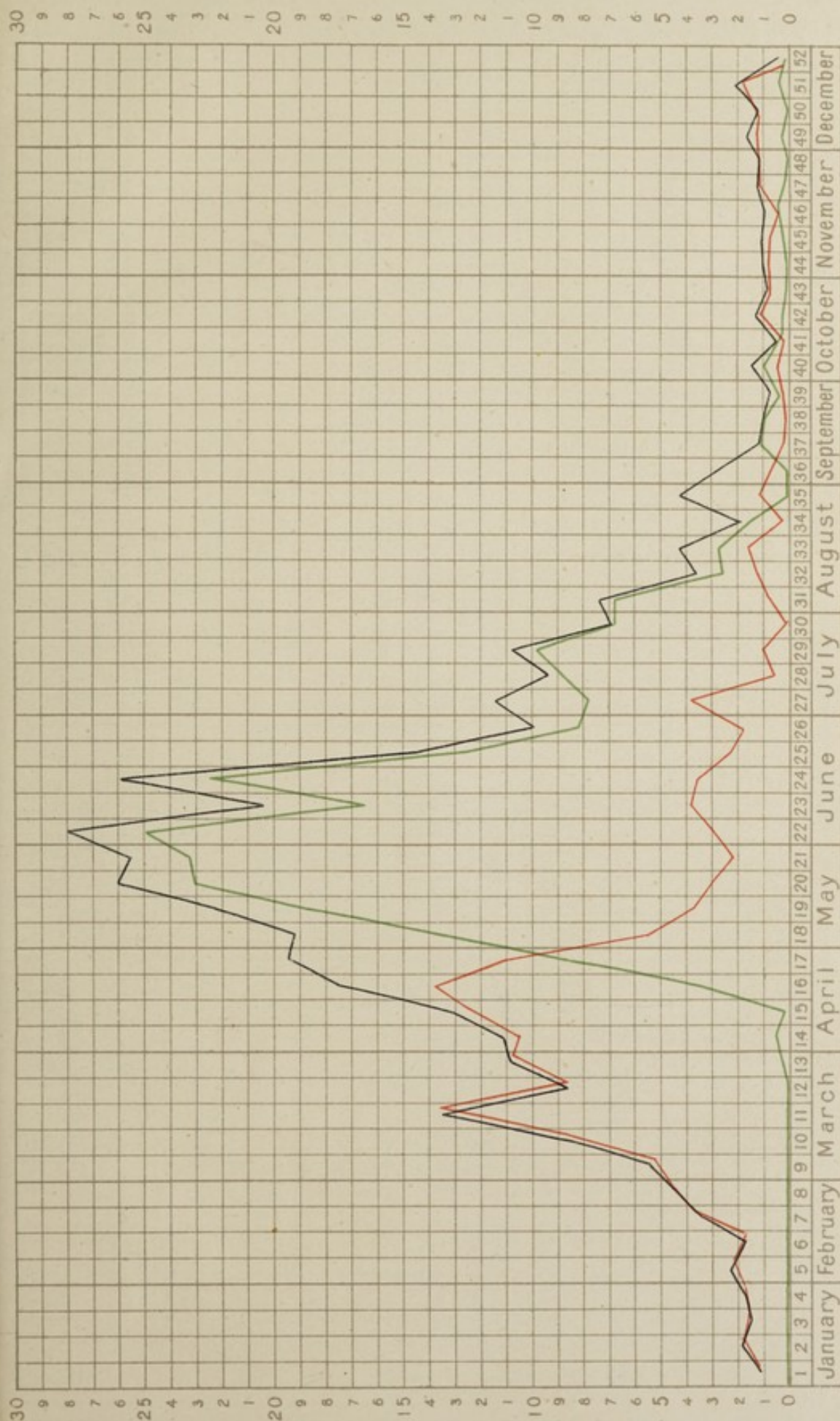
Printed by the Survey of Egypt, 1918. (1316)



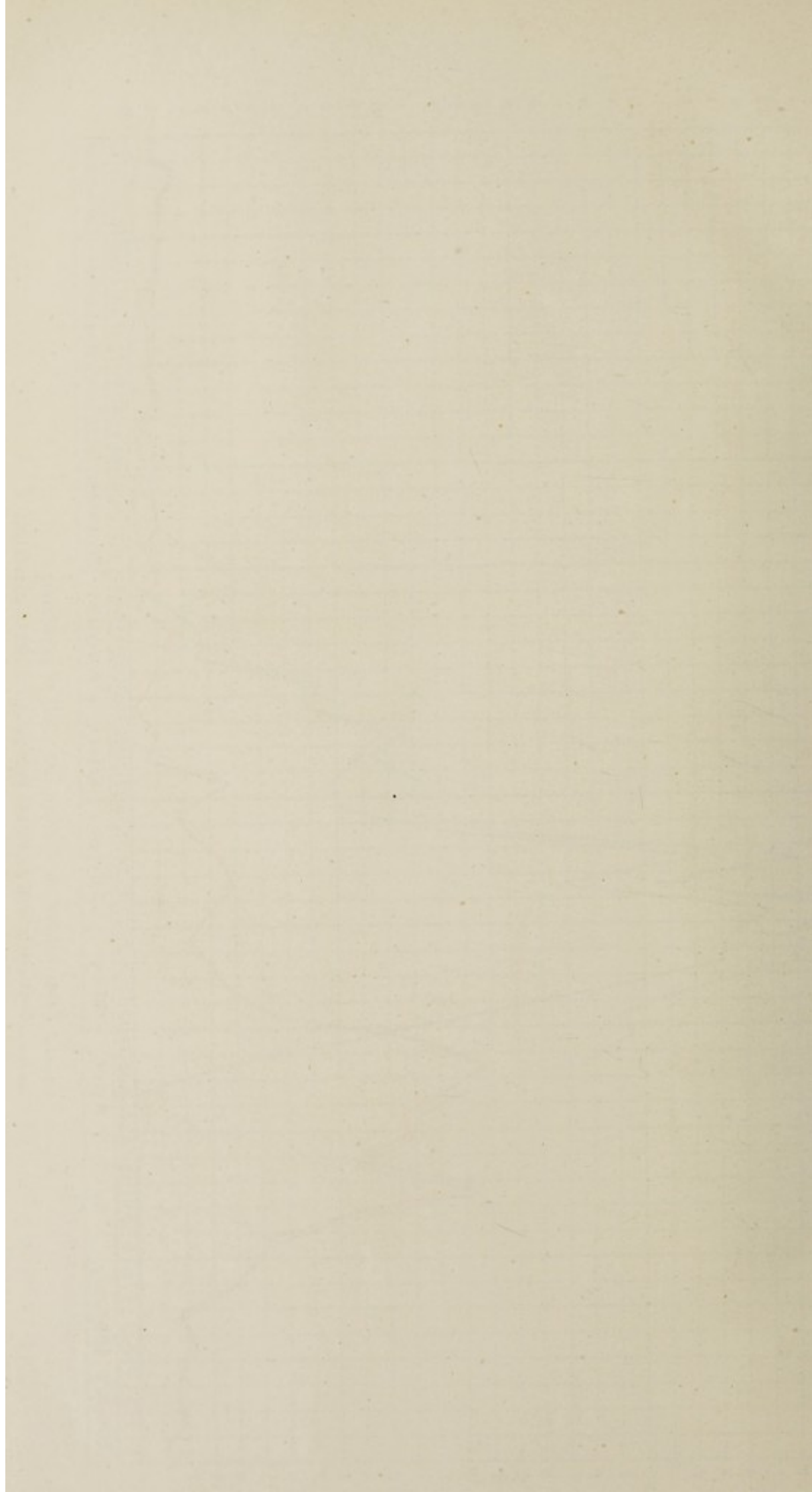




weekly incidence rate per 1000 of population.

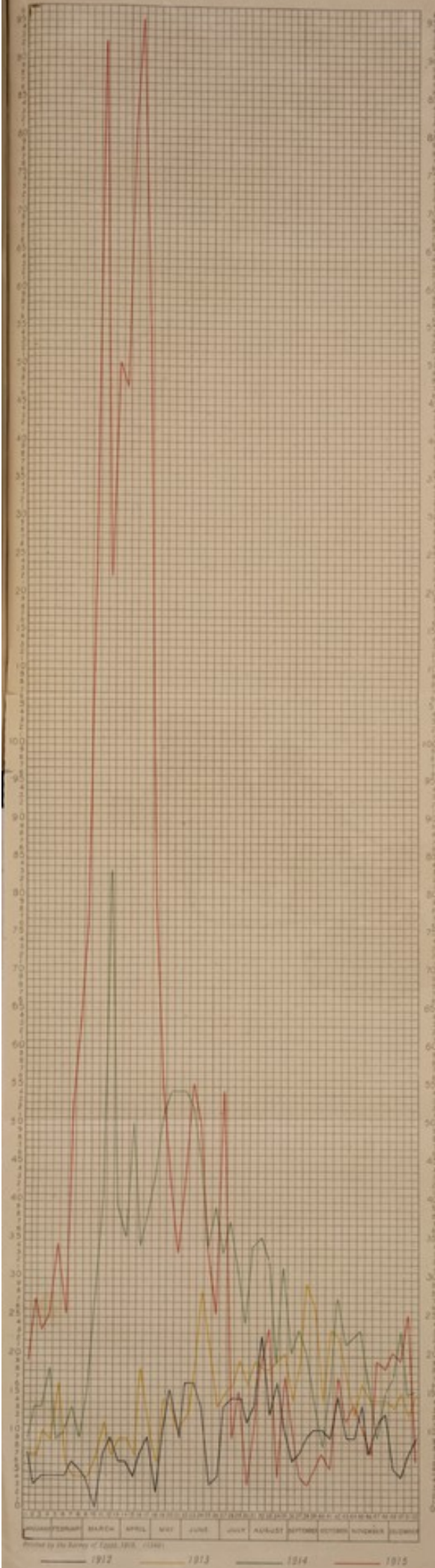








# TYPHOID FEVER. Weekly Total of Cases.

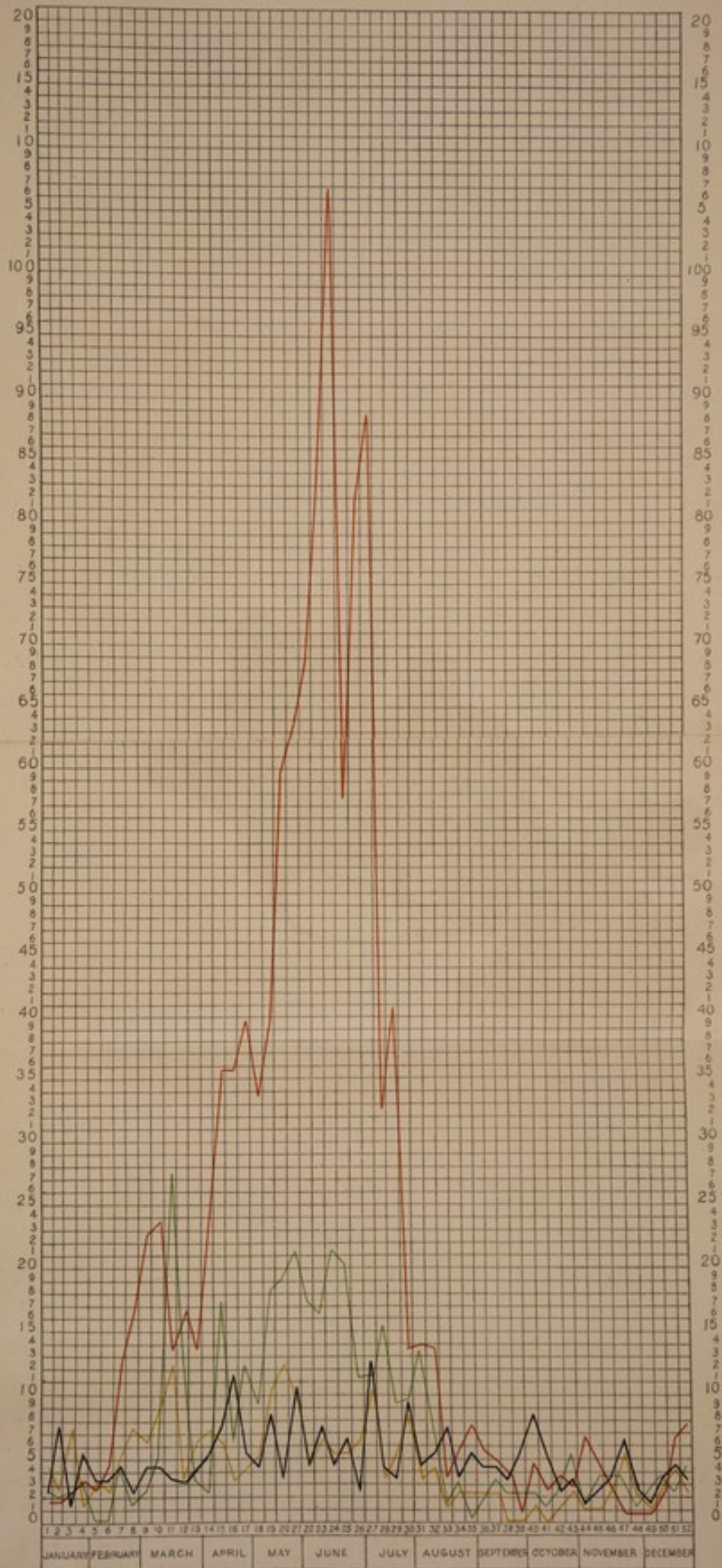








# TYPHUS. Weekly Total of Cases.

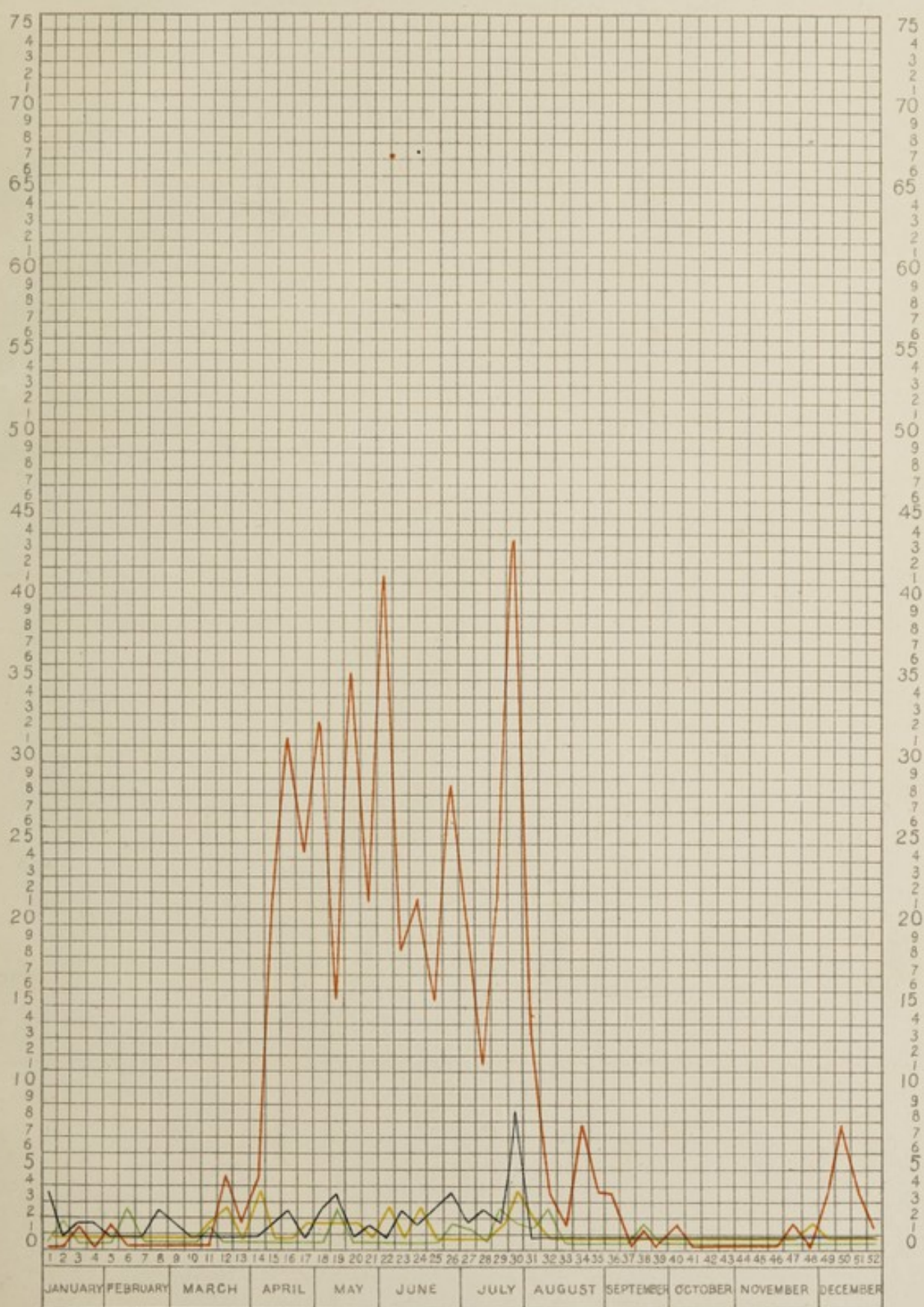






# RELAPSING FEVER.

## Weekly Total of Cases.



Printed by the Survey of Egypt, 1918. (1348)

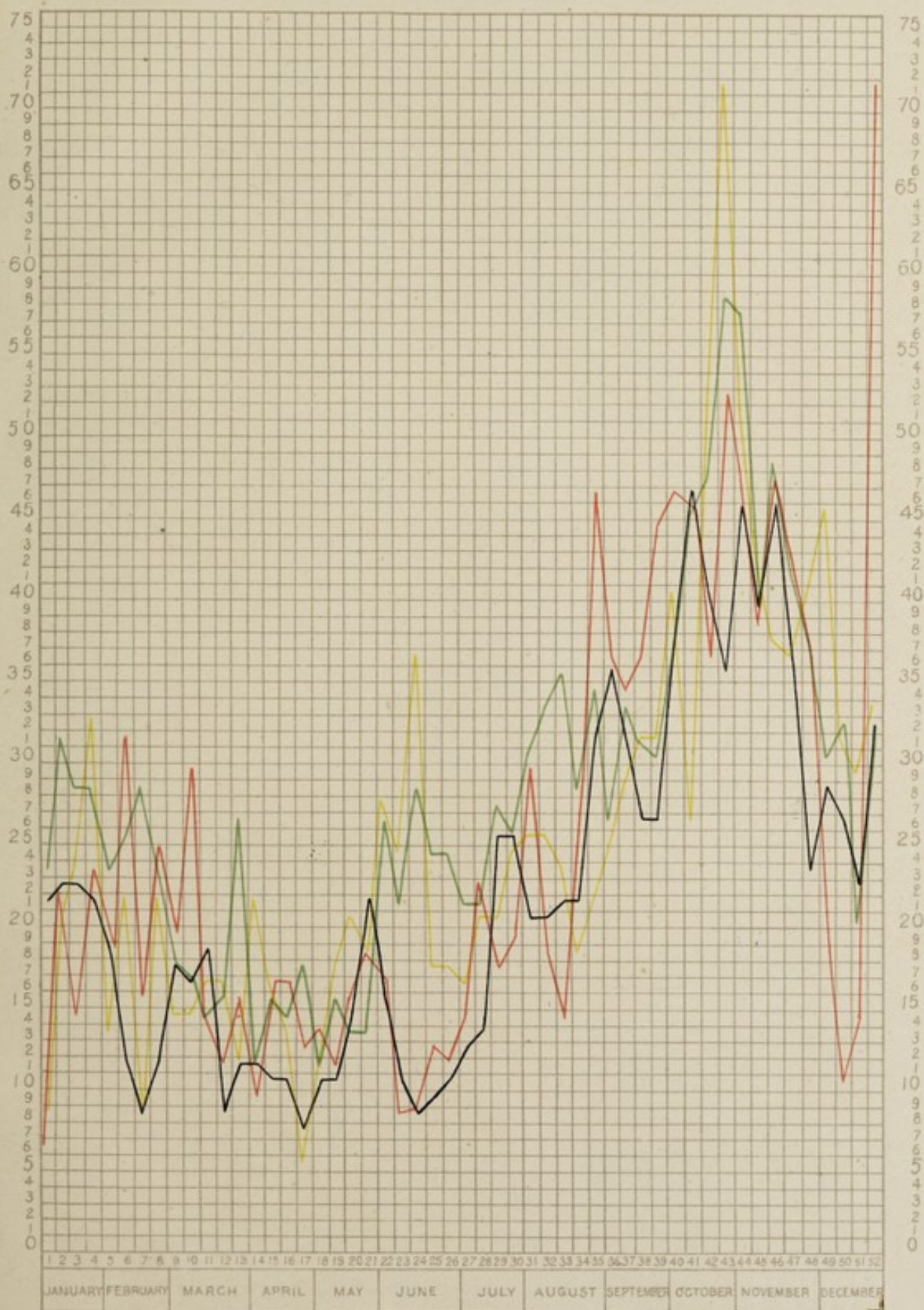
1912 1913 1914 1915





# DIPHTHERIA.

## Weekly Total of Cases.



Printed by the Survey of Egypt, 1918. (1348)

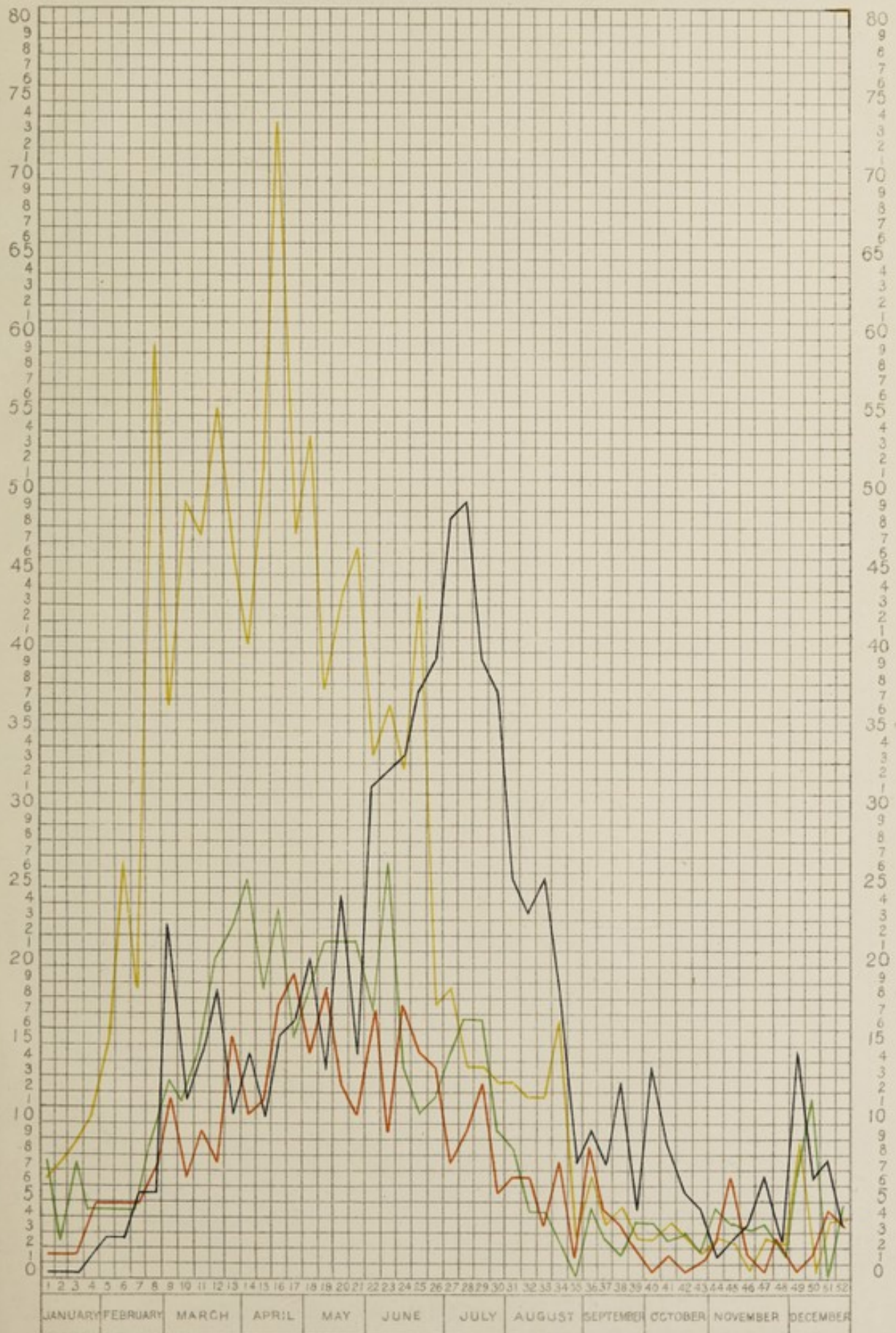
— 1912 — 1913 — 1914 — 1915





# MEASLES.

## Weekly Total of Cases.



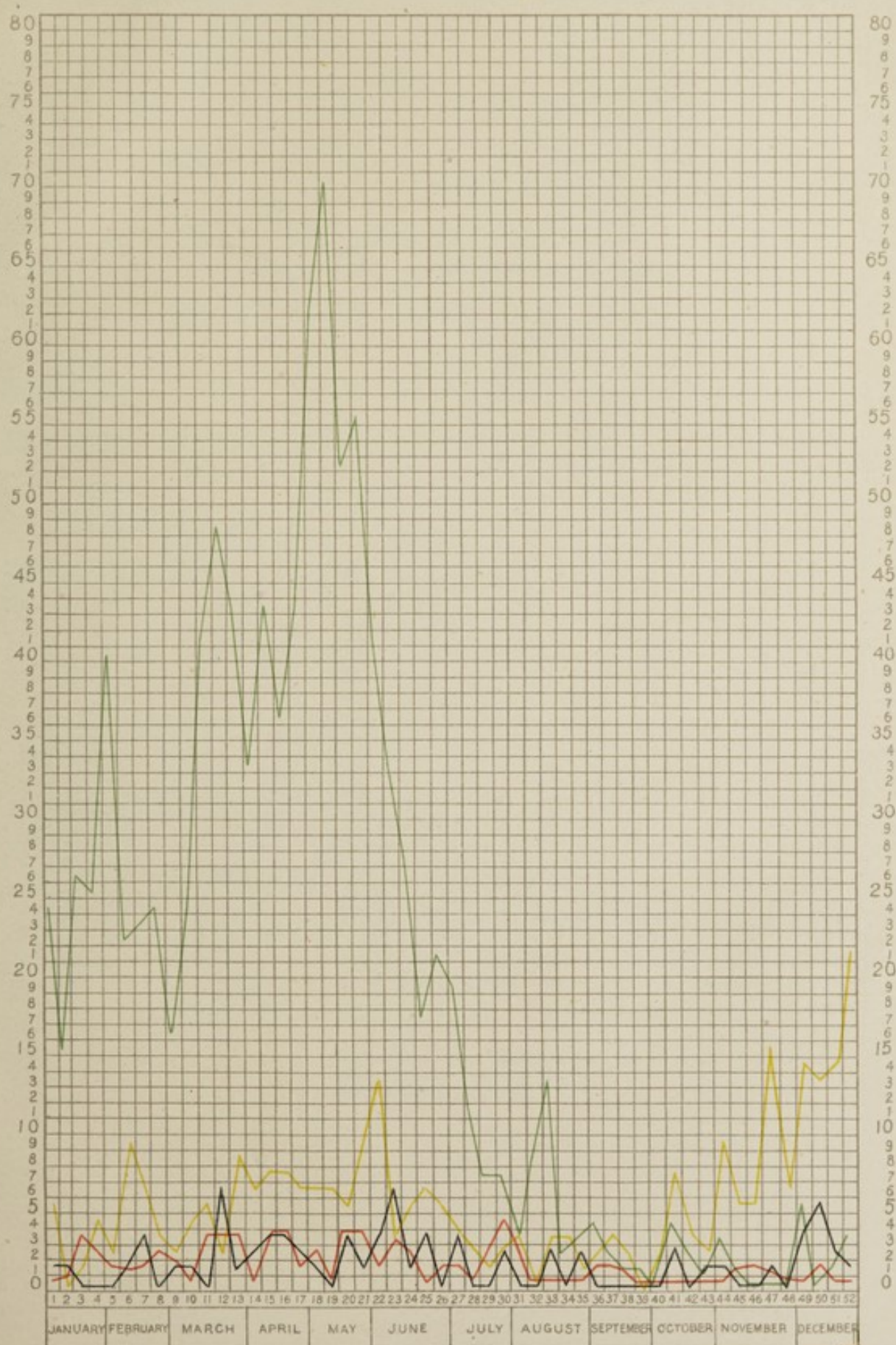
Printed by the Survey of Egypt, 1918. (1348)

— 1912      — 1913      — 1914      — 1915





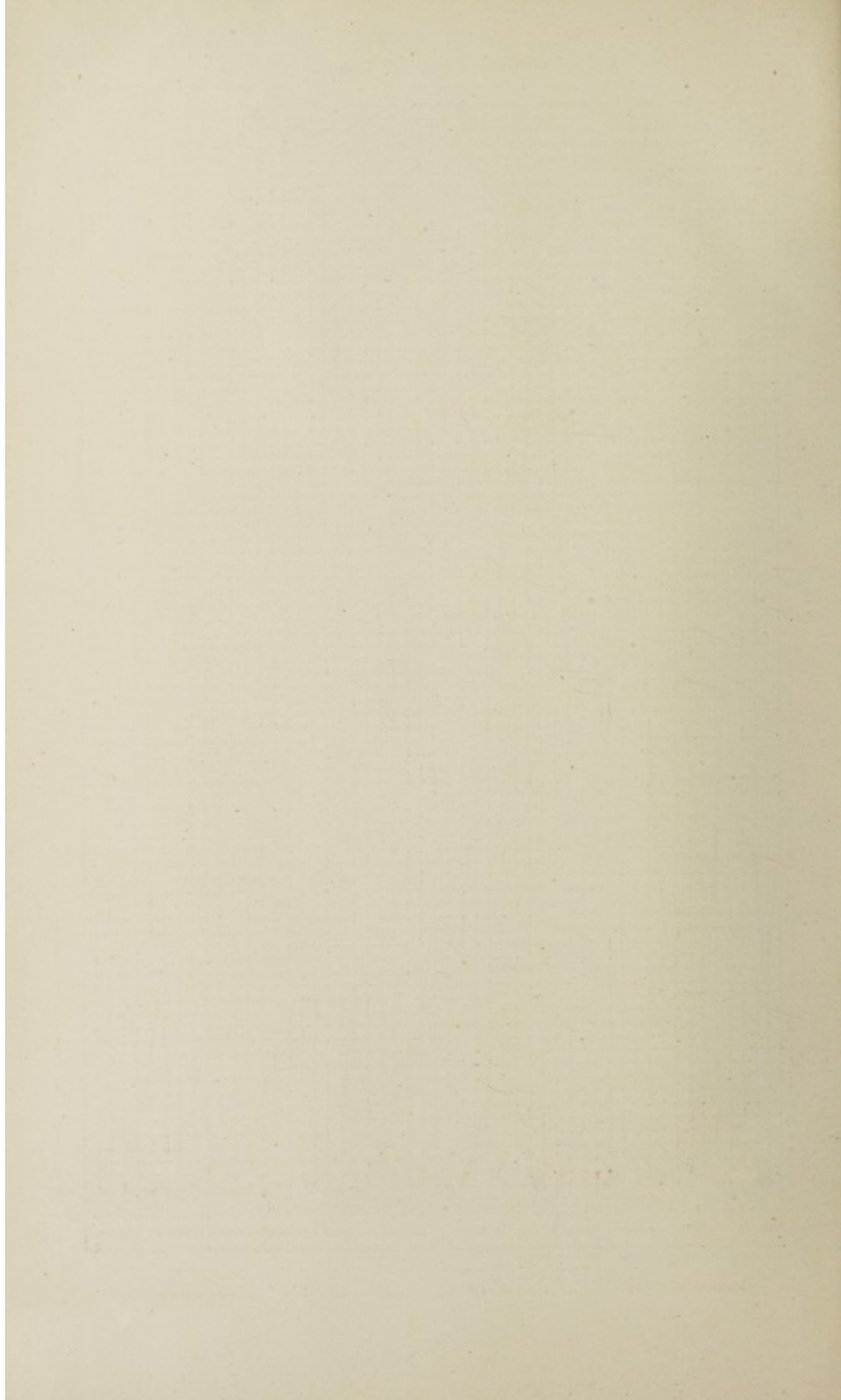
# SMALL POX. Weekly Total of Cases.



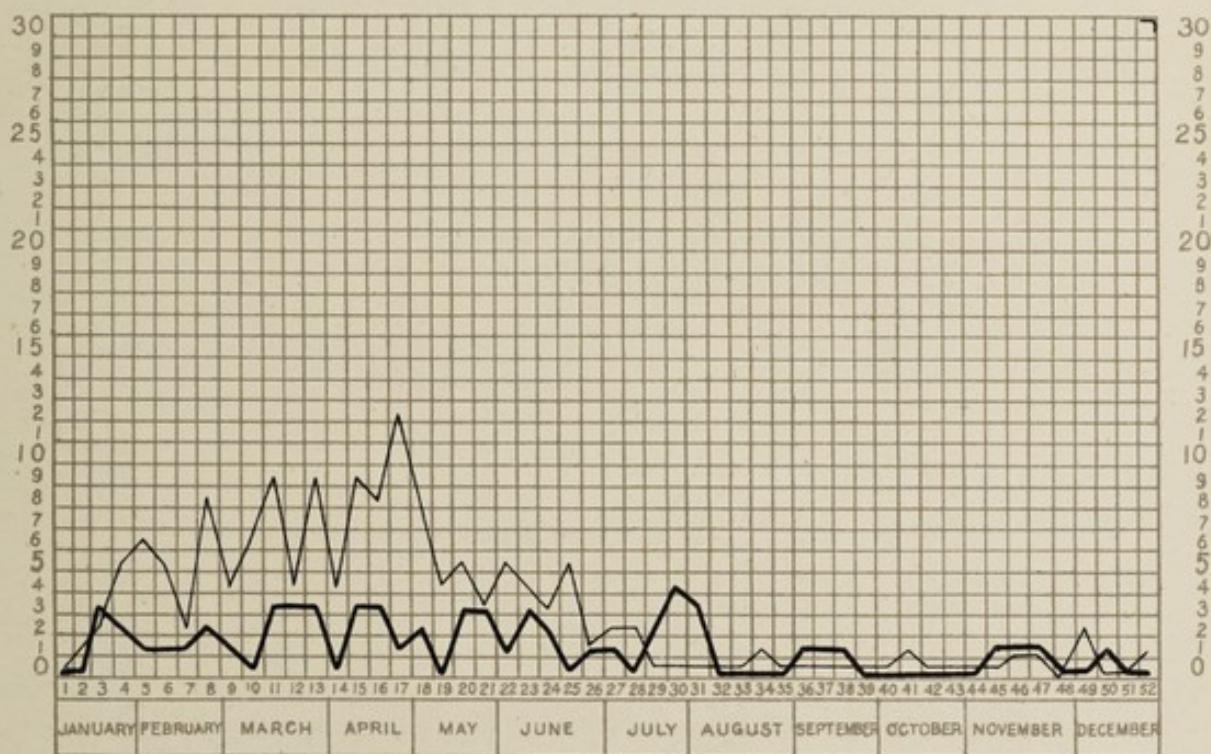
Printed by the Survey of Egypt, 1918. (1348)

— 1912 — 1913 — 1914 — 1915





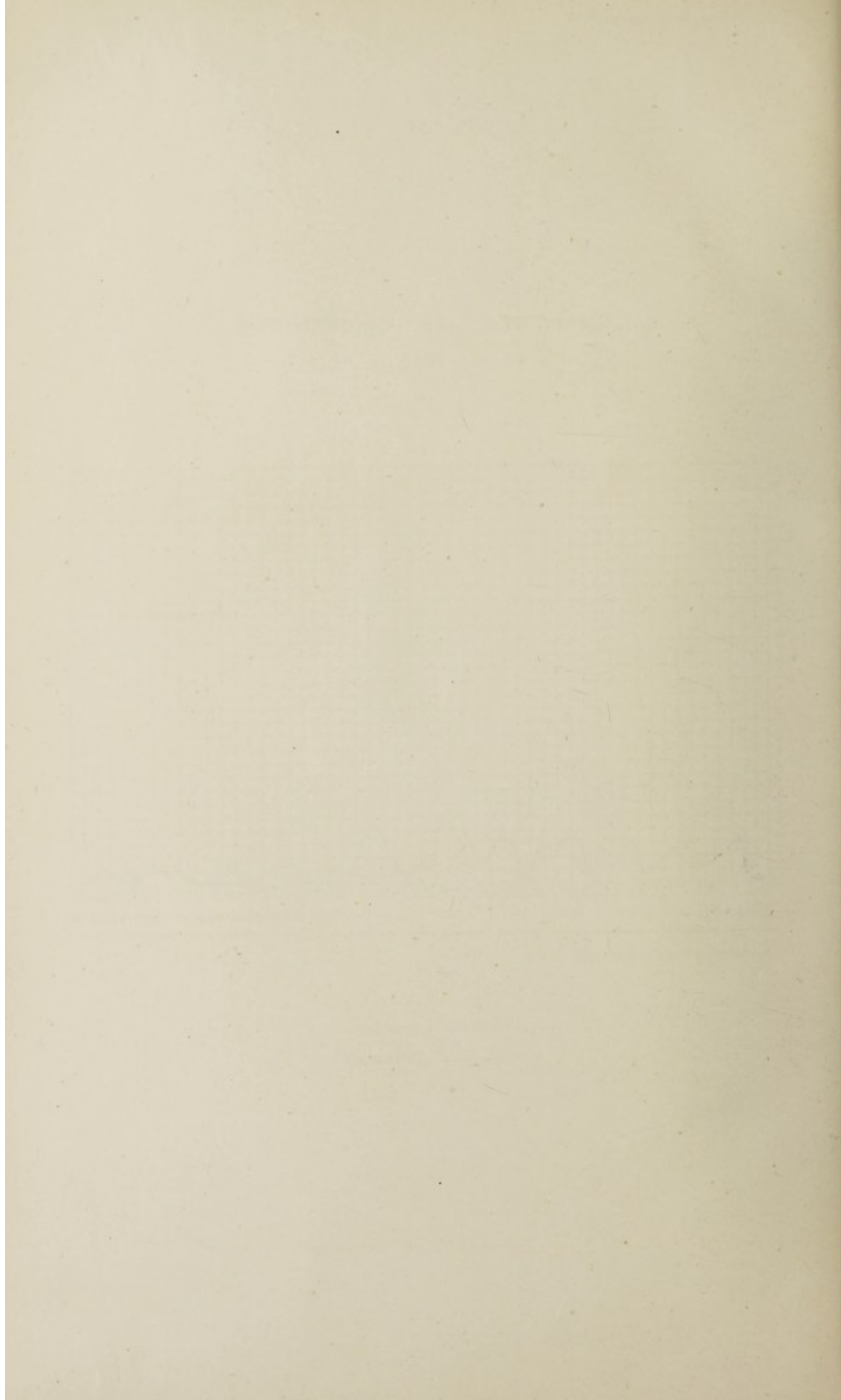
# SMALL POX and CHICKEN POX. 1915.



Printed by the Survey of Egypt, 1918. (1348)

— Small pox.  
— Chicken pox.





## CEREBRO-SPINAL FEVER.

Weekly Total of Cases.

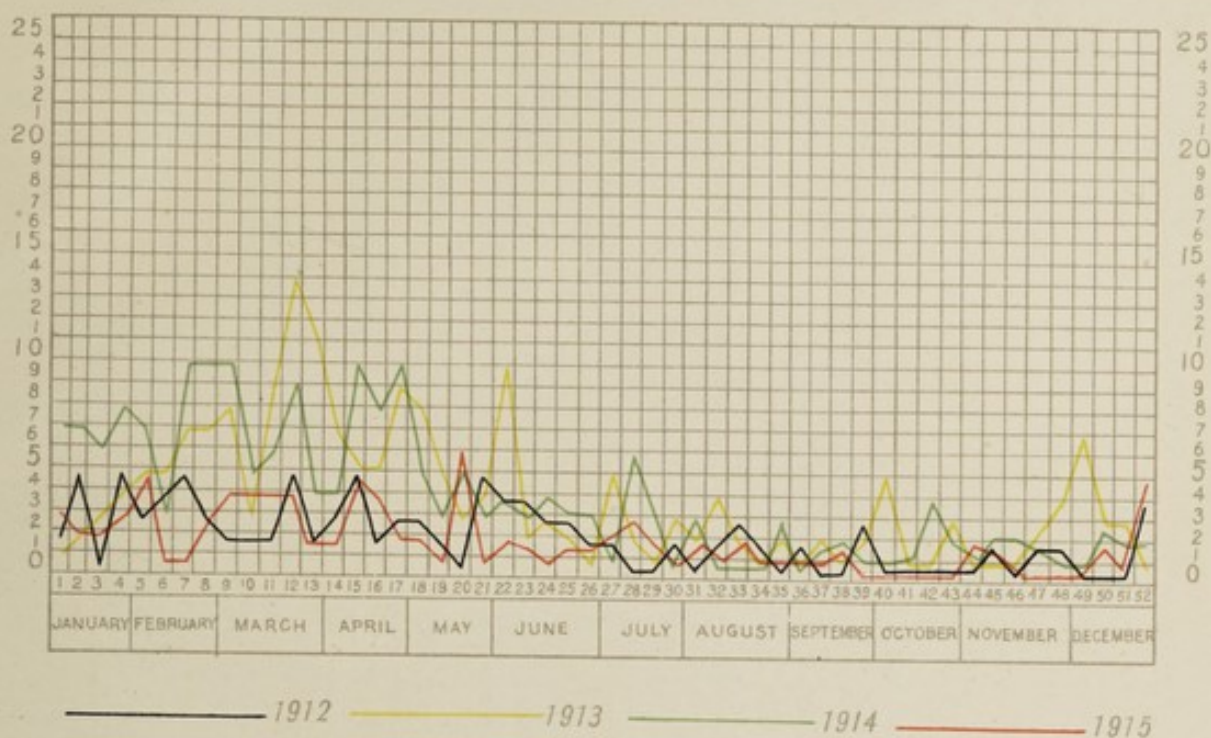
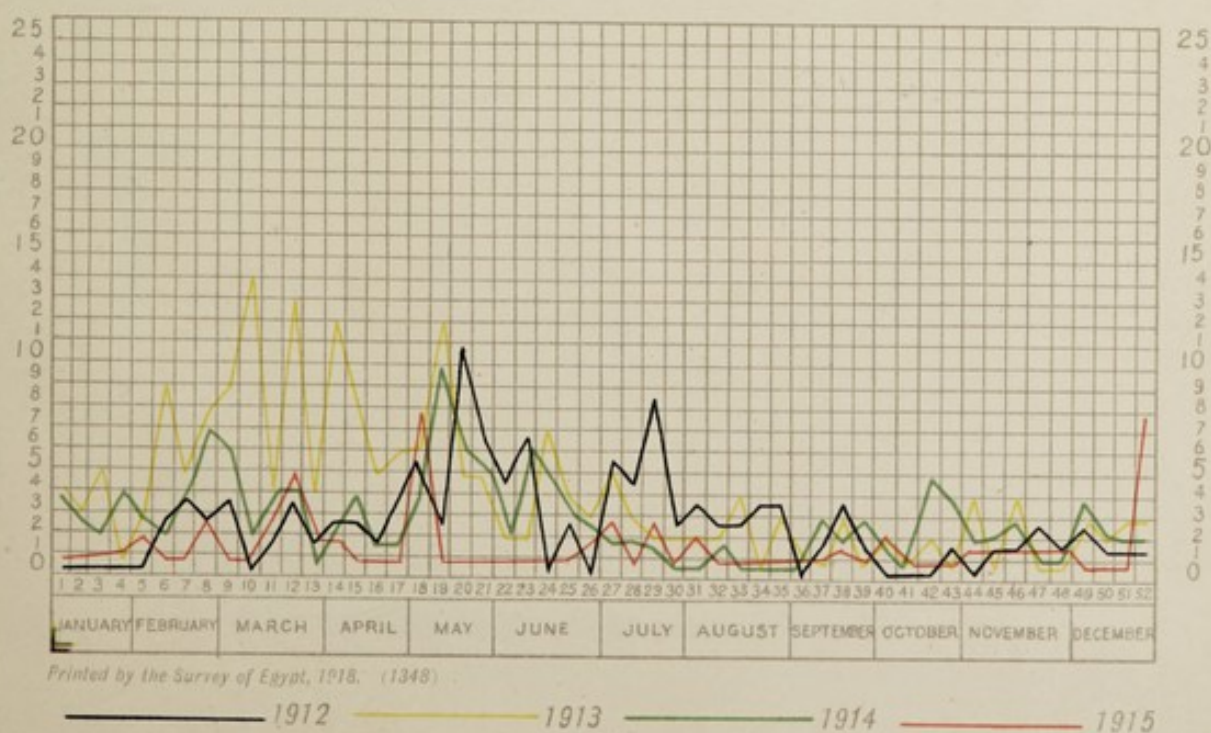


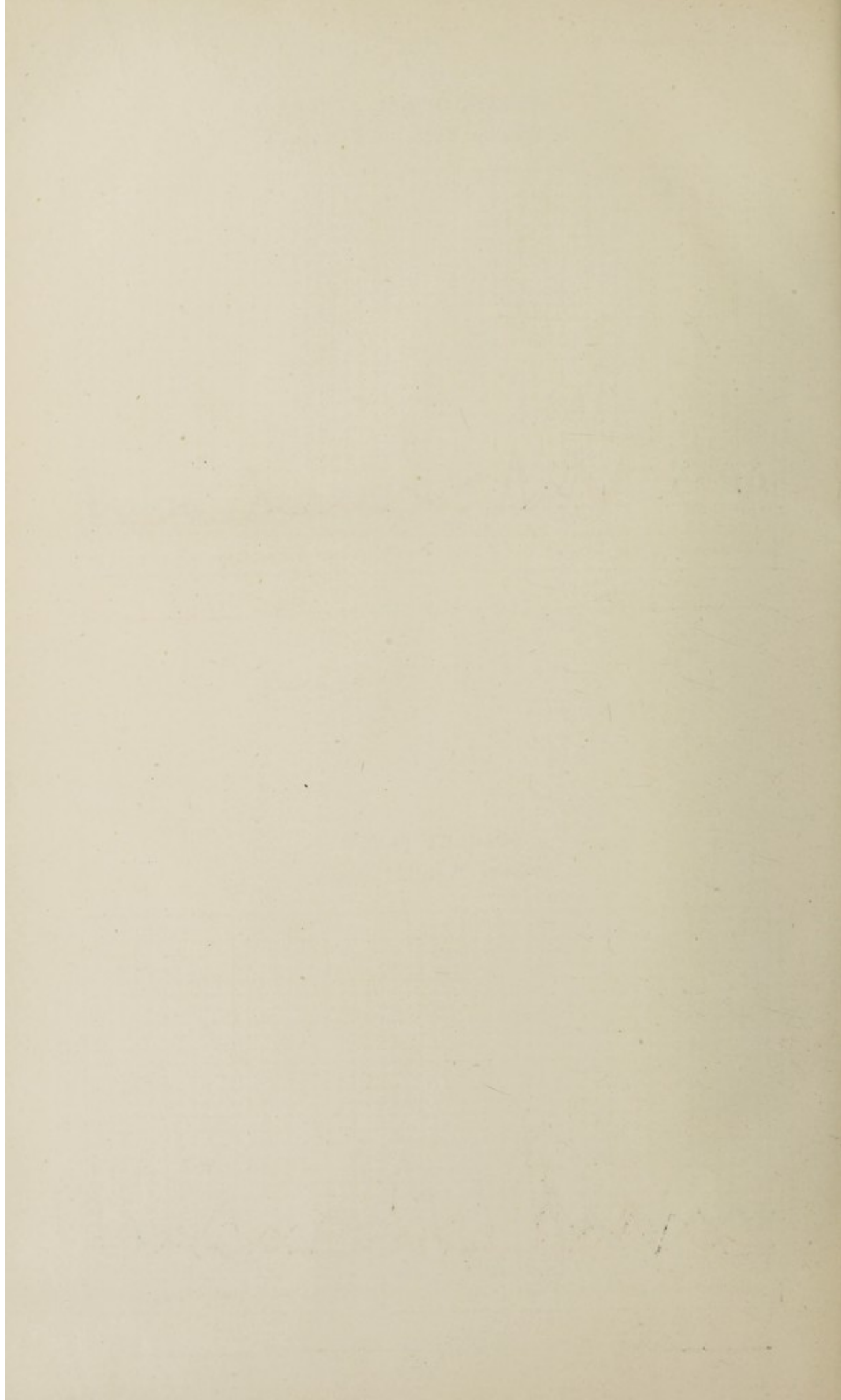
Chart XIV.

## SCARLET FEVER.

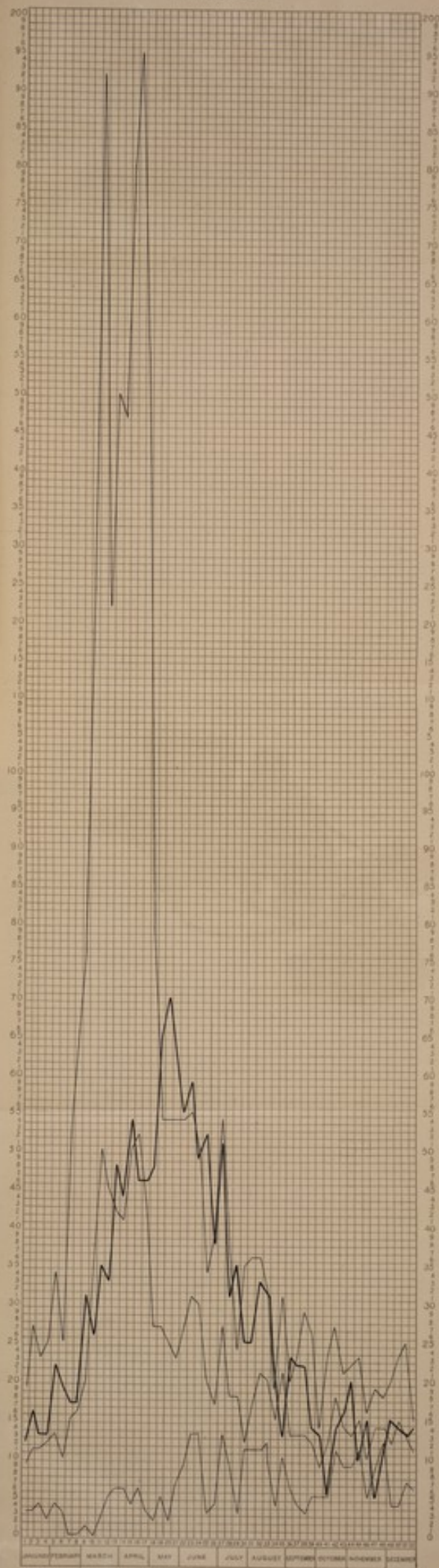
Weekly Total of Cases.







TYPHOID FEVER.



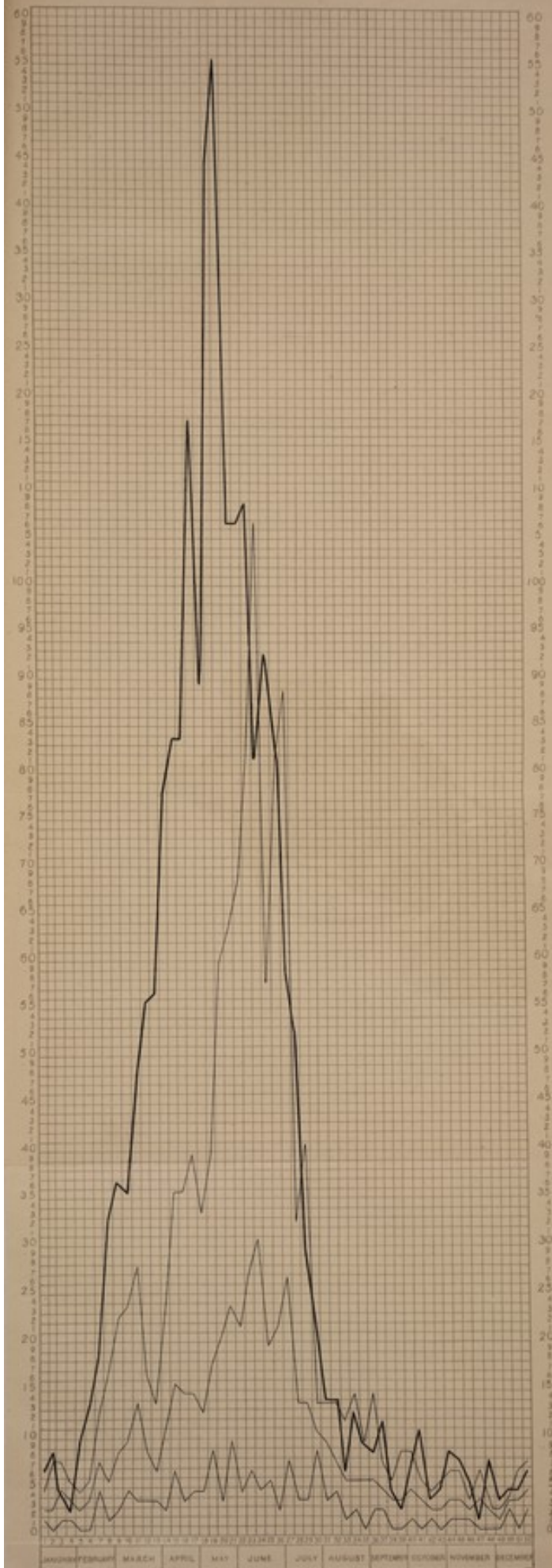
Printed by the Survey of Egypt, 1918. (1246)

Maximum, Minimum and Mean of weekly cases in quinquennial period 1911-1915.  
Weekly Total of cases in 1918.





TYPHUS.



Printed by the Survey of Egypt, 1916-1917

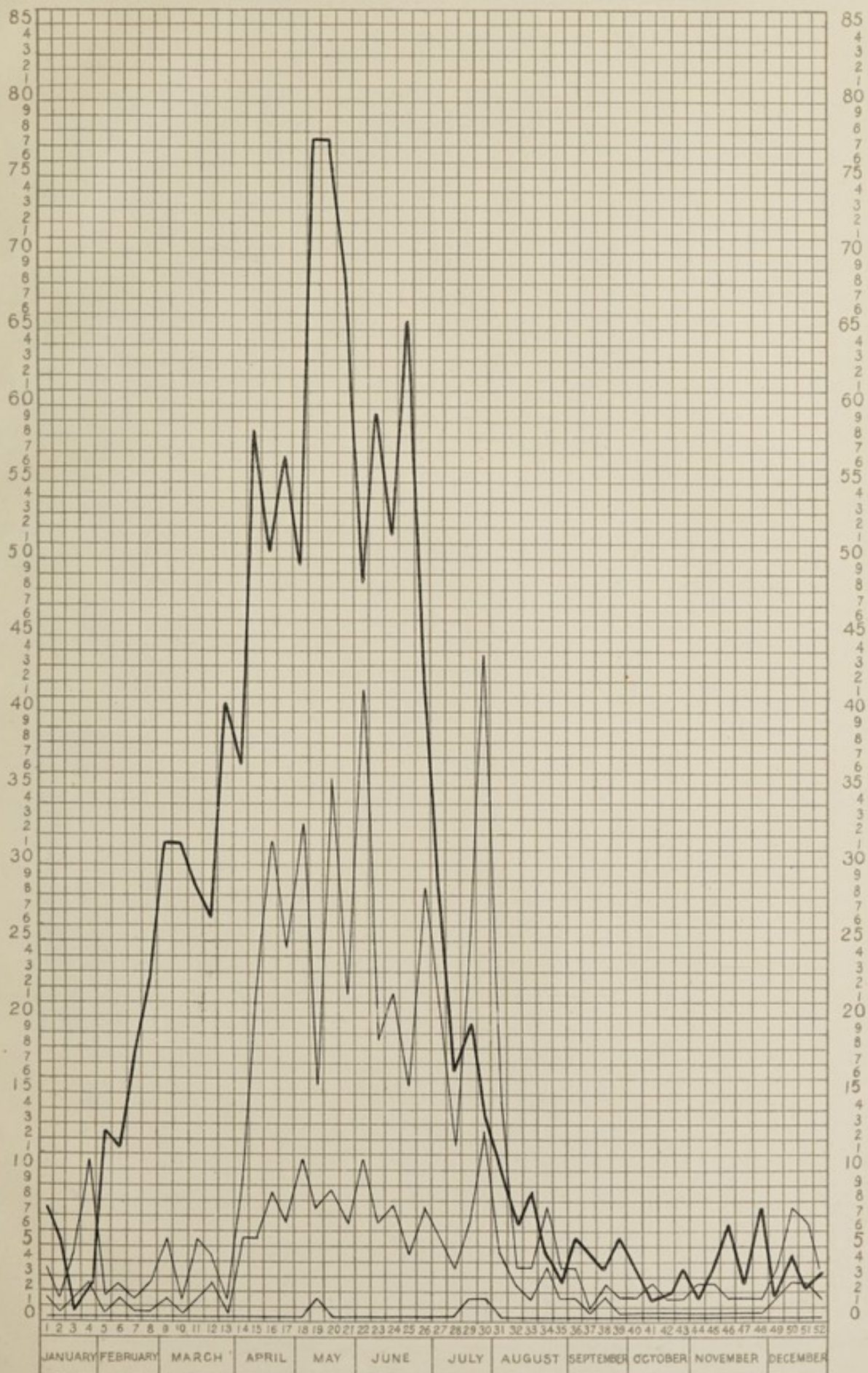
Maximum, Minimum and Mean of weekly cases in quinquennial period 1911-1915

Weekly Total of cases in 1916.





## RELAPSING FEVER.



Printed by the Survey of Egypt, 1916. (1348)

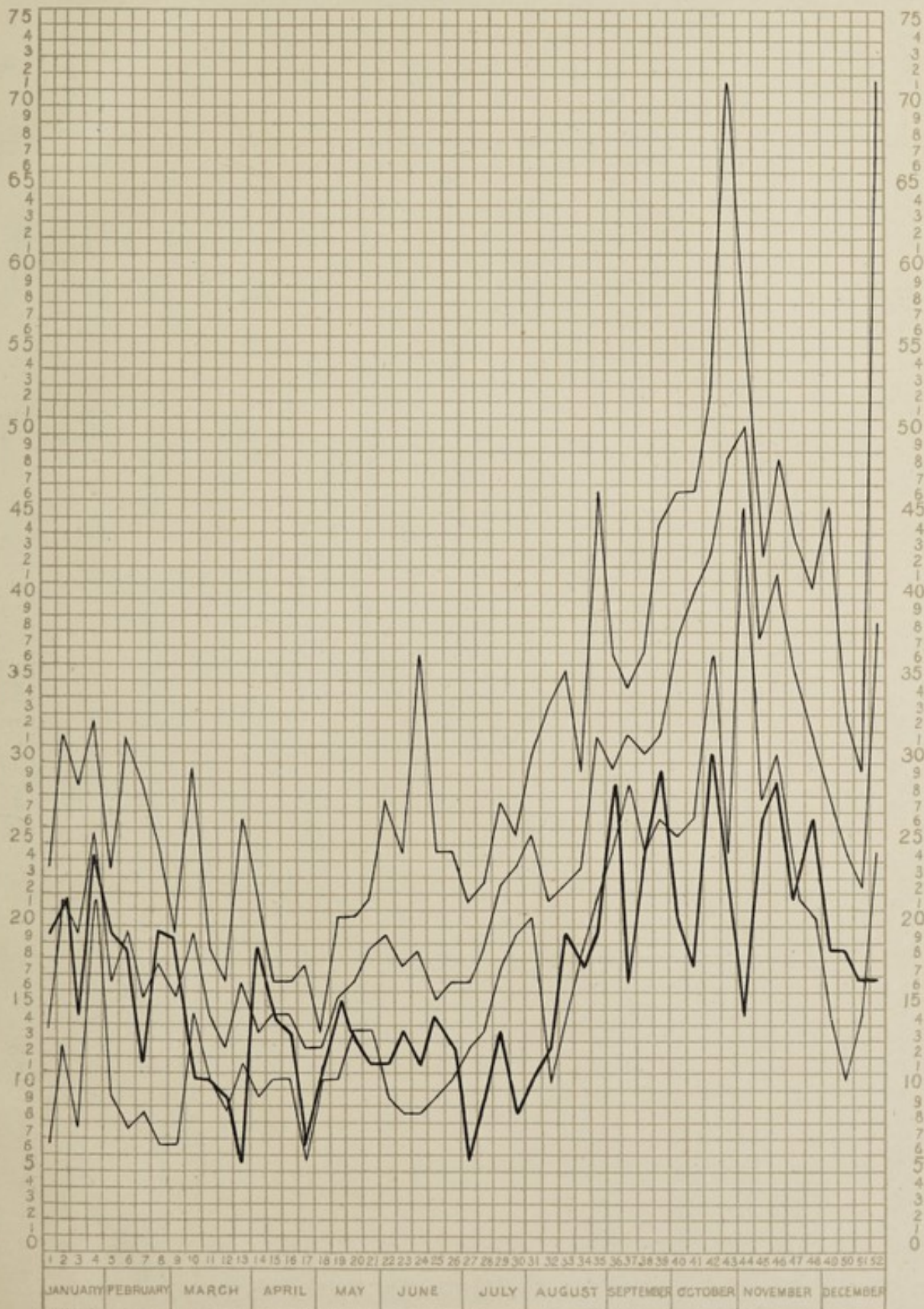
Maximum, Minimum and Mean of weekly cases in quinquennial period 1911-1915.

Weekly Total of cases in 1916.





## DIPHTHERIA.

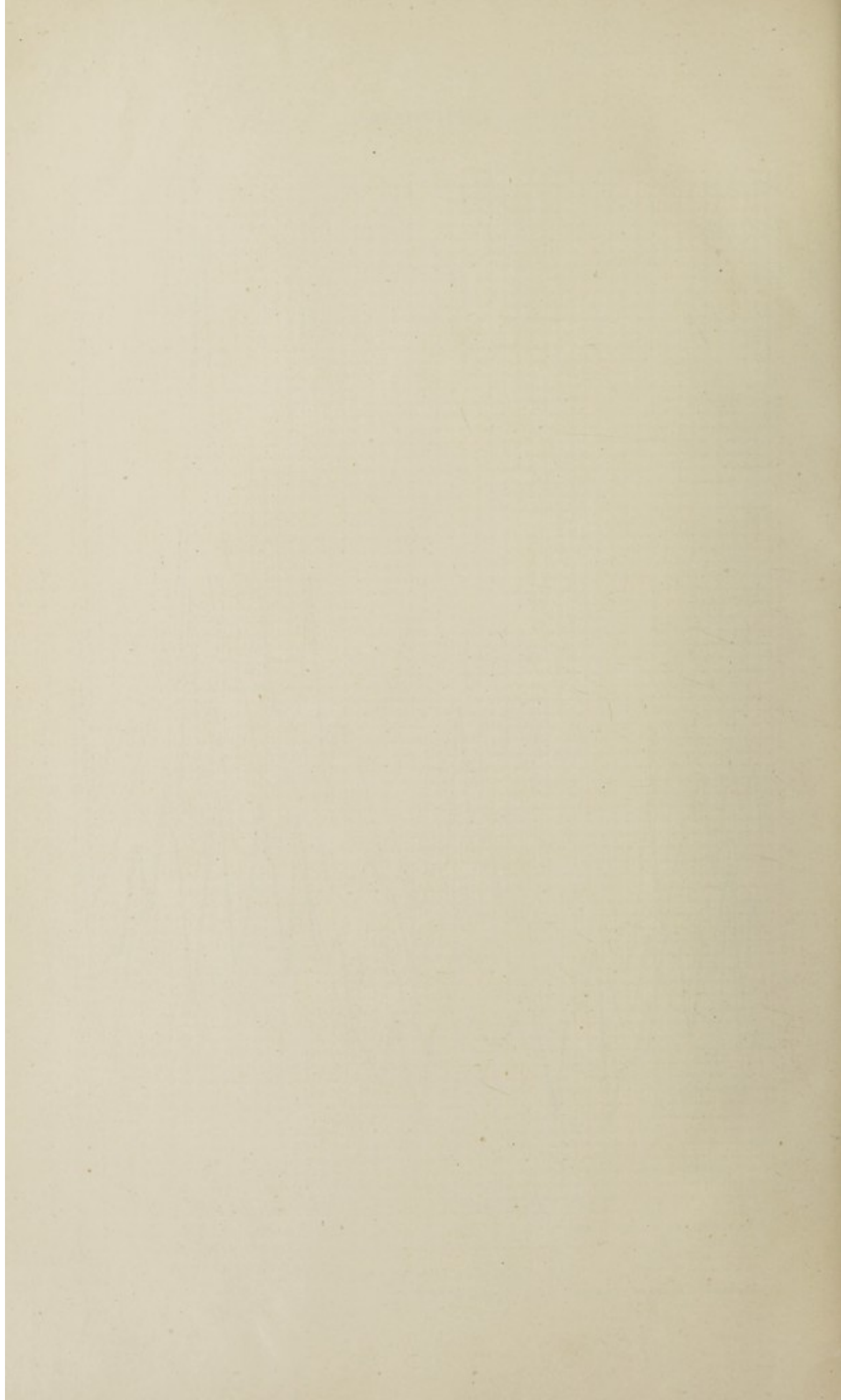


Printed by the Survey of Egypt, 1916. (1348)

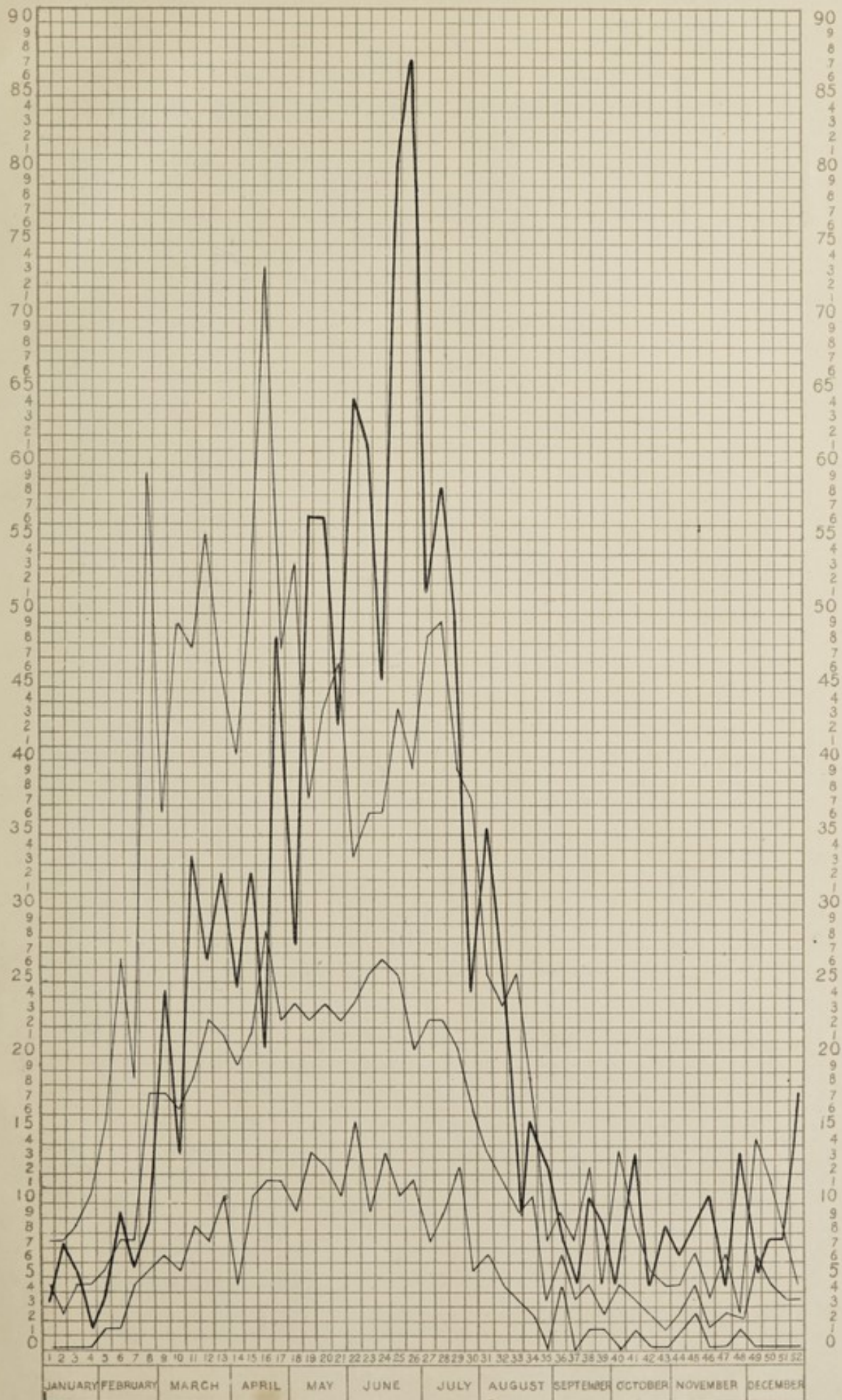
Maximum, Minimum and Mean of weekly cases in quinquennial period 1911-1915.

Weekly Total of cases in 1916.





## MEASLES.



Printed by the Survey of Egypt, 1918. (1348)

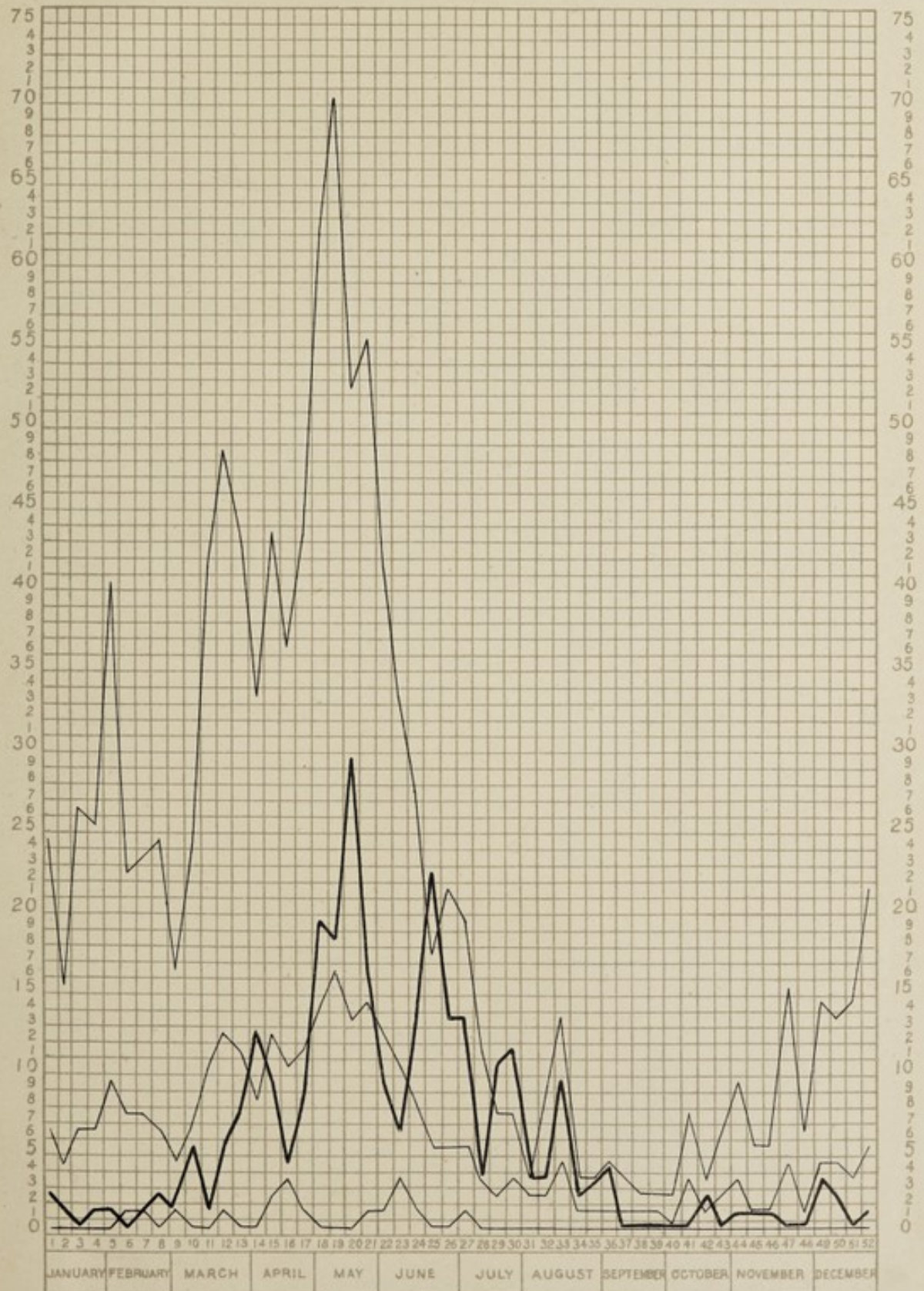
Maximum, Minimum and Mean of weekly cases in quinquennial period 1911-1915.

Weekly Total of cases in 1916.





## SMALL POX.

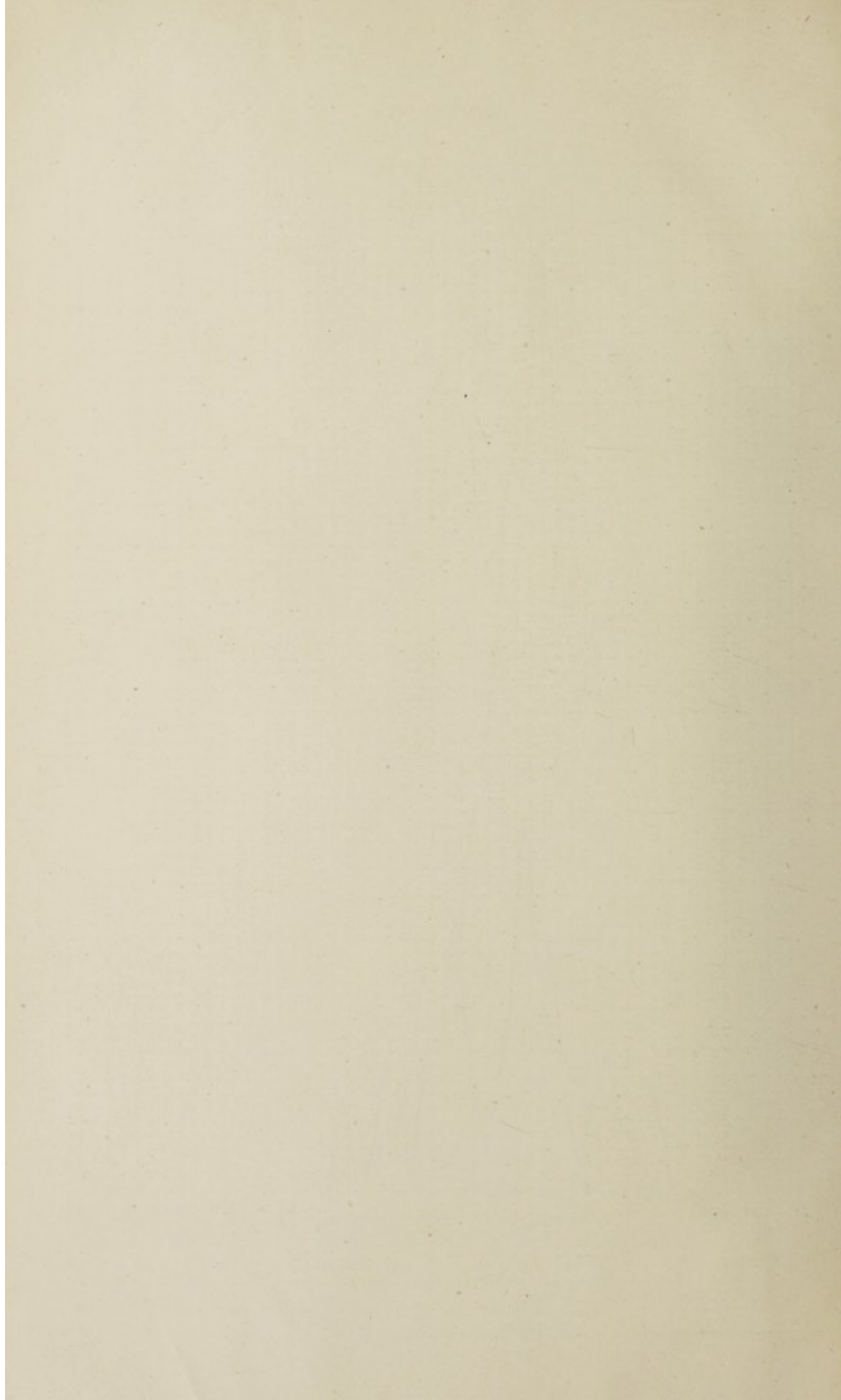


Printed by the Survey of Egypt, 1918. (1548)

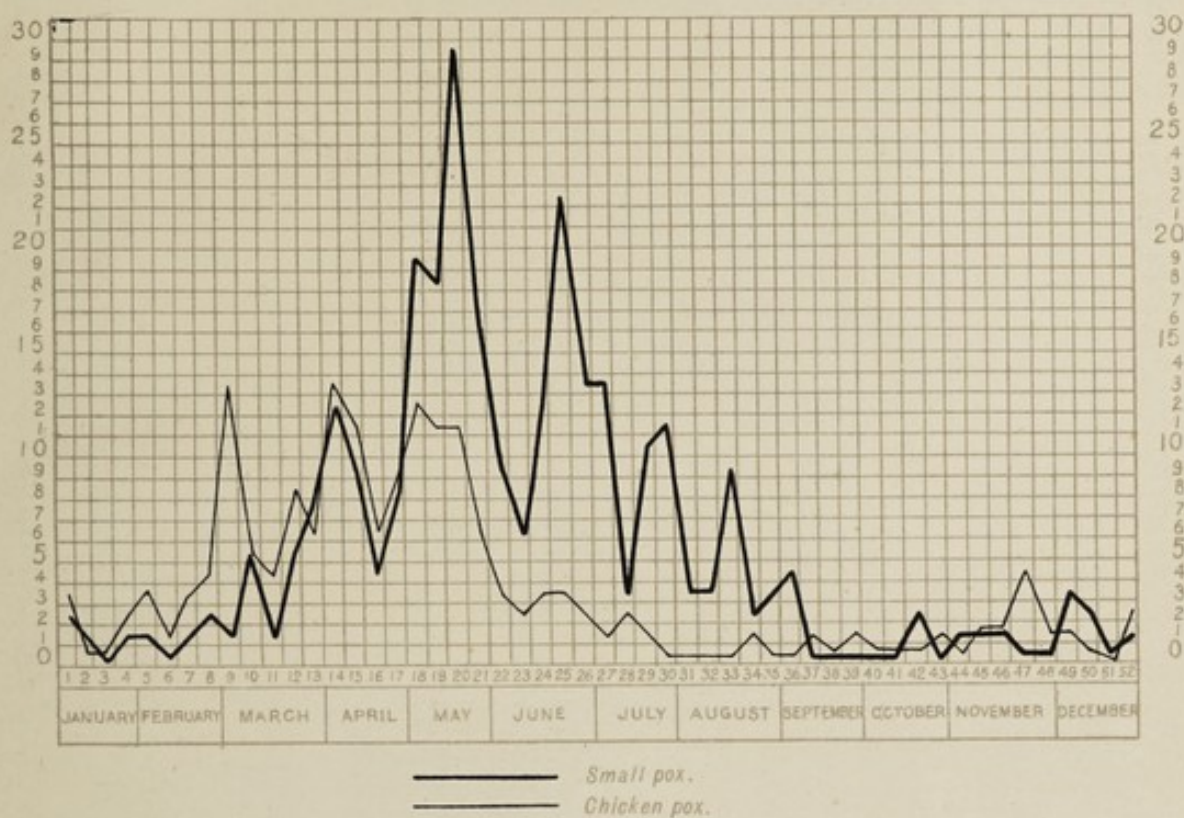
Maximum, Minimum and Mean of weekly cases in quinquennial period 1911-1915.

Weekly Total of cases in 1916.



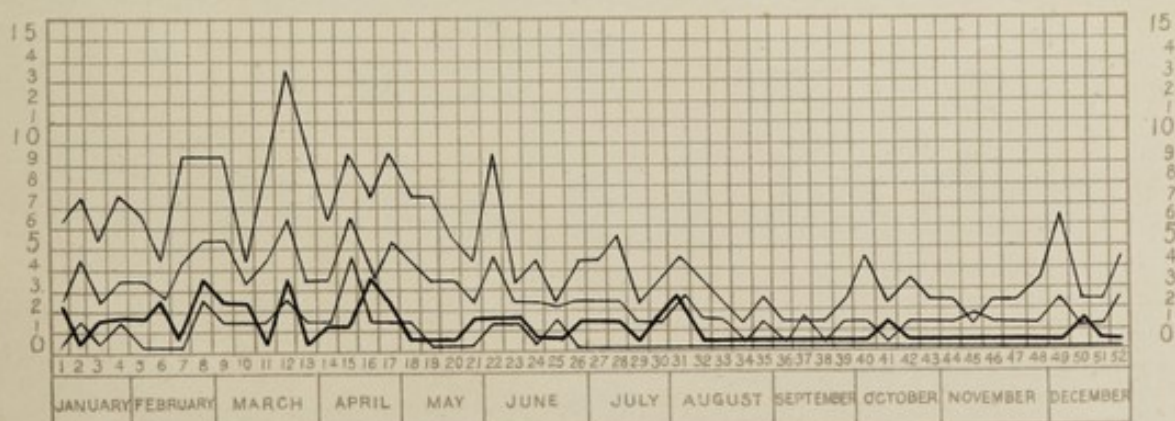


# SMALL POX and CHICKEN POX. 1916.



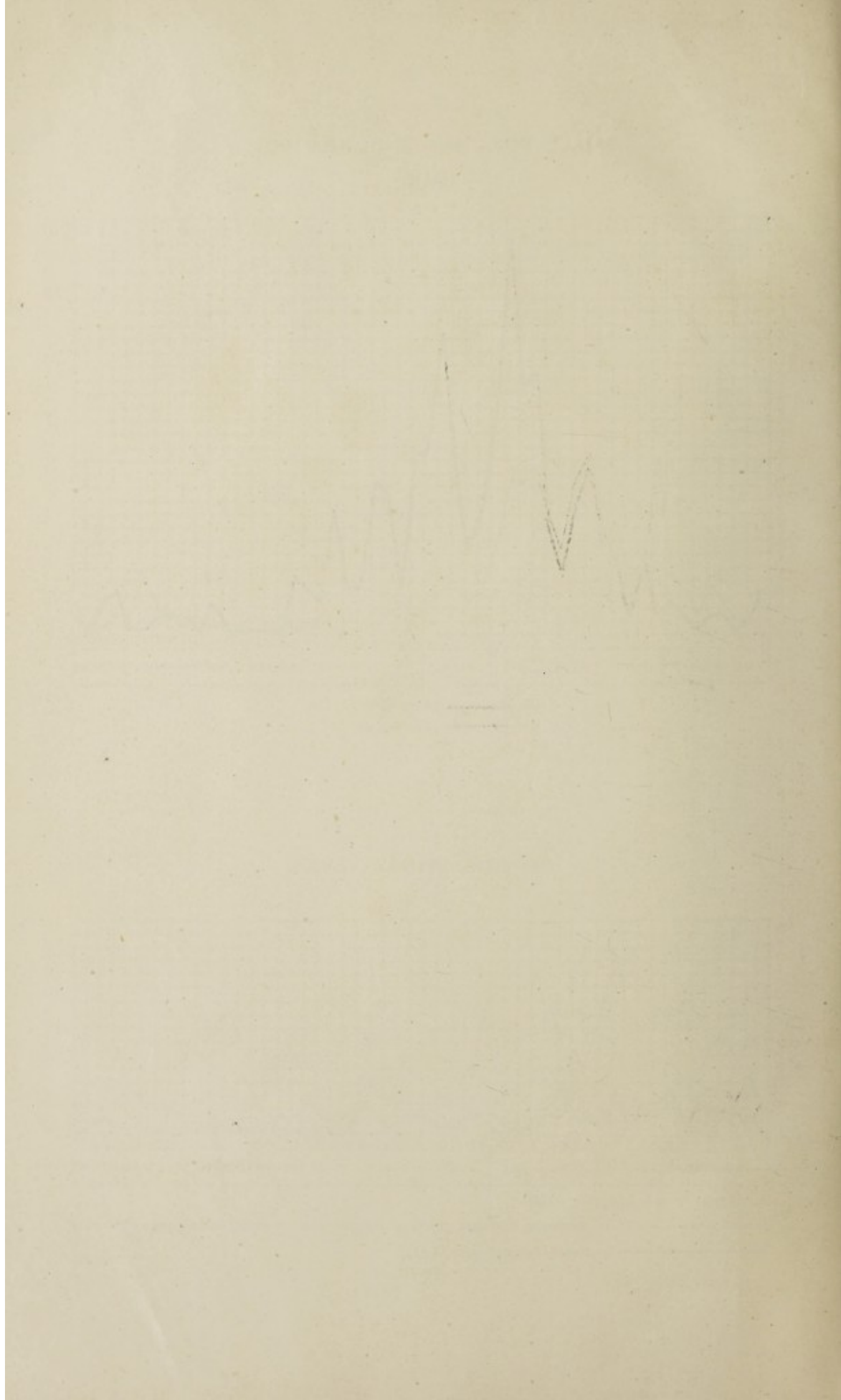
## CEREBRO-SPINAL FEVER.

Chart XXII.

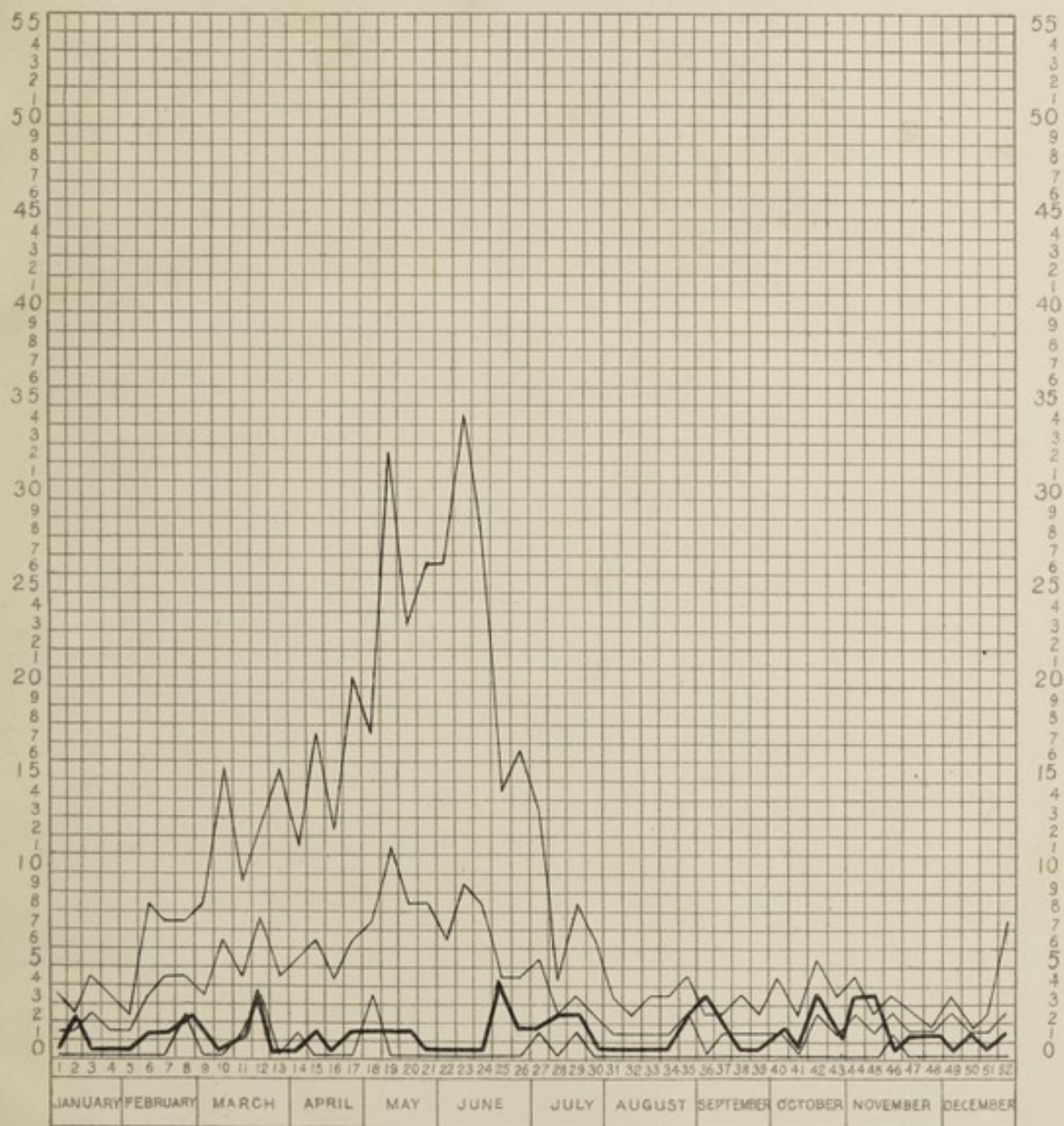


Printed by the Survey of Egypt, 1918. (1348)





## SCARLET FEVER.



Printed by the Survey of Egypt, 1918. (1348)

\_\_\_\_\_ Maximum, Minimum and Mean of weekly cases in quinquennial period 1911-1915.  
 \_\_\_\_\_ Weekly Total of cases in 1916.



