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A COUNTY-WIDE SANITARY AND HEALTH SURVEY*

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I. Introduction

The growing tendency toward standardization in health work has undoubtedly resulted in a marked increase in the efficiency of such work. This is true because of the fact that the health problems of fundamental importance are common to all communities. The proper balancing of the health program, however, requires a detailed knowledge of the community concerned. Unfortunately, the acquisition of this detailed knowledge is a laborious procedure, and only under special circumstances has it been secured with anything approaching completeness. Nevertheless, the fact remains that the detailed study of communities is essential to an accurate diagnosis of their health needs, and to the development of a program definitely designed to meet those needs adequately.

This paper deals with the data compiled during a sanitary and health survey of an entire county (Darke County, Ohio), and should be of interest to health workers engaged in counties which approximate this one in general conditions.

Inasmuch as 71 persons participated in the field work, acknowledgment can be made only to the group. However, special acknowledgment is made of the valuable assistance rendered by two members of the staff of the Darke County health unit, namely, Dr. G. W. Burnett, assistant health commissioner, and Mr. Roy C. Kester, chief of the inspection division.

The surveys were carried out during 1927 and 1928. Every house, urban or rural, in the entire county was visited, the premises were inspected, and the residents interrogated with regard to the various matters concerning which information was desired. When the purposes of the survey were explained the people cooperated wholeheartedly, only 55 families in the entire county refusing to answer questions. The information secured no doubt lacks complete accuracy, but it is first-hand information and therefore is the best that can be obtained. A preliminary paper dealing with the data on the

* EDITORIAL NOTE.—This survey was made under very exceptional conditions. Considering the cost of a house-to-house sanitary survey in a county, the Public Health Service is of the opinion that the results obtained by this means are not sufficiently great to justify the making of such a survey under ordinary circumstances.

19 incorporated municipalities was published in 1928 (1). For the sake of completeness such of these data as are pertinent are included in the present paper.

II. Salient Facts

Darke County, Ohio, lies on the western boundary of the State, about midway between its northern and southern boundaries. It is a rich agricultural county, producing an abundance of grain, tobacco, dairy products, and poultry. It has few manufacturing industries, but the products of its enormous deposits of gravel are distributed over a wide region. The approximate area is 600 square miles, and all parts are easily accessible because of the more than 600 miles of splendidly improved highways. Two divisions of the Pennsylvania Railroad and two of the New York Central system, running in a general east to west direction, and one division of the New York Central and one of the Baltimore & Ohio, pursuing a general northerly direction, cross the county.

In the early days of State history Darke County was the center of a considerable Indian population, and numerous battles were waged in which the noted Chief Tecumseh participated. Several frontier forts were in existence at various times, Fort Greenville being abandoned in 1796 or 1797. During the period of military occupancy and for long years thereafter this region was notorious for insalubrity. A military observer, Volney, reported, in 1796, that out of a garrison in Fort Greenville numbering 370 he found 300 suffering from "fever" and that during the entire journey of over 700 miles to and from Detroit he did not find 20 settlers' houses where the inhabitants had escaped the fever. The Indians also suffered, and Volney reports that on observing Little Turtle he found his skin as white as his own where not exposed to the weather (2).

The county during these early days was covered with forests and abounded in swamps. The older residents state that prior to the digging of drainage ditches practically everyone suffered from "chills and fever" and ague. The older physicians confirm the deduction that malaria was extremely prevalent. Gradually the swamps were drained and extremely valuable lands reclaimed. Endemic malaria has long since disappeared, owing no doubt in a large measure to these reclamation projects, which were undertaken for an entirely different purpose. Anopheles mosquitoes are still plentiful, but thus far the writer has found only *Anopheles punctipennis.*

In 1920 the total census population of the county was 42,911, divided as follows:

Group	County, exclusive of Greenville		Greenville		Total	
	Number	Per cent	Number	Per cent	Number	Per cent
Native white	35,182	98.2	,947	97.8	42,129	98.1
Foreign white	328	.9	135	1.9	463	1.1
Negro	297	.8	22	.3	319	.7
Total	35,807		7,104		42,911	

At the time of the survey there were 134 schools in the county as a whole, 4 public schools and 1 parochial school in the city of Greenville, and 128 public schools and 1 parochial school in the county district. Sixty-two district boards of education are supervised by the county board of education.

The total school enrollment during 1928 for the county as a whole was 8,668, of whom 6,890 pupils were in the elementary grades and 1,778 in the high schools.

Within the confines of the county are 1 city, 18 incorporated municipalities, 25 unincorporated villages, and 20 townships.

The total tax duplicates for 1928 are as follows:

Property	County excluding Greenville	Greenville	Total
Real estate	$42,353,950	$8,013,370	$50,367,320
Personal	21,948,520	5,164,760	27,113,280
Total	64,302,470	13,178,130	77,480,600

The tax levies vary with the different municipalities and townships, the range for municipalities being from 2 to 18.2 mills and that for townships from 2 to 4.8 mills.

There are 42 physicians resident in the county, distributed as follows: City of Greenville, 14; incorporated towns, 26; unincorporated villages, 2.

One small hospital (capacity 20 beds) is located in Greenville. It is authorized to receive a maximum of four obstetrical cases at a time. The county has no tuberculosis hospital and no isolation hospital.

The health and allied work is conducted by a well-rounded health unit. Special appropriations are made by the county commissioners for the following purposes: County orphanage, county infirmary, care of tuberculosis cases in sanatoria, care of crippled children, pensions for mothers, pensions for the blind. The total appropriations for the health unit and for the purposes mentioned reached approximately $100,000 during 1928 and amounted to approximately 40 per

cent of the general fund. In addition to these official agencies the township trustees have small funds available for emergency relief, and various clubs and organizations aid in special cases. The Darke County Public Health Association uses proceeds of sales of Christmas seals for aiding antituberculosis work.

For administrative purposes the county has two health districts, namely, the general health district (i. e., the county exclusive of Greenville) and the city of Greenville. By mutual agreement the boards of health of these two districts elect the same personnel in health work.

The whole-time staff of the Darke County health unit numbers 8 and consists of 1 health commissioner, 1 deputy health commissioner, 1 sanitary inspector, 1 supervising nurse and 3 field public health nurses, and 1 clerk. The part-time employees are 1 assistant health commissioner (vital statistics), 1 clerk of the city board of health, and 1 janitor. This unit has been in operation since February 1, 1927, and during 1927 expended $18,107.35, a gross per capita cost of 42 cents. During 1928 the gross expenditures were $19,817.38, or a gross per capita cost of 46 cents. The net cost to taxpayers, owing to subsidies, amounted to approximately one-half of the gross cost. The total number of services rendered by the unit was 19,293 in 1927 and 29,547 in 1928.

The unit has four divisions, namely, executive, clerical, inspection (including laboratory), and public health nursing. It carries out a generalized program. The laboratory does such work as is needed locally, but the State laboratory is depended upon for special services.

III. Data From Surveys

1. *The population is decreasing.*—During the surveys, 10,782 houses were located. At 1,402 houses (13 per cent) the residents were absent; 830, or 7.6 per cent of the total number of houses, were vacant. At 55, or 0.5 per cent, the residents refused to cooperate. The houses successfully visited numbered 8,404 and comprised 84.4 per cent of the occupied houses. The actual population per house was calculated for each area surveyed, and the total population for the occupied houses was estimated on that basis. Calculated thus, the estimated total population for the occupied houses numbers 37,158. This represents a loss of 5,753 from the 1920 census population, or 13.4 per cent loss. The average size of the families for the 9,952 occupied houses was calculated at 3.73. The data are set forth in Table 1.

TABLE 1.—*Population and house data*

Civil division	Number	1920 census	Population by surveys	Per cent loss from 1920 census	Total number of houses	Number of occupied houses	Average family per occupied house	Number of vacant houses	Per cent of houses vacant
Towns under 500 population	12	2,387	2,123	11.0	724	659	3.2	65	8.9
Towns 500–1,000	3	2,268	2,074	8.5	656	610	3.4	46	7.0
Towns 1,000–1,500	3	4,408	3,649	17.2	1,170	1,139	3.2	31	2.7
Greenville (city)	1	7,104	6,265	11.8	2,063	1,982	3.1	81	3.9
Rural townships	20	26,744	23,047	13.8	6,169	5,562	4.1	607	9.8
Total	39	42,911	37,158	13.4	10,782	9,952	3.73	830	7.6

2. *The age distribution is abnormal.*—In all but two small municipalties a record was obtained as to the age distribution of the population, which is given in Table 2. It will be noted that only in the rural townships was there a close approximation to the distribution shown by the standard million people living in 1910 (3). In the municipalities there were decidedly fewer individuals in the early decades of life and considerably more in the groups 50 years or more in age than occur in the standard million. This age distribution must be taken into consideration in measuring the health needs of the community. It will prove an important factor in determining the scope of the work planned. Obviously it will have a bearing upon such results as are measurable by vital statistics tables.

TABLE 2.—*Age distribution of population*

Age group (year)	Percentage of total population occurring in each age group					
	Towns under 500	Towns 500 to 1,000	Towns 1,000 to 1,500	Greenville	Rural township	Standard million
0–9	17.2	17.8	15.8	15.3	21.2	22.2
10–19	16.9	18.6	17.5	16.2	22.3	19.8
20–29	10.7	12.4	12.3	13.0	11.9	18.8
30–39	13.4	14.3	10.4	14.6	12.2	14.6
40–49	9.6	12.7	11.1	12.1	12.3	10.6
50–59	11.6	10.5	13.0	11.4	9.2	7.2
60–69	11.3	8.3	10.4	10.3	3.2	4.2
70–79	6.7	3.9	7.1	5.2	.8	1.9
80–89	2.2	1.0	1.9	1.5	.7	.5
90–99	.05	.02	.05	.14		.04
50 or more years of age	31.85	23.72	32.45	28.54	13.9	13.84

3. *Birth and birth rates are moderate.*—The number of births and the official birth rates are given in Table 3, the rates being calculated upon the census estimates of population for intervening years for the city and on the 1920 census returns for the county. The rising birth rates in the city make one question the accuracy of the survey census in the city, whereas the apparently falling birth rates in the county serve to confirm the survey estimates of a decreased population in that district.

TABLE 3.—*Births and birth rates*

Year	County		City		Year	County		City	
	Number of births	Births per 1,000 population	Number of births	Births per 1,000 population		Number of births	Births per 1,000 population	Number of births	Births per 1,000 population
1921	967	27.00	112	15.57	1925	756	21.11	129	17.11
1922	781	21.81	109	14.97	1926	690	19.27	125	16.38
1923	773	21.58	117	15.75	1927	578	16.14	137	17.79
1924	796	22.23	130	17.45	1928	598	16.70	141	18.00

4. *Stillbirths are moderately high.*—In view of the relation between stillbirths and syphilis, a suspicion is warranted that this disease is more prevalent than the reports indicate. No such deductions are justified based purely upon this data, but Table 4 certainly warrants careful investigation into the causes which are responsible. It is probable that adequate prenatal care would reduce appreciably the number of stillbirths.

TABLE 4.—*Stillbirths*

Year	County		City		Year	County		City	
	Number of still-births	Rate per 100 live births	Number of still-births	Rate per 100 live births		Number of still-births	Rate per 100 live births	Number of still-births	Rate per 100 live births
1921	29	3.0	6	5.3	1925	20	2.6	5	3.8
1922	36	4.6	6	5.5	1926	16	2.3	6	4.8
1923	28	3.6	7	5.9	1927	23	4.0	6	4.3
1924	28	3.5	6	4.6	1928	32	5.3	6	4.2

5. *Infant mortality is relatively low, but can be lowered.*—The infant mortality is relatively low in the county district, and remarkably low when one considers that adequate health service was not available until 1927. The rates in the city fluctuate very greatly, owing to the small numbers involved.

TABLE 5.—*Infant mortality*

Year	County		City		Year	County		City	
	Number of infant deaths	Deaths per 1,000 live births	Number of infant deaths	Deaths per 1,000 live births		Number of infant deaths	Deaths per 1,000 live births	Number of infant deaths	Deaths per 1,000 live births
1921	49	50.67	5	44.6	1925	34	44.90	2	15.5
1922	59	75.54	14	128.4	1926	41	52.17	12	96.0
1923	47	60.80	6	51.3	1927	33	57.09	15	102.0
1924	47	59.04	12	92.3	1928	22	36.07	9	63.8

The infant deaths in the two health districts from 1921 to 1928, inclusive, totaled 407. The percentages of this total attributed to the various principal causes are listed in Table 6.

A large proportion of expectant mothers in this county fail to consult a physician until near or at the time of expected delivery. It is reasonable to expect that adequate prenatal and maternal care would have some effect in reducing the number of deaths of babies from "premature birth," congenital debility, and from birth injuries. Intelligently conducted infant hygiene work should reduce the deaths from pneumonia, diarrhea and enteritis, gastritis, convulsions, and accidents. Although the general infant mortality rate is relatively low, more than half of these causes of death fall within the group which could be affected at least to an appreciable extent by aggressive public health measures.

TABLE 6.—*Causes of infant deaths, 1921–1928*

Cause of death	Percentage of total infant deaths	Cause of death	Percentage of total infant deaths
1. Premature birth	25.3	9. Congenital malformation	4.1
2. Pneumonia and bronchitis	12.0	10. Gastritis	1.9
3. Congenital heart	10.0	11. Accidents	1.7
4. Diarrhea and enteritis	9.5	12. Pertussis	1.4
5. Congenital debility	8.8	13. Convulsions	1.4
6. Diseases peculiar to infancy	5.6	14. Tuberculosis	1.0
7. Birth injuries	5.1	15. Syphilis	.5
8. Influenza	4.6	16. Miscellaneous causes	7.1

6. *The general death rates are low.*—The official crude death rates, as set forth in Table 7, are subject to the same criticism with regard to the population used in the calculations as was mentioned in discussing birth rates. Furthermore, the age distribution of the population must be taken into consideration. Under these conditions, the rates shown must be considered very favorable.

The general death rates over a period of years have been quite low. They would be higher, however, in the county district if corrected estimates for population could be used.

TABLE 7.—*General death rates*

Year	County		City		Year	County		City	
	Number	Deaths per 1,000 population	Number	Deaths per 1,000 population		Number	Deaths per 1,000 population	Number	Deaths per 1,000 population
1921	437	12.20	85	10.1	1925	464	12.95	127	16.7
1922	436	12.20	130	17.8	1926	464	12.95	145	19.0
1923	464	12.95	139	18.5	1927	308	8.60	123	15.97
1924	437	12.20	102	13.6	1928	339	9.46	140	17.94

From 1921 to 1928, inclusive, 4,380 deaths occurred. The percentages of these total deaths due to the first 20 causes arranged in order of frequency are listed in Table 8. It is obvious that, taking

into consideration the age distribution, certain of these causes of death can not be eliminated from the present population. There is no excuse, however, for the 27 deaths from diphtheria or for the 24 deaths from typhoid fever. The 232 deaths from accidental causes is needlessly high. Thirty-six, or approximately 15 per cent, of these were caused by railway trains, and constitute a tragic argument against the numerous grade crossings. Deaths from malignancy and from tuberculosis should be lowered by early diagnosis and treatment, and by adequate attention to contacts in the case of tuberculosis. Preventive measures against acute infections during childhood and early adolescence should eventually lower the death rate from heart diseases and nephritis.

TABLE 8.—*Causes of death, 1921–1928*

Disease	Number of deaths	Per cent of total deaths	Disease	Number of deaths	Per cent of total deaths
1. Heart disease (all kinds)	787	17.9	12. Appendicitis	61	1.4
2. Cerebral hemorrhage	512	11.7	13. Diarrhea and enteritis (under 2)	56	1.3
3. Cancer (all kinds)	384	8.7	14. Suicide	46	1.0
4. Pneumonia (all kinds)	316	7.2	15. Congenital heart	37	.8
5. Tuberculosis (all kinds)	258	5.8	16. Congenital debility	28	.6
6. Accidents	232	5.3	17. Diphtheria	27	.6
7. Chronic nephritis	205	4.6	18. Puerperal causes	25	.5
8. Premature birth	204	4.6	19. Typhoid fever	24	.5
9. Influenza	195	4.4	20. Syphilis	19	.4
10. Arteriosclerosis	126	2.8			
11. Diabetes mellitus	76	1.7			

7. *The county is wide open to smallpox.*—Of the 31,791 persons actually dealt with in the surveys, 1,071 (3.3 per cent) have had smallpox and 8,628 (27.1 per cent) have been successfully vaccinated. Assuming that the latter still have protection, this leaves 22,092 (69.5 per cent) unprotected either by previous attack or by vaccination recent or remote. When the school population is considered separately, the number of unprotected school children approximates 80 per cent. The danger inherent in this situation is evident. The remarkable thing is that there has not been more smallpox than the records indicate. The situation calls for aggressiveness in handling all outbreaks and the working out of some measure for securing wholesale vaccination of the population. The cases reported since 1921 number 331, distributed as follows: 1921, 25; 1922, 77; 1923, 163; 1924, 47; 1925, 15; 1926, 1; 1927, 3; 1928, 0.

8. *The typhoid fever rate is fairly low but not negligible.*—Of the 31,791 persons included in the survey, 2,045 (6.4 per cent) have had typhoid fever. Only 196 could be found who claimed to have been immunized. Since 1918 there have been reported 193 cases, an average of 17.5 cases per year. Calculated on the basis of the 1920 census, this represents an attack rate of 40 per 100,000 population, a rate which is not nowadays considered to be negligible. Of these

cases, 119 occurred in the rural districts and 74 in the incorporated municipalities. The distribution of the cases is given in Table 9.

TABLE 9.—*Yearly prevalence of typhoid fever in Darke County, Ohio, 1918 to 1928*

District	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928
Rural districts	14	6	13	29	9	16	6	17	5	1	4
Towns:											
Under 500	4	1	------	1	1	6	------	1	------	------	------
500 to 1,000	3	------	1	------	3	1	2	2	------	------	------
1,000 to 1,500	2	------	------	6	2	------	------	------	1	------	------
City over 5,000	7	3	------	9	3	7	1	1	2	------	3
Total	30	10	14	45	18	30	9	21	8	1	7

As a result of the surveys, a list has been compiled of the names, location, and occupation of everyone in the county who admits ever having had typhoid fever, and a definite search for carriers can now be undertaken. One thousand one hundred and thirteen persons giving a positive history live in the rural townships, and the danger of carriers among those handling milk or other articles of food is real. The situation calls for the elimination of possible carriers from food-handling occupations, the safeguarding of the milk supply, and improved general sanitation rather than wholesale immunization.

9. *Undulant fever is a real danger.*—It was impossible to secure detailed and reliable information as to the prevalence of contagious abortion among herds. From information received from veterinarians and other individuals in a position to know, it can be definitely stated that this infection is widespread among cattle, very few large herds being free. Of 50 cows recently tested, only one showed absence of agglutinating power for *B. abortus*. The organism was found in the milk of one out of seven tested. The prevalence of human cases of Widal-negative and undiagnosed fevers has been verified, and the recent definite diagnosis of 10 cases of undulant fever adds to the suspicion that numerous unrecognized cases have occurred. Definite measures for preventing its spread are indicated.

10. *Scarlet fever exacts its toll.*—One thousand seven hundred and forty-four persons (5.4 per cent of the population canvassed) have had scarlet fever. Only 562 report having received active immunization against this disease. In this connection, an analysis of the results of active immunization in the county during 1927 is of interest. Of 68 children exposed to cases in their homes without protective treatment, 39 (57.5 per cent) contracted scarlet fever. Of 74 children similarly exposed but who received one immunizing treatment (Larsen's method), only 6, or 8.2 per cent, contracted the disease. Although because of the small numbers involved no definite conclusions can be drawn, the difference shown in these two groups of contact exposures is at least impressive.

The cases reported in recent years were as follows: 1921, 44; 1922, 72; 1923, 72; 1924, 85; 1925, 135; 1926, 57; 1927, 194; 1928, 35.

11. *Diphtheria still kills.*—Five hundred and seventy-four persons (1.8 per cent) of the population canvassed have had diphtheria, and only 451 (1.4 per cent) claim to have been immunized. It is probable that this information is unreliable, as it is easy for the laity to confuse active and passive immunization. Of 1,221 school children recently receiving the Schick test 700 (57.3 per cent) were found susceptible. Since 1921 there have been 27 deaths from and 182 cases of this disease. The cases occurred as follows: 1921, 19; 1922, 52; 1923, 28; 1924, 27; 1925, 18; 1926, 14; 1927, 19; 1928, 5.

In view of the facts that the means of active immunization are known and that antitoxin for the treatment of cases is provided free, the record above shows in reality "a slaughter of the innocents," and urgent measures should be adopted to prevent its recurrence.

12. *Tuberculosis is an important problem.*—The surveys can not be depended upon to locate anything except obvious or advanced cases of tuberculosis. The location of early cases can be secured only by careful investigation and examination. The health unit has on its lists 91 cases, 27 suspects, and 359 contacts; but it is certain that the actual number of cases is much larger. Through the cooperation of the State department of health and the county medical association a diagnostic chest clinic was held in 1928 at which 92 persons were examined. Of these, 27 were declared tuberculous, 16 were regarded as suspects, and 49 were found free from the disease.

Home care of the tuberculosis patient is taught, and certain necessary supplies are provided by the health unit. The funds from the sale of Christmas seals are expended on requests made by the health unit.

Sanatorium care is provided for certain cases by the county commissioners, the patients being sent to the State Sanatorium or to various sanatoria maintained by other counties.

13. *Water supplies need further safeguarding.*—Of the 19 incorporated municipalities, 6 have central water supplies. Two of these have objectionable features. In one of the latter instances the wells lie along the bank or in the bed of a small creek from beneath which they draw water from a depth of 30 feet. The town discharges the effluent of 98 toilets via storm sewers into the creek at points ranging from 15 to 100 yards above the site of the wells. Thus, in reality the water supply comes from a source 30 feet beneath a sewer.

Of 7,516 houses where this information was secured, 1,609 (21.4 per cent) used municipal water supplies; 2,884 (38.3 per cent) had drilled or driven wells, 2,853 (37.9 per cent) had dug wells, 162 (2.1 per cent) had wells of an undetermined type beneath porches, and 8 used springs. The dug wells and springs are particularly a

potential source of danger, as a large proportion of them are improperly protected against surface contamination.

Of the 134 schools in the county, 89 (66.9 per cent) had a satisfactory water supply, the water being drawn either from approved municipal supplies or from tested wells. Forty-four (23.1 per cent) had wells with structural defects and are not to be classed as satisfactory.

14. *Milk supply is being safeguarded.*—The city of Greenville has a strictly enforced milk regulation requiring all milk sold within the city to be produced by licensed dairies and to be either pasteurized or to be of "Grade A raw" quality, all methods being subject to approval by the board of health. Approximately 87 per cent of the milk sold in the city is pasteurized. Seven small incorporated towns share in this same supply, and dealers in other towns are planning to distribute this milk.

The milk supply of the small towns is provided by small dealers who vary considerably in the care with which they handle their product. Much progress has been made during the past two years through voluntary cooperation on the part of the producers, and a milk regulation for the county health district has just been passed. That a strictly enforced county-wide regulation is urgently needed is evident from the number of people in this district who have had typhoid fever and from the existence of *Brucella abortus* infections among the herds, as well as from the frequent outbreaks of scarlet fever, diphtheria, etc., which have occurred. Until the county regulation has been put into effect, the milk situation constitutes a very potential danger.

The average per capita consumption of milk is approximately 1 pint in the rural townships and 0.5 pint in the incorporated municipalities. The average is surprisingly low in a county so amply provided with dairy cows. One interesting finding was that 97 families in the rural townships and 32 in the municipalities use no milk at all, and that 85 families in the rural townships and 88 in the municipalities use canned milk exclusively. The majority of these township families mentioned live in unincorporated villages.

15. *Examination of food handlers needed.*—The routine health examination of food handlers, as it is frequently carried out, is of little more than transient value. It is obvious, however, from what has already been presented, that laboratory examinations among this group for the detection of possible typhoid carriers should be made. This procedure has been carried into effect among the milk handlers and part of the restaurant workers in the city of Greenville. It should be required of all food handlers in the entire county as a routine feature of the health program.

16. *Food inspection not well developed.*—Food inspection can be carried out by the health unit with its present staff only to a limited extent. It has not been possible, within the limits of the present budget, to include meat inspection. Therefore, no assurance can be given the public with regard to the meat offered for sale. Information in the hands of the health commissioner indicates that such inspection is needed, and provision for it should be made as soon as finances permit.

17. *Methods of sewage disposal are far from ideal.*—Information was secured relative to the method of sewage disposal employed at 8,811 houses, including 407 houses from which the occupants were absent at the time of the visits. The types of disposal are listed in Table 10.

TABLE 10.—*Sewage disposal*

Type of disposal	Number	Per cent
Total houses investigated	8,811	
1. Indoor toilets connected with—		
(*a*) City sanitary sewer	1,427	16.2
(*b*) Septic tanks	472	5.4
(*c*) Cesspools	121	1.4
(*d*) Open tile field drains	24	.3
(*e*) Storm sewers	109	1.2
(*f*) Chemical toilets	2	
2. Outdoor closets:		
(*a*) Surface or earth vaults	6,617	75.1
(*b*) Concrete vaults	32	.4
3. No toilet or privy	7	

Only one of the incorporated municipalities has a sanitary sewerage system, and in this instance no treatment is given the sewage prior to discharge into a small creek. The volume of the stream is entirely inadequate to take care of this pollution. The result is the conversion of a stream formerly much used for fishing and pleasure into an unsightly and dangerous sewer. Several cases of typhoid fever have been traced to this stream. The remaining municipalities, for the most part, have storm sewers which, in some instances, are very much abused, with resultant highly objectionable pollution of adjacent streams and the backing up into cellars of sewage-laden storm water. As a result of the surveys the citizens of one town have been stimulated into signing an appeal for relief, and a sanitary sewer system with treatment plant will no doubt be installed in the near future. Two other municipalities have similar projects under consideration. The installation of complete sewage systems is within the financial possibilities of at least six municipalities. In the remaining municipalities the type of privies should at least be improved, and wherever possible should be supplanted by septic tanks.

The State laws require that all new installations of sanitary equipment for schools receive the prior approval of the State department of health. As a result the larger schools have proper arrangements

installed. The rural consolidated schools are equipped with septic tanks and filter beds. In some instances these suffer from careless operation and maintenance. At the small one and two room schools, of which there are 113, outdoor privies are provided. In the majority of instances these leave much to be desired.

18. *School children show many defects.*—Systematic examination of school children is carried out by the health unit. Of 8,565 such examinations during 1928, 3,908, or 45.6 per cent, revealed defects in the following proportions: Dental, 20.9; visual, 5.5; eyes and lids, 2.3; hearing, 1.7; nose and throat, 13.1; heart, 0.1; lungs, 0.06; skin, 0.3; glands, 1.1; orthopedic, 0.1. An incomplete check up shows that approximately 10 per cent of the defects had been corrected. A surprisingly large number of children are underweight from 15 to 20 per cent, even in the country districts.

19. *Crippled children are adequately cared for.*—Twenty-seven crippled children are on the lists at the health unit, and special inquiry was made during the surveys to make sure that none were overlooked. Free examination and treatment are provided by law for all where the finances of the family will not permit such expense, and these advantages have been offered to the parents of every crippled child located.

20. *Prenatal and maternity service needs further development.*—The births and stillbirths for 1928 totaled 777. Of these, 22 (11 pairs) were twins, leaving 766 maternity cases during the year. Only 64, or 8.3 per cent, of these cases were enrolled during the prenatal period in the records of the health unit. A very large per cent of the remainder were without adequate prenatal care, as they did not consult a physician until near the time of expected confinement. There are no recognized midwives in the county. The failure of expectant mothers to secure prenatal care is due partly to financial reasons and partly to reluctance to discuss the subject with others. The health unit is prepared to extend this service as rapidly as demand requires. The problem, in this instance, appears to be one of health education, and this will necessarily require time.

21. *Infant welfare and preschool child-welfare work expanding satisfactorily.*—The facilities of the health unit are being utilized increasingly by parents in matters relating to infants and preschool children. Weighing stations, well-baby clinics conducted by local physicians, mothers' classes, and the examination of preschool children in groups are meeting with increasing favor. It is estimated that there are approximately 4,000 infants and preschool children. One thousand eight hundred and fifty-two home calls on their behalf were made during 1928. Although the entire group is not being reached, the progress must be considered as fairly satisfactory.

IV. Problems of Outstanding Importance

A perusal of the facts presented indicates that the county has some very definite health problems, and these have been measured and discussed. Although each of these problems is important, certain of them should be given special emphasis in a health program based upon the community's needs.

1. *Health education.*—This study indicates the need for widespread and intensive health education. The methods employed must be designed specifically for the various age groups shown by the survey. Health education is a very important function of the health department. The people of the community as yet have by no means fully realized the value of the services rendered, or which could be rendered, by the health unit they support. The detection of defects among school children results in too small a percentage of corrections. The administration of the Schick test is of no avail unless the susceptible children are immunized. Even the safeguarding of milk supplies is neutralized, to a certain extent, by a small minority which countenances and connives at evasion. The development of an adequate program of prenatal care is being retarded by the people themselves. The facilities for an extensive service have been provided, but a great deal of intensive health education will be required before they are fully utilized.

That effective educational work has already been conducted is, perhaps, best illustrated by the health measure which appears to be the most obnoxious to the public, namely, quarantine. The community is being educated to the point of view that a placard upon a house wherein communicable disease exists is a sign of honor, a proof to the neighbors that the family is playing the game, and that the absence of such a placard under those circumstances justifies the neighbors in the opposite opinion. Hundreds of families voluntarily call up the health unit and report such diseases. A comparison of the total number of cases reported during 1927 and 1928 with that for previous years provides striking evidence upon this point:

TABLE 11.—*Notifiable diseases*

Year	Total number of cases reported
1921	249
1922	318
1923	424
1924	348
1925	275
1926	383
1927	787
1928	1,257

2. *The milk problem.*—It is not always possible to attack the outstanding problems first. However, the potential danger inherent in the milk situation was such that the newly organized health unit staked its whole existence upon the proper solution of this problem. Preliminary work was begun immediately, and the city passed its regulation at the end of the first year. The county-wide regulation was passed at the end of the second year. A feature of this work is that the measures have the support of the majority of the milk producers. Until the regulation for the county health district is in effect the problem remains. It is, however, in process of solution.

3. *Immunization.*—Smallpox vaccination and immunization against diphtheria are matters of urgency. The health unit is not free to carry out active immunization, which is left to the practicing physicians. An aggressive educational program has been carried out, but as yet no appreciable results have become manifest. It is probable that the local medical association will take steps toward introducing methods of accomplishing the desired end more effectively. Until this situation is corrected the danger to the community is very real.

4. *Prevention of tuberculosis.*—The existence of 91 known cases of tuberculosis, 27 suspects, and 359 known contacts is sufficient evidence of the need for aggressive and unremitting efforts to locate and control incipient cases.

5. *Prenatal care.*—The deaths of infants from "premature birth" and the stillbirths could without doubt be somewhat decreased if all expectant mothers were under adequate prenatal care. Similarly, the welfare of the mothers would be benefited by such service. The necessary service is, or can be made, available, and this work should be emphasized.

6. *Nutrition.*—In spite of the fact that this is a rich agricultural community, mothers, infants, and children of preschool and school age give abundant evidence of faulty nutrition. Measures to counteract this situation are needed.

7. *Protective measures against typhoid fever and undulant fever.*—With regard to typhoid fever, the situation does not warrant the wholesale immunization of the population against the disease. The insurance that typhoid carriers are barred from food-handling occupations, and the development of general sanitation are the measures indicated.

The universal pasteurization of milk and the use of milk products which have been pasteurized appear to be the measures of choice in preventing undulant fever.

8. *Safe disposal of sewage.*—Six municipalities should install sewage-treatment plants. The private homes enumerated in the survey reports each constitute a health problem in this respect.

9. *Adequate protection of water supplies.*—Every dug well should be regarded as a specific health problem until adequate protection has been secured.

V. Conclusions

1. The detailed study of a community is essential to the development of an adequate health program based upon actual rather than assumed needs.

2. Such studies, besides supplying necessary information and measuring the relative importance of the various health problems, establish a basis for comparing progress over a period of years.

3. The method to be followed in conducting the study will depend upon the facilities available and need not be so detailed as the one herein presented. In fact, the house-to-house survey method, on the scale reported in this paper, is unsuitable for general use because of the expense, detail, and time required. It was made possible in this instance by the location in the county of a training station for health workers.

4. Inasmuch as the application of this method to an entire county is unusual, this attempt to demonstrate and evaluate the health problems of Darke County, Ohio, as of 1927 and 1928 is placed on record.

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(2) View on the United States. Volney, 1804, Philadelphia.

(3) Medical Biometry. By Raymond Pearl. 1923, page 196.

METHOD OF PREPARING AND EXAMINING THICK FILMS FOR THE DIAGNOSIS OF MALARIA

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This paper is a revision and expansion of an article by the same authors which appeared in the Proceedings of the International Conference on Health Problems in Tropical America, 1924, pages 110–120, published by the United Fruit Co., Boston Mass. Our experience during the intervening time has shown the advisability of some minor changes in technique, descriptions of which have been incorporated in the present paper.

Slides.—Slides should be well cleaned. It is a good plan to wipe slides, cleaned in the ordinary manner, with an alcohol-wet cloth to free them from grease. Old slides are usable if not fogged or scratched. If any dust gets on the slides in carrying them to the field, brush each one on a clean cloth just before using.

Select slides of a proper length to fit the slide box, and sufficiently thick to fit the mechanical stage of the microscope.

Collecting blood specimens.—It is essential that the blood be free from dirt coming from the skin, from dust, or other débris. Cleanse the skin with alcohol and gauze. Let it dry. Prick the skin deeply enough to allow the blood to well up in a large drop. Touch the slide to the upper part of the drop, avoiding as far as possible the blood which has been in immediate contact with the skin. In any case, avoid rubbing the skin with the flat of the slide or scraping it with the edge. Bacteria or other débris, which confuse the search for parasites in the thick film, usually come from the dirt which is dissolved by the blood from the surface of the skin; and cleansing with alcohol and gauze does not always wholly free the skin from such débris.

It is possible to get fair specimens from a dry skin without any preliminary cleansing if one takes the blood from the top of the drop only, but it is better to cleanse the skin as an additional precaution.

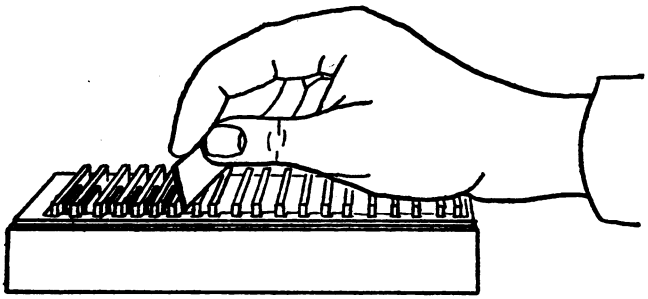

FIGURE 1.—Placing pasteboard separators between slides

We usually take the blood from the upper surface of the middle finger, pricking the skin about one-half centimeter below the base of the nail.

The blood can be spread sufficiently by dragging the drop on the surface of the slide, or the drop can be spread with the sticking needle or corner of the labeled end of the next slide. Put on a large drop, three or four times as much as one would use for a thin film, and spread it over an area 1 to 1½ centimeters in diameter. It does not matter whether or not the blood is thicker in some parts of the film than in others, and a good deal of latitude is permissible in regard to the amount of blood used; but one should avoid the not uncommon error of using a very small amount of blood and then spreading it so much that if becomes the equivalent of a thin film. If the slide is subsequently to be stained in the upright position, place the thick drop with its lower margin about one-half centimeter from the end of the slide, or a good deal of stain will be required to cover the specimens.

Labels.—Labels may be written with a wax pencil on the unused end of the slide. It is often convenient to number a batch of slides beforehand. Each batch should be marked with a distinguishing letter, or other symbol, as well as numbered.

As soon as the blood is spread, place the slide in a box where it will be protected from dust. Keep the box upright until the blood has dried enough so that it will not run. While the box is being filled it may be fastened with a strong rubber band to a block or other convenient support in order to prevent accidental tipping. (Fig. 5). Such a support may be made of two blocks of soft wood, fastened to each other at a right angle, the upright block being 3½ inches wide, 1 inch thick, and about 6 inches long. The horizontal block should be 3½ inches wide, 2 inches thick, and about 4 inches long.

Drying films.—Thick films should be dried enough to make them adhere during the staining, but too much drying will prevent a clear staining of the parasites.

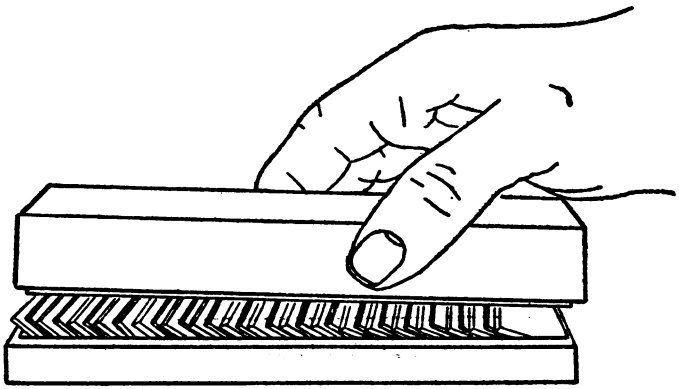

FIGURE 2.—Box inverted and raised, leaving slides and separators in lid

In ordinary summer weather preparations will dry enough to stick well if kept overnight in boxes with closed lids; or the lids may be removed and the slides dried 1–1½ hours in an incubator. When preparations are to be sent some distance by mail before staining, or when it is impracticable for any reason to stain soon after taking them, they may be protected from overdrying for some days by wrapping them in paraffined paper. In any case they must be protected from flies and cockroaches, which will eat dried films, and from dust. The temperature and dryness of a room, as well as of an incubator, vary so much in different laboratories that it is impossible to give precise rules for drying, but a very little experience will guide.

Staining.—It is essential to use a good quality of Giemsa stain. The water used for diluting it must be neutral, or only slightly alkaline, and must be nearly or quite free from salts.

The stock Giemsa solution may be made up by the following formula: Dissolve Azur II eosin, 0.3 gram, and Azur II, 0.08 gram, in 25 c. c. of pure anhydrous glycerin at 60° C.; then add 25 c. c. of absolute methyl alcohol (C. P., acetone-free) at the same temperature. Allow the glycerin-methyl alcohol solution to stand overnight and then filter.

The Azur II may be omitted from the formula of a Giemsa solution to be used for thick films. According to Giemsa,[1] a glycerin suitable for this stain should have a specific gravity of 1.26 and a water content of only 1.5 per cent.

In recent years we have been using a prepared Giemsa solution. We prefer Azur eosin, Gruebler.[2] Stock solutions, if kept in well-

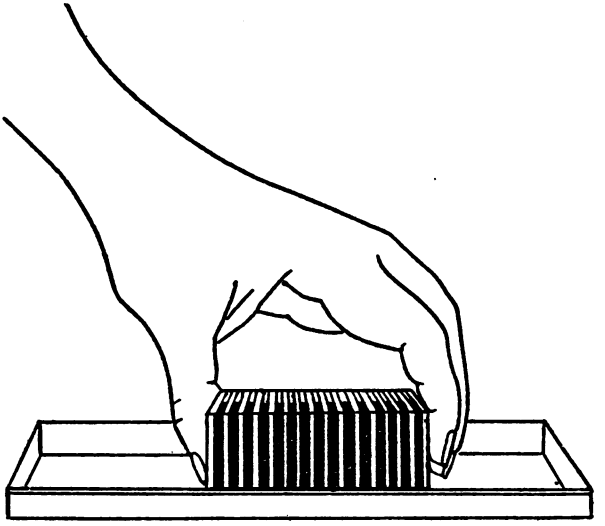

FIGURE 3.—Assembling slides and separators into a block

stoppered containers, remain in good condition for months, even in the Tropics.

Dehemoglobinization previous to staining or fixation of films is unnecessary. Neither alcohol nor any other fixing agent should be allowed to touch the thick films before dehemoglobinization, and are not used at all in the method described below.

If only a few slides are to be stained, a Coplin jar or other convenient staining dish will serve. If a large number are to be handled, the methods illustrated by Figures 1 to 5 will be found very convenient.

Place all slides in the slide box with the blood films on the left and the wax-pencil numbers on the right. Pieces of pasteboard, each

[1] Centralbl. f. Bakteriol. I Abth. Orig., 1924, Vol. 91, No. 5, pp. 343-346.

[2] This stain may be obtained in America of the American Kreuger & Toll Corp., New York, under the name of "Azur Eosine Solution for Romanowsky Giemsa Staining." An excellent Giemsa solution can also be obtained from Dr. Karl Hollborn, Leipzig.

about 1 inch by 1¼ inches by 1/20 inch thick (25 by 30 by 1.2 mm.), are dropped between the numbered ends of the slides, one to each interval. The lid is replaced, the box lifted and rotated clockwise and inverted. The box is then raised from the lid, leaving the slides in the lid, separated from each other by the pieces of pasteboard. All the slides from a box, or any group of them, may now be easily assembled, fastened together by means of a stout rubber band, and given a group label.

To stain one block of 25 slides, place 60 or 70 drops (about 1.3 c. c.) of Giemsa stock solution in a clean glass vessel and pour in 75 c. c. of water. The pouring in of the water insures sufficient mixing.

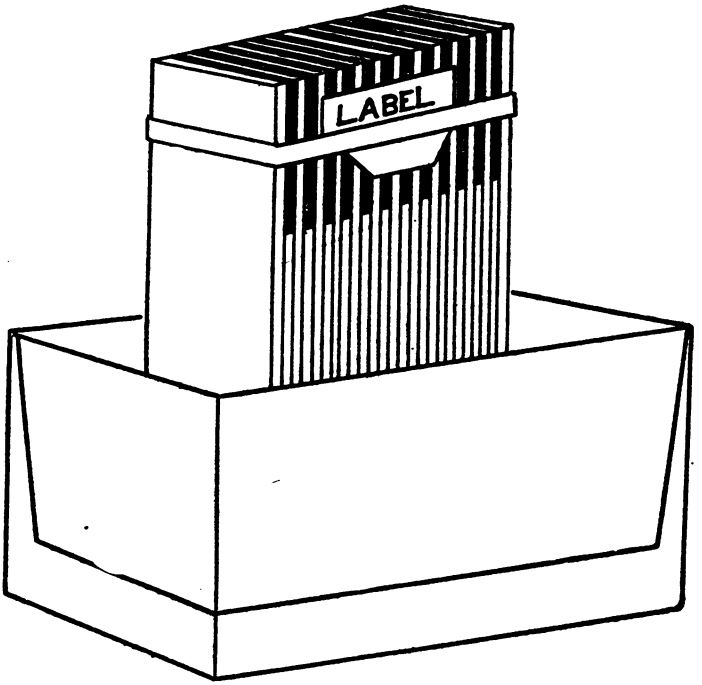

FIGURE 4.—Block, labeled, in staining dish

Then stand the block in the diluted stain and leave for about one hour. Any clean glass or porcelain dish will do provided it is of such dimensions that the stain will cover the thick films to the top and not wet the pasteboard slips.

Dilute the stain immediately before use and use it only once. To dilute the stock Giemsa solution, use distilled water, neutralized or at most but slightly alkaline (pH 7.0 to pH 7.2). Rain water caught in the open (not from a roof), melted snow, or melted ice made from distilled water, will serve, especially if boiled until free from carbonic acid. In any case, see that the water does not contain free acid. If it is not convenient to make a hydrogen-ion determination, a single

indicator, phenol red, neutral red, or an alcoholic solution of hematoxylin will serve. One may neutralize with a one per cent solution of sodium or potassium hydroxide or with dilute hydrochloric acid. Distilled water is often acid, and it is well to test the reaction of any water before using it. A tap water not too heavily impregnated with salts may give good results, but salts (especially sodium or magnesium

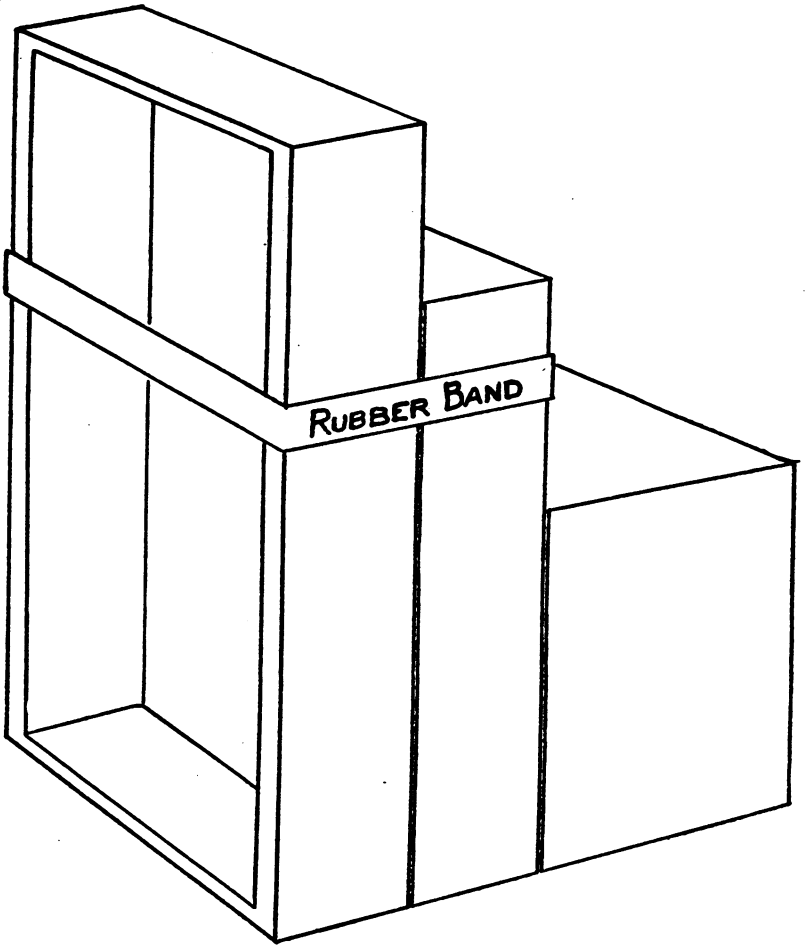

FIGURE 5.—Slide box and wooden block support

chloride) tend to precipitate part of the stain. The sediment remaining in a dish after a previous staining may also precipitate part of the stain. A good practice is to rinse each staining dish immediately after use.

Occasionally, infusoria become so numerous in a supply of water long kept in the laboratory that they appear in the thick films and may confuse the inexperienced by their resemblance to parasites.

Decolorization after staining is not always necessary. A sufficient decolorization is usually obtained by setting the block (while the slides are still wet from the stain) for five minutes in clean water, preferably the same as that used for diluting the stain.

These staining directions will serve for most cases, but a good deal of latitude is permissible if one observes the essentials—a good Giemsa stain and a proper diluting water. The length of time for staining as well as for decolorization may vary with the dilution of the stain, the amount of stain per slide, and the average thickness of the blood films. A very little experience with known positives will serve as a guide. The red of the chromatin of the parasites and the blue of the cytoplasm should stand out distinctly against the background.

When the background is deep blue and the leucocytes are almost black, the preparation is overstained and the red of the chromatin may be somewhat obscured. Overstaining is likely to occur when only a few slides are left for a full hour in a large amount of stain. When the leucocytes in the thicker parts of the film are pale, the preparation is understained. Sometimes there is enough well-stained area at the margin or in the thinner parts of a preparation to serve, but especially when a whole batch of slides is understained, it is best to restain.

Two or more blocks can be stained at once in a larger dish. In the staining and decolorizing of specimens an interval timer clock will prove to be a useful monitor.

After having been stained, the block may be placed on a piece of blotting paper to drain and dry at room temperature or in the incubator. It may be then set away in a dry, dark place, free from dust, and kept for weeks before examination. When the blocks are to be kept for some days it is best to replace the rubber bands with string, unless very strong bands have been used.

During the whole process of staining, and during storage, the position of the slides in a block is not changed, so that they remain in the same order in which they were taken.

Thin films may be made on the same slide as the thick films, and the slides can be labeled with an ordinary lead pencil in the thin film. In ordinary surveys it is not necessary to make thin films of all cases. When they are employed, they need not be stained unless they are desired for some particular purpose—confirmation of the results obtained in the thick-film, for example. Then they may be stained by the method of Wright or Leishman or by any thin-film technique preferred. A thick line made with a wax pencil may be drawn across the slide to keep the stain used in the thin film from spreading over the thick. We have found Pappenheims Panchrome [3] diluted with water and used as one does Giemsa, an excellent stain for thin films. As a

[3] Obtainable from Karl Hollborn, Leipzig.

routine, thin films should be fixed with methyl alcohol before being stained; but thin films long dried will afford good specimens for diagnosis without fixation.

Quick staining of thick films for early diagnosis.—Spread the blood, or a part of it, a little more thinly than for ordinary thick films. Dry. Lay the slide flat, film side up, and pour on a generous quantity (3 or 4 c. c.) of freshly diluted Giemsa stain. Stain 15 or 20 minutes. Wash with water cautiously so as not to loosen the film. Dry and examine. Films brought in one or two at a time for diagnosis are often best stained by this method, especially a kind intended for a thin film but having a surplus heap of blood at one end or the other of the thinner part.

Preservation of films after examination.—If it is desired to preserve a preparation, warm the slide, wash off the immersion oil with xylol, and quickly wash off the xylol with absolute ethyl alcohol. Blot or dry quickly. Cover the films with liquid petrolatum or petrolatum (vaseline) and keep them away from the light. The alcohol is used to prevent the formation of a ground-glass deposit, which sometimes occurs after the use of xylol alone; and if a cold slide is washed with xylol and alcohol, enough water may condense on it to dilute the alcohol and partly decolorize the film. Where it is desired to avoid the use of cedar oil for immersion, liquid petrolatum, heavy (U. S. P. IX) will prove to be a fair substitute. In that case the same medium will serve for examination and preservative.

The advantages of the thick film method, especially for malaria surveys, have been recognized by all who have given it a fair trial. An assistant may be easily taught to collect good specimens, and the method has been widely and successfully used in field work. Much time is saved in the examination of specimens. When parasites are at all numerous they are usually picked up in the first thick-film field; when they are rare, they are often detected in the thick film when they might have been missed in a thin film or found only after a long search. The chief purpose of the thick film is, of course, the diagnosis of malaria rather than the study of the characteristics of malaria parasites, a purpose for which the thin film is more suitable.

Recognition of parasites in the thick film.—The difficulty of learning to recognize parasites in the thick films has been overestimated. Examiners familiar with the appearance of parasites in the thin films have learned to do thick films in a day or two. The following directions may be of use to the less experienced. It is assumed that the examiner is already familiar with the appearance of malaria parasites in the thin film.

Examine thick films of normal blood and get familiar with the appearance of all normal constituents of the blood as they appear in such preparations. Make thick films of known positives, spreading

the blood at one side of the drop until it becomes essentially a thin film. Before staining, dry the preparation enough partially to fix the red blood cells at the thinner margin. Compare the appearance of parasites in portions of the film of various thicknesses. A little practice of this sort will teach the learner more than can be expressed in many paragraphs of description.

A few general directions may be of particular assistance: Except in the case of crescents, it is unsafe to call anything a parasite unless it shows a red chromatin dot, or mass, associated with blue cytoplasm. The latter, of course, is not always in the form of a ring; it may appear as a round or oval body and is not uncommonly irregular in form. With increasing experience and in clean preparations one can sometimes take into consideration pigment alone or pigment associated with cytoplasm only.

Bacteria sometimes stain like chromatin and may deceive when accidentally associated with a basophilic cloud or a remnant of a leucocyte; but bacteria are rare in clean preparations and do not show the even distribution throughout the film characteristic of malaria parasites. Red dots or masses, not bacteria, occasionally occur evenly distributed in the blood, and in some cases may be the remnants of malaria parasites; but it is not safe to reckon them as parasites unless they are clearly associated with cytoplasm. These red dots are found in the red cell itself, and in the thick film they may lie close to the blue remnant of the basophilic cell. As in the case of bacteria, it is necessary to be on guard against regarding such accidental associations as parasites. A good general rule is not to reckon as a parasite anything which can be interpreted as an artefact. The number of doubtful appearances will diminish as one gains experience.

When dirt from the skin is mixed in the thick film, much time is lost in trying to distinguish parasites from bacteria and débris, and errors in diagnosis are far more likely to occur. If a preparation is very "smudgy," especially if the dirt is distributed throughout the whole film, it is best to discard the specimen and get a new one.

Identification of the species of parasite in thick films.—The red blood cells throughout most of the thick film are laked out, so that they no longer serve as a guide in the determination of species. On the other hand, the thick film often affords parasites in large numbers and in a greater variety of stages of growth than one would find in the ordinary examination of thin films. When parasites are abundant enough it is well to examine the margin of the thick film where the red cells are partially fixed by drying. In taking films it is a good plan to make a small, thinner extension to the thick drop or to place a thin dab of blood beside it. These thinner places become sufficiently fixed by drying and may be stained along with the thick part.

A few general directions may assist in the identification of species in thick films:

Benign tertian (*P. vivax*).—In most specimens the benign tertian parasites appear in different stages of growth, and it will be found that older schizonts (plasmodia) easily recognized by their larger size, irregular form, abundant chromatin and pigment. In some thick films the outline of the enlarged host cell persists, even at the center of the preparation; at the margin of the preparation the host cell often remains intact and may exhibit Schüffner's dots. Benign tertian rings or younger parasites usually have larger chromatin dots and more abundant cytoplasm than do estivo-autumnal rings. When the cytoplasm occurs in ring form, its outline is less regular than in estivo-autumnal.

Quartan (*P. malariae*) is regarded by some authors as hardly distinguishable from benign tertian in thick films. In most cases, however, the smaller and more compact rings and schizonts, and the more abundant pigment, serve to distinguish them. In sporulating forms the quartan has only 8 spores while the benign tertian has 16 or more.

Estivo-autumnal (*P. falciparum*).—Rings may vary greatly in size, but are generally smaller than those of benign tertian. Chromatin dots are smaller and more often two dots occur in one ring. Where many small rings and no plasmodia are seen, it is usually safe to identify the parasite as estivo-autumnal. Crescents, characteristic of estivo-autumnal, are easily recognized when typical in form; but they sometimes change their shape in slowly drying films and may assume more rounded forms, which may simulate the schizonts of benign tertian or quartan. The more compact pigment of crescents, the deeper staining of the cytoplasm, and, in some cases, a pink remnant of the host cell will aid in identifying doubtful forms. At the margin of thick films, crescents dry more rapidly and are more likely to retain their typical form. Except crescents, larger parasites of estivo-autumnal are very rare in the peripheral blood.

Mixed infections are commonly overlooked in any kind of film unless the parasites of the two or more species occur in some very characteristic form. Thin films may show the specific characters more clearly, but, more often than thick films, probably, fail to disclose a mixed infection, since fewer parasites are commonly examined. In any case it is well to continue the search after the detection of the first parasite. In any sort of preparation where only a few young rings are present, it is sometimes impossible to identify the species.

We generally use the thin film for identifying and estimating the number of gametocytes of benign tertian and quartan. In the case of crescents, the thick film is more suitable.

Minimum equipment for examining thick films.—Any standard microscope fitted with a good mechanical stage is suitable. Expen-

sive apochromatic objectives are not necessary, but much greater flatness of field and increased definition may be obtained by the use of a good fluorite objective, such as the Bausch and Lomb No. 1043. It is a good plan to use an eyepiece of relatively low magnification, such as a 5X, as a searcher, but also to have a good 7.5X eyepiece to give higher magnification for examination of doubtful parasite appearances. The usual small substage lamp is inadequate for illumination; the chalet type of lamp fitted with 100-watt electric bulb and daylite glass window is to be preferred.

The length of time to devote to thick films apparently negative.—It is commonly recommended that 15 to 20 minutes be devoted to a thin film before it is declared negative, and 5 minutes to the thick film. In either case the time spent on apparently negative specimens must vary with circumstances. When, for example, the sole purpose is to find a crescent carrier suitable for mosquito-infection experiments, a fraction of a minute will suffice for the thick film. In a clinical case it may be necessary to spend a good deal of time on a film; but here it is usually possible to get a new specimen taken at a time when parasites may appear in larger numbers.

The question of time of examination is usually most important in connection with malaria-parasite surveys. It is difficult to establish a standard time, since the skill of individual examiners varies greatly. We recommend that each examiner determine for himself the amount of error incident on shortening the time devoted to thick films apparently negative. Select a batch of slides where a fair percentage, say 20 per cent or more, of positives may be expected. Note the amount of time required to find the first parasite in each positive, and continue the examination of negatives for 10 minutes. It then becomes possible to estimate the error which would have resulted had the time been shortened. The skilled examiner will probably find that a very small percentage will be missed if the examining time be limited to three or even two minutes. The experiment may be worked out in terms of the number of fields examined instead of the time devoted to the search. When basophilia or other evidence of anemia, or suspected remnants of parasites are found in a preparation, the examination is prolonged.

If a survey of a given group of persons be repeated after a few days one usually obtains new positives among former negatives. The best single examination can disclose only a fraction of the persons actually infected. But a single survey gives results of much comparative value, especially if the examiner follows the golden rule of recording as negative all doubtful specimens. The examiner is then sure that the population contains at least the percentage positive which he has obtained; and if he has ascertained his examination-time error and has adopted a standard time, he will obtain results

reliable for comparing the malaria rate of one population with that of another. It is of questionable utility to attempt to prescribe an examination time applicable to all examiners and all circumstances.

Much time can be saved in collecting blood specimens if the slides, boxes, and other apparatus are placed before the collector in convenient order. The collector sits alongside a table, near the end. His right side should be nearest the table. The slide box is set upright a little to the left and in front of the collector. The cover of the slide box is placed next in order to the right, and the numbered slides are ranged in consecutive order, numbered side down, upon the box cover. The pricking needle, well fixed in a large cork, is placed within convenient reach in front of the slide box. The subject stands to the left of the collector, and the blood is taken from the middle finger of the left hand. The blood films are placed in the box film side down, the numbered ends of the slides all toward the left, and the films toward the right.

In collecting blood specimens, a great deal of time can be saved by the use of cards instead of a note book for recording data. In surveys of schools, cards may be distributed among older children and each can be directed to write on his card his name, age, residence, or other information. Sometimes these data are more accurately recorded by the child than by the teacher. The child brings his card to the examiner, who takes the blood specimen and enters the slide number on the card. After the results of the microscopic examination have been recorded on the cards, these may be classified by age of child, type of parasite, or any other datum. When these results have been tabulated, the cards may be arranged alphabetically.

Any attempt to prevent expense by the use of inferior stains, slides, or other necessary apparatus is likely to prove to be poor economy. The time lost in collecting and staining an unserviceable batch of specimens may be worth more than a month's supply of a proper stain.

DEATH RATES IN A GROUP OF INSURED PERSONS

Rates for Principal Causes of Death for July, 1929

The accompanying table, taken from the Statistical Bulletin for August, 1929, issued by the Metropolitan Life Insurance Co., presents the mortality record of the industrial-insurance department of the company for July and the cumulative death rates for the period January to July, inclusive, for the principal causes of death. The rates are based on a strength of approximately 19,000,000 insured persons in the United States and Canada.

The death rate for July in this group was 8.2 per 1,000, approximately the average rate for July during the current decade. It is

the same as the rate for July of last year and for June of this year. The cumulative death rate for the first seven months of 1929 was 10 per 1,000 (annual basis), or only 3.1 per cent higher than that for the corresponding period of 1928, whereas at the end of February the cumulative rate was 31.9 per cent in excess of the figure for the first two months of 1928.

As compared with July of last year, declines are noted for measles, whooping cough, diphtheria, influenza, organic heart disease, pneumonia, other respiratory conditions, and diarrheal diseases. On the other hand, the death rates for July of this year were slightly higher than those for last year for scarlet fever, typhoid fever, tuberculosis, diabetes, and puerperal conditions, and were markedly higher for cancer, cerebral hemorrhage, Bright's disease, accidents, and automobile fatalities.

The outstanding item in this year's record to date among this group of persons is the further decrease in the mortality from tuberculosis. The cumulative death rate for this cause at the end of July was nearly 4 per cent below the previous low record for the corresponding period, which was established only last year. Next in importance is stated to be the further reduction in deaths from diphtheria.

On the other hand, the cancer death rate continues its persistent rise, the death rate for diabetes is well above the previous maximum, and cardiac diseases caused many more deaths in the January–July period this year than last.

Death rates (annual basis) per 100,000; causes of death

[Industrial department, Metropolitan Life Insurance Co.]

Cause of death	Rate per 100,000 lives exposed[1]				
	July, 1929	June, 1929	July, 1928	Cumulative, January to July	
				1929	1928
Total, all causes	822.0	816.1	817.6	997.7	966.1
Typhoid fever	3.2	2.4	2.8	1.9	2.0
Measles	2.7	4.8	5.1	4.2	8.1
Scarlet fever	2.4	2.2	2.0	3.2	3.5
Whooping cough	5.8	4.7	5.9	6.2	6.2
Diphtheria	6.5	7.5	7.1	9.1	10.8
Influenza	5.2	9.9	10.0	62.1	29.5
Tuberculosis (all forms)	86.9	86.7	84.1	92.0	95.8
Tuberculosis of respiratory system	75.8	75.7	73.6	81.5	83.9
Cancer	78.5	73.5	70.7	76.5	75.4
Diabetes mellitus	15.4	13.8	14.8	19.8	18.6
Cerebral hemorrhage	53.1	50.0	48.6	59.8	59.1
Organic diseases of heart	123.4	130.1	129.1	156.8	150.2
Pneumonia (all forms)	39.3	61.1	49.8	111.3	111.7
Other respiratory diseases	8.4	11.1	14.0	13.4	14.6
Diarrhea and enteritis	20.4	16.3	27.3	15.0	17.7
Bright's disease (chronic nephritis)	62.4	60.0	58.5	72.2	74.1
Puerperal state	14.4	11.1	13.1	14.2	14.4
Suicides	7.9	8.0	8.0	8.6	8.4
Homicides	6.1	6.2	6.2	6.2	6.4
Other external causes (excluding suicides and homicides)	79.0	63.9	72.0	61.5	59.3
Traumatism by automobiles	22.6	19.2	16.1	17.6	15.6
All other causes	201.2	192.8	188.4	203.7	200.4

[1] All figures include infants insured under 1 year of age.

COURT DECISION RELATING TO PUBLIC HEALTH

Sale in city of milk pasteurized outside of city.—(New York Court of Appeals; Lang's Creamery, Inc., *v.* City of Niagara Falls et al., 167 N. E. 464; decided July 11, 1929.) An ordinance of the city of Niagara Falls provided that no one should sell milk in the city without a license, renewable annually, from the health officer; that the application for the license should be in writing, stating the applicant's sources of milk supply; that the health officer should inspect such sources of supply, having the protection of the public health in view; and that a milk dealer's permit should be issued to the applicant, if the health officer was satisfied that the applicant had fully complied with the regulations. In addition there was a section which provided that "No milk or cream shall be sold or offered for sale as 'pasteurized' milk or cream unless the same shall have been 'pasteurized' within the limits of Niagara Falls."

The plaintiff corporation, which pasteurized milk in the city of Buffalo, desired to sell the bottled product in Niagara Falls. It did not apply for a license to sell milk in Niagara Falls because it had been informed by the city officials that the pasteurization provision would be enforced against it. It brought an action to restrain the city and its officials from enforcing the ordinance or interfering with the sale by it in the city of pure pasteurized milk and cream. The validity of the pasteurization provision was challenged as an unreasonable exercise of the city's power, under statute, to regulate and license occupations and businesses so as to preserve and care for the health of the inhabitants of the city and visitors thereto and as an arbitrary discrimination against out-of-town dealers in pasteurized milk.

The court of appeals decided that the plaintiff was not in a position to question the validity of the pasteurization provision. The court stated that the plaintiff should apply to the local authorities for a license to sell its milk products and that, if such application was unreasonably refused, it would then have a remedy through mandamus. The court then proceeded to say that in such mandamus proceeding the validity of the ordinance would be subject to attack, but that, if, "on such an application [for a license], it did not appear that its pasteurization plant was properly conducted and its sources of milk supply were sanitary, the license might reasonably be refused without regard to the validity of the ordinance."

DEATHS DURING WEEK ENDED SEPTEMBER 14, 1929

Summary of information received by telegraph from industrial insurance companies for the week ended September 14, 1929, and corresponding week of 1928. (From the Weekly Health Index, September 18, 1929, issued by the Bureau of the Census, Department of Commerce)

	Week ended Sept. 14, 1929	Corresponding week, 1928
Policies in force	74, 362, 406	71, 675, 556
Number of death claims	12, 702	12, 990
Death claims per 1,000 policies in force, annual rate	8. 9	9. 5

Deaths from all causes in certain large cities of the United States during the week ended September 14, 1929, infant mortality, annual death rate, and comparison with corresponding week of 1928. (From the Weekly Health Index, September 18, 1929, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Sept. 14, 1929		Annual death rate per 1,000, corresponding week, 1928	Deaths under 1 year		Infant mortality rate, week ended Sept. 14, 1929 [2]
	Total deaths	Death rate [1]		Week ended Sept. 14, 1929	Corresponding week, 1928	
Total (62 cities)	5,782	10. 2	11. 2	621	764	[3] 56
Akron	44			11	5	113
Albany [4]	40	17. 4	12. 6	8	7	158
Atlanta	99	20. 3	16. 2	17	8	176
White	52			9	5	
Colored	47	(5)	(5)	8	3	
Baltimore [4]	157	9. 9	14. 4	19	38	61
White	135			17	27	68
Colored	22	(5)	(5)	2	11	32
Birmingham	56	13. 2	16. 5	10	12	91
White	22			3	9	45
Colored	34	(5)	(5)	7	3	160
Boston	157	10. 3	10. 6	17	28	47
Bridgeport	31			5	4	86
Buffalo	112	10. 5	10. 4	8	22	34
Cambridge	15	6. 2	10. 0	2	3	36
Camden	32	12. 4	8. 1	8	4	138
Canton	13	5. 8	7. 6	3	3	71
Chicago [4]	576	9. 5	10. 0	60	60	53
Cincinnati	111			12	16	70
Cleveland	170	8. 8	9. 1	17	20	50
Columbus	74	12. 9	12. 1	5	12	47
Dallas	41	9. 8	12. 5	6	9	
White	35			5	6	
Colored	6	(5)	(5)	1	3	
Dayton	38	10. 8	11. 9	5	4	79
Denver	59	10. 5	13. 3	7	12	68
Des Moines	38	13. 1	11. 4	2	3	36
Detroit	258	9. 8	10. 7	45	47	72
Duluth	11	4. 9	11. 6	0	6	0
El Paso	25	11. 1	17. 8	4	8	
Erie	24			2	2	41
Fall River [4]	13	5. 1	11. 7	4	7	75
Flint	20	7. 0	11. 2	3	14	36
Fort Worth	25	7. 7	9. 5	3	2	
White	20			3	2	
Colored	5	(5)	(5)	0	0	
Grand Rapids	29	9. 2	6. 7	5	1	76
Houston	66			8	10	
White	46			7	8	
Colored	20	(5)	(5)	1	2	
Indianapolis	71	9. 7	14. 1	7	14	56
White	60			5	12	46
Colored	11	(5)	(5)	2	2	119
Jersey City	56	9. 0	9. 7	9	5	70
Kansas City, Kans	13	5. 7	13. 7	1	1	22
White	11			1	0	25
Colored	2	(5)	(5)	0	1	0
Kansas City, Mo	86	11. 5	13. 1	11	10	93

(Footnotes at end of table)

Deaths from all causes in certain large cities of the United States during the week ended September 14, 1929, infant mortality, annual death rate, and comparison with corresponding week of 1928. (From the Weekly Health Index, September 18, 1929, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended Sept. 14, 1929		Annual death rate per 1,000, corresponding week, 1928	Deaths under 1 year		Infant mortality rate, week ended Sept. 14, 1929 [2]
	Total deaths	Death rate [1]		Week ended Sept. 14, 1929	Corresponding week, 1928	
Knoxville	36	17.9	7.4	2	2	44
White	24			1	1	24
Colored	12	(5)	(5)	1	1	211
Los Angeles	204			22	19	65
Louisville	56	8.9	13.8	8	13	65
White	47			7	13	65
Colored	9	(5)	(5)	1	0	63
Lowell	20			1	2	23
Lynn	20	9.9	5.9	1	1	27
Memphis	76	20.9	15.7	10	11	118
White	35			4	7	76
Colored	41	(5)	(5)	6	4	188
Milwaukee	95	9.1	9.0	11	14	48
Minneapolis	77	8.8	8.5	5	1	31
Nashville	28	10.5	19.9	4	6	65
White	18			2	4	43
Colored	10	(5)	(5)	2	2	126
New Bedford	8			1	5	21
New Haven	30	8.3	12.0	1	3	15
New Orleans	126	15.3	14.9	14	15	70
White	67			4	8	28
Colored	59	(5)	(5)	10	7	168
New York	1,132	9.8	11.0	116	150	47
Bronx Borough	138	7.6	9.4	9	11	27
Brooklyn Borough	378	8.6	9.5	42	56	43
Manhattan Borough	444	13.3	15.4	51	70	62
Queens Borough	130	8.0	6.8	11	11	45
Richmond Borough	42	14.6	14.9	3	2	54
Newark, N. J	74	8.2	10.2	16	16	84
Oakland	52	9.9	11.6	3	3	33
Oklahoma City	42			8	3	160
Omaha	41	9.6	13.1	2	6	23
Paterson	38	13.7	8.7	3	3	53
Philadelphia	419	10.6	10.8	32	53	45
Pittsburgh	161	12.5	12.9	15	18	52
Portland, Oreg	50			2	5	23
Providence	61	11.1	11.5	8	7	70
Richmond	43	11.6	12.6	2	3	28
White	20			1	0	21
Colored	23	(5)	(5)	1	3	41
Rochester	60	9.6	11.9	4	10	34
St. Louis	152	9.4	11.2	10	16	34
St. Paul	38			3	3	31
Salt Lake City [4]	29	11.0	12.9	7	1	108
San Antonio	44	10.5	9.1	6	5	
San Diego	23			1	2	19
San Francisco	140	12.5	10.7	4	6	25
Seattle	55	7.5	8.9	1	2	11
Somerville	15	7.6	7.1	1	0	36
Spokane	26	12.5	20.1	2	1	52
Springfield, Mass	31	10.8	9.8	1	2	17
Syracuse	42	11.0	13.6	1	6	12
Toledo	66	11.0	9.8	10	4	93
Trenton	31	11.7	16.6	7	4	127
Washington, D. C	103	9.8	14.2	15	8	88
White	59			7	4	59
Colored	44	(5)	(5)	8	4	152
Waterbury	13			4	3	102
Wilmington, Del	34	13.8	13.4	4	5	104
Worcester	35	9.3	11.6	5	2	63
Yonkers	26	11.2	5.2	2	2	47
Youngstown	44	13.2	9.0	2	5	29

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births. Cities left blank are not in the registration area for births.
[3] Data for 70 cities.
[4] Deaths for week ended Friday.
[5] In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentages of the total population: Atlanta, 31; Baltimore, 15; Birmingham, 39; Dallas, 15; Fort Worth, 14; Houston, 25; Indianapolis, 11; Kansas City, Kans., 14; Knoxville, 15; Louisville, 17; Memphis, 38; Nashville, 30; New Orleans, 26; Richmond, 32; and Washington, D. C., 25.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended September 14, 1929, and September 15, 1928

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended September 14, 1929, and September 15, 1928

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Sept. 14, 1929	Week ended Sept. 15, 1928	Week ended Sept. 14, 1929	Week ended Sept. 15, 1928	Week ended Sept. 14, 1929	Week ended Sept. 15, 1928	Week ended Sept. 14, 1929	Week ended Sept. 15, 1928
New England States:								
Maine	2	6	----	----	21	18	0	0
New Hampshire	2	1	----	2	1	114	0	0
Vermont	----	----	----	----	----	----	0	0
Massachusetts	57	42	----	4	31	34	3	1
Rhode Island	9	6	----	----	2	2	0	2
Connecticut	19	10	1	3	5	12	0	1
Middle Atlantic States:								
New York	53	89	[1] 2	[1] 9	69	65	16	36
New Jersey	60	59	----	3	18	14	2	0
Pennsylvania	107	94	----	----	39	74	5	11
East North Central States:								
Ohio	36	40	14	11	19	47	5	8
Indiana	17	13	----	14	2	10	0	0
Illinois	108	81	2	38	41	23	5	5
Michigan	67	55	2	----	43	25	22	5
Wisconsin	14	22	16	19	34	12	1	2
West North Central States:								
Minnesota	11	18	1	2	2	12	1	0
Iowa	2	6	----	----	2	----	1	1
Missouri [2]	12	35	10	2	4	2	3	1
North Dakota	14	6	----	8	4	2	4	1
South Dakota	2	1	----	----	1	----	0	0
Nebraska	4	7	----	1	8	2	0	0
Kansas	3	11	1	4	14	5	2	2
South Atlantic States:								
Delaware	1	----	----	----	----	2	0	0
Maryland [3]	8	26	1	3	1	6	1	1
District of Columbia	20	17	----	2	----	1	0	0
Virginia	----	----	----	----	----	----	----	----
West Virginia	19	9	14	27	22	1	3	0
North Carolina	206	120	----	----	1	9	4	0
South Carolina	86	49	----	521	----	----	0	0
Georgia	18	20	10	95	4	2	0	0
Florida	4	8	----	2	----	----	1	0

[1] New York City only.
[2] Figures for 1929 are exclusive of St. Louis.
[3] Week ended Friday.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended September 14, 1929, and September 15, 1928—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Sept. 14, 1929	Week ended Sept. 15, 1928	Week ended Sept. 14, 1929	Week ended Sept. 15, 1928	Week ended Sept. 14, 1929	Week ended Sept. 15, 1928	Week ended Sept. 14, 1929	Week ended Sept. 15, 1928
East South Central States:								
Kentucky	22	4					0	0
Tennessee	36	34	4	6	4	2	4	0
Alabama	60	54	2	43	2	11	2	0
Mississippi	43	18						2
West South Central States:								
Arkansas	8	14	3	3	1	2	0	0
Louisiana	24	20	2	3	4	1	0	0
Oklahoma [4]	18	35	11	19	4	3	4	0
Texas	30	15	8	14	6	1	0	1
Mountain States:								
Montana		3			11	3	1	0
Idaho					1		2	0
Wyoming	1	7					1	0
Colorado	2	5		1	6	5	1	3
New Mexico	5	8				2	0	0
Arizona	4	1			2	11	6	1
Utah [3]	1	5	13			1	7	0
Pacific States:								
Washington	8	11			13	15	1	2
Oregon	3	9	2	6	1	3	0	2
California	20	34	11	9	25	20	3	1

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Sept. 14, 1929	Week ended Sept. 15, 1928	Week ended Sept. 14, 1929	Week ended Sept. 15, 1928	Week ended Sept. 14, 1929	Week ended Sept. 15, 1928	Week ended Sept. 14, 1929	Week ended Sept. 15, 1928
New England States:								
Maine	2	5	16	27	0	1	0	15
New Hampshire	3	2	7	10	4	0	1	0
Vermont	1	5		1	0	0	0	0
Massachusetts	7	35	64	81	0	0	11	11
Rhode Island	3	1	1	8	0	0	2	1
Connecticut	0	4	7	6	0	0	3	4
Middle Atlantic States:								
New York	43	87	72	89	3	0	58	63
New Jersey	4	4	29	25	0	0	18	19
Pennsylvania	11	14	80	77	3	0	33	76
East North Central States:								
Ohio	14	15	81	75	9	2	47	51
Indiana	4	1	23	31	17	2	6	18
Illinois	1	4	101	76	6	9	31	46
Michigan	12	9	83	64	12	4	11	15
Wisconsin	0	2	34	56	6	6	11	5
West North Central States:								
Minnesota	3	25	59	59	0	0	5	7
Iowa	3	1	11	12	8	0	42	4
Missouri [2]	1	1	21	22	5	4	5	32
North Dakota	1	5	10	32	4	0	1	6
South Dakota	0	2	10	1	10	1	0	2
Nebraska	0	1	11	12	3	2	7	2
Kansas	1	3	37	29	3	1	13	24
South Atlantic States:								
Delaware	1	1		4	0	0	7	1
Maryland [3]	1	26	13	10	0	0	24	56
District of Columbia	0	6	1	4	0	0	1	0
Virginia	10							
West Virginia	8	13	42	25	3	0	44	29
North Carolina	2	2	95	60	4	9	42	35
South Carolina	1	1	25	11	0	0	87	67
Georgia	2	0	21	8	0	0	29	37
Florida	0	0	6	4	0	0	1	6

[2] Figures for 1929 are exclusive of St. Louis.
[3] Week ended Friday.
[4] Figures for 1929 are exclusive of Oklahoma City and Tulsa and for 1928 are exclusive of Tulsa only.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended September 14, 1929, and September 15, 1928—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Sept. 14, 1929	Week ended Sept. 15, 1928	Week ended Sept. 14, 1929	Week ended Sept. 15, 1928	Week ended Sept. 14, 1929	Week ended Sept. 15, 1928	Week ended Sept. 14, 1929	Week ended Sept. 15, 1928
East South Central States:								
Kentucky	1	2	23	26	0	8	50	43
Tennessee	1	1	18	21	0	2	63	79
Alabama	2	3	36	31	0	2	27	45
Mississippi	0	1	16	20	0	0	22	25
West South Central States:								
Arkansas	0	1	6	7	0	2	22	51
Louisiana	0	0	20	5	1	3	27	25
Oklahoma [4]	2	1	24	12	2	3	52	74
Texas	0	0	17	15	23	2	17	13
Mountain States:								
Montana	0	5	16	3	3	2	18	3
Idaho	1	3	1	2	0	2	1	2
Wyoming	0	0	1	6	7	0	4	3
Colorado	0	7	4	5	1	0	8	10
New Mexico	0	0	1	2	3	5	5	18
Arizona	0	0	6	0	0	0	3	5
Utah [3]	0	0	6	3	0	1	2	4
Pacific States:								
Washington	1	29	23	27	11	13	4	14
Oregon	0	0	9	8	9	9	6	9
California	6	6	51	61	20	13	12	19

[3] Week ended Friday.
[4] Figures for 1929 are exclusive of Oklahoma City and Tulsa and for 1928 are exclusive of Tulsa only.

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week:

State	Meningococcus meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
August, 1929										
Arizona	8	1			3		1	4	2	3
Idaho	5	8	5		21		2	17	40	7
Iowa	5	17					4	53	25	67
Kansas	3	47	2	20	81	1	3	65	29	61
Michigan	66	230	2	7	225		27	318	114	37
New Hampshire		7						10		3
New Jersey	22	238	15	1	73		10	99	0	55
North Dakota	4	27	6		90		1	40	13	3
Ohio	22	146	27	16	151		35	192	106	163
Porto Rico		36	14	1,178	68	5				63
South Carolina		232	621	3,527	18	942	10	53	3	259
Vermont		5			49		5	13	17	10

August, 1929

	Cases
Anthrax:	
Porto Rico	3
Chicken pox:	
Arizona	3
Idaho	11
Kansas	16
Michigan	127
New Jersey	70
North Dakota	25
Ohio	117
South Carolina	38
Vermont	24
Colibacillosis:	
Porto Rico	12
Colitis:	
Kansas	1
Dengue:	
South Carolina	13
Diarrhea:	
South Carolina	1,186
Diarrhea and enteritis (under 2 years):	
Ohio	79
Dysentery:	
Kansas (amebic)	1
Kansas (bacillary)	1
Ohio	6
Porto Rico	91
Filariasis:	
Porto Rico	10
Food poisoning:	
Ohio	3
German measles:	
Kansas	2
New Jersey	13
Ohio	3
Hookworm disease:	
South Carolina	158
Lead poisoning:	
New Jersey	10
Ohio	14
Lethargic encephalitis:	
Arizona	2
Kansas	2
Michigan	5
North Dakota	1
Ohio	10
Mumps:	
Arizona	1
Idaho	5
Kansas	49
Michigan	94
North Dakota	10
Ohio	59
Porto Rico	15
South Carolina	55
Vermont	14
Ophthalmia neonatorum:	
New Jersey	3
Ohio	83
Porto Rico	4
South Carolina	10

August, 1929—Continued

	Cases
Paratyphoid fever:	
Kansas	8
New Jersey	4
Ohio	4
South Carolina	8
Puerperal fever:	
Ohio	2
Porto Rico	8
Rabies in animals:	
South Carolina	15
Rabies in man:	
Kansas	1
Michigan	4
Ohio	1
Rocky Mountain spotted or tick fever:	
Idaho	2
Septic sore throat:	
Michigan	10
Ohio	40
Tetanus:	
Kansas	2
Ohio	9
Porto Rico	11
South Carolina	3
Tetanus (infantile):	
Porto Rico	17
Trachoma:	
Arizona	1
Kansas	3
New Jersey	2
North Dakota	1
Ohio	3
Porto Rico	1
South Carolina	1
Tularæmia:	
Kansas	1
South Carolina	2
Undulant fever:	
Arizona	2
Iowa	22
Kansas	7
Michigan	1
Ohio	4
Vincent's angina:	
Kansas	2
North Dakota	86
Whooping cough:	
Arizona	4
Idaho	21
Kansas	144
Michigan	785
New Jersey	639
North Dakota	32
Ohio	1,071
Porto Rico	51
South Carolina	693
Vermont	53

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 94 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 31,120,000. The estimated population of the 87 cities reporting deaths is more than 29,545,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended September 7, 1929, and September 8, 1928

	1929	1928	Estimated expectancy
Cases reported			
Diphtheria:			
46 States	1,013	857	----------
94 cities	384	305	518
Measles:			
45 States	485	477	----------
94 cities	75	109	----------
Meningococcus meningitis:			
45 States	117	67	----------
94 cities	59	49	----------
Poliomyelitis:			
46 States	145	338	----------
Scarlet fever:			
46 States	1,021	841	----------
94 cities	311	216	311
Smallpox:			
46 States	202	117	----------
94 cities	24	8	12
Typhoid fever:			
46 States	931	1,015	----------
94 cities	109	142	188
Deaths reported			
Influenza and pneumonia:			
87 cities	343	341	----------
Smallpox:			
87 cities	0	0	----------

City reports for week ended September 7, 1929

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during non-epidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1920 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1928, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	78,600	1	0	0	-------	0	0	0	0
New Hampshire:									
Concord	(1)	0	0	0	-------	0	1	0	0
Manchester	85,700	0	0	0	-------	0	0	0	0
Vermont:									
Barre	(1)	0	0	1	-------	0	0	0	0
Massachusetts:									
Boston	799,200	4	22	13	1	0	6	4	12
Fall River	134,300	0	1	1	-------	0	0	0	1
Springfield	149,800	6	1	2	-------	0	0	0	1
Worcester	197,600	2	3	1	-------	0	2	0	0
Rhode Island:									
Pawtucket	73,100	-------	0	-------	-------	-------	-------	-------	-------
Providence	286,300	-------	4	-------	-------	-------	-------	-------	-------
Connecticut:									
Bridgeport	(1)	2	4	1	-------	0	0	0	0
Hartford	172,300	0	2	0	1	0	0	0	2
New Haven	187,900	0	1	0	-------	0	0	0	1
MIDDLE ATLANTIC									
New York:									
Buffalo	555,800	1	9	6	-------	0	0	1	12
New York	6,017,500	9	82	45	7	0	6	19	91
Rochester	328,200	0	4	0	-------	0	2	1	1
Syracuse	199,300	2	2	0	-------	0	2	7	3
New Jersey:									
Camden	135,400	0	2	1	-------	0	0	0	2
Newark	473,600	1	7	17	1	0	1	2	10
Trenton	139,000	0	2	0	-------	0	0	0	3
Pennsylvania:									
Philadelphia	2,064,200	2	30	13	3	2	1	11	22
Pittsburgh	673,800	1	12	11	-------	2	2	1	9
Reading	115,400	0	2	1	-------	0	0	0	2
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	413,700	0	5	2	-------	0	0	0	3
Cleveland	1,010,300	8	22	2	5	3	2	1	17
Columbus	299,000	1	3	0	-------	0	0	0	1
Toledo	313,200	0	5	1	-------	0	3	1	4
Indiana:									
Fort Wayne	105,300	0	2	5	-------	0	0	0	0
Indianapolis	382,100	1	3	0	-------	1	2	0	5
South Bend	86,100	0	1	0	-------	0	0	0	0
Terre Haute	73,500	1	0	0	-------	0	0	0	0
Illinois:									
Chicago	3,157,400	17	48	92	5	3	11	1	28
Springfield	67,200	0	1	1	-------	0	0	0	0
Michigan:									
Detroit	1,378,900	4	30	27	-------	1	2	3	12
Flint	148,800	0	3	0	-------	0	2	0	0
Grand Rapids	164,200	0	2	0	-------	0	0	0	0

[1] No estimate of population made.

City reports for week ended September 7, 1929—Continued

Division, State, and city	Population July 1, 1928, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL—continued									
Wisconsin:									
Kenosha	56,500	0	0	1		0	1	0	1
Madison	50,500	1	0	0		0	0	0	0
Milwaukee	544,200	6	8	4	1	1	5	4	1
Racine	74,400	0	1	0		0	0	0	0
Superior	(1)	0	1	0		0	0	0	1
WEST NORTH CENTRAL									
Minnesota:									
Duluth	116,800	1	0	0		0	0	0	0
Minneapolis	455,900	9	13	1		0	0	4	6
St. Paul	(1)	0	9	0		0	0	0	2
Iowa:									
Davenport	(1)	0	1	0			0	0	
Des Moines	151,900	0	2	0			0	0	
Sioux City	80,000	1	0	0			0	0	
Waterloo	37,100	0	1	0			0	0	
Missouri:									
Kansas City	391,000	1	2	3		0	1	1	2
St. Joseph	78,500	0	1	0		0	0	0	2
St. Louis	848,100	1	20	10			0	5	9
North Dakota:									
Fargo	(1)	0	0	0		0	0	0	0
Grand Forks	(1)	0	0	0			0	0	
South Dakota:									
Aberdeen	(1)	0	0	0			1	1	
Sioux Falls	(1)	0	0	0			0	0	
Nebraska:									
Omaha	222,800	1	9	4		0	0	0	2
Kansas:									
Topeka	62,800		0						
Wichita	99,300	0	2	2		0	0	0	3
SOUTH ATLANTIC									
Delaware:									
Wilmington	128,500	0	0	0		0	0	0	1
Maryland:									
Baltimore	830,400	1	15	6		2	0	1	12
Cumberland	(1)	0	0	0	1	0	1	0	[2]1
Frederick	(1)	0	0	0		0	0	0	0
District of Columbia:									
Washington	552,000	0	8	7		0	0	0	9
Virginia:									
Lynchburg	38,600	0	2	2		0	0	5	0
Norfolk	184,200	1	0	0		0	0	0	2
Richmond	194,400	0	11	14		0	0	0	1
Roanoke	64,600	0	4	2		0	0	0	0
West Virginia:									
Charleston	55,200	0	1	3		0	0	0	1
Wheeling	(1)	0	1	1		0	0	0	0
North Carolina:									
Raleigh	(1)	0	2	0		0	0	0	0
Wilmington	39,100	0	1	5		0	0	0	0
Winston-Salem	80,000	0	2	1		0	0	1	3
South Carolina:									
Charleston	75,900	0	1	0	31	0	0	0	2
Columbia	50,600	0	1	0		0	0	0	1
Georgia:									
Atlanta	255,100	0	4	6	6	0	0	0	3
Brunswick	(1)		0						
Savannah	99,900	0	1	1	6	0	0	0	0
Florida:									
Miami	156,700	0	1	2		0	0	0	0
St. Petersburg	53,300		0			0			1
Tampa	113,400	0	1	1		0	0	0	0

[1] No estimate of population made.
[2] Nonresident.

City reports for week ended September 7, 1929—Continued

Division, State, and city	Population July 1, 1928, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL									
Kentucky:									
Covington	59,000	0	1	1		0	0	0	0
Tennessee:									
Memphis	190,200	0	2	3		0	0	0	5
Nashville	139,600	0	4	1		1	0	0	3
Alabama:									
Birmingham	222,400	0	4	5		0	1	0	2
Mobile	69,600	0	1	0		0	0	0	0
Montgomery	63,100	0	1	1			1	0	
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	[1]	0	0	0			0	0	
Little Rock	79,200	1	0	0		0	0	0	0
Louisiana:									
New Orleans	429,400	0	6	8		0	0	0	5
Shreveport	81,300	0	2	1		0	0	0	1
Oklahoma:									
Oklahoma City	[1]	0	2	6		0	0	0	1
Tulsa	170,500	0	0	2			0	2	
Texas:									
Dallas	217,800	0	5	9	1	0	1	0	0
Fort Worth	170,600	0	2	0		0	0	0	2
Galveston	50,600	0	0	1		0	0	0	1
Houston	[1]	0	3	8		0	0	0	1
San Antonio	218,100	0	1	8		0	0	0	0
MOUNTAIN									
Montana:									
Billings	[1]	0	0	2		0	0	0	0
Great Falls	[1]	1	0	0		0	0	2	0
Helena	[1]	0	0	0		0	0	0	0
Missoula	[1]	1	0	0		0	0	0	0
Idaho:									
Boise	[1]	0	0	0		0	0	0	0
Colorado:									
Denver	294,200	1	13	6		0	3	1	2
Pueblo	44,200	0	1	0		0	0	1	2
New Mexico:									
Albuquerque	[1]	1	0	1		0	0	0	0
Utah:									
Salt Lake City	138,000	3	3	0		0	0	1	2
Nevada:									
Reno	[1]	0	0	0		0	0	0	0
PACIFIC									
Washington:									
Seattle	383,200	4	3	0			5	5	
Spokane	109,100	1	1	2			0	0	
Tacoma	110,500	0	2	2		0	0	0	2
California:									
Los Angeles	[1]	6	24	5	4	1	9	4	6
Sacramento	75,700	0	2	0		0	0	0	1
San Francisco	585,300	12	11	5		0	5	2	1

[1] No estimate of population made.

City reports for week ended September 7, 1929—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND											
Maine:											
Portland	1	6	0	0	0	0	1	0	0	0	22
New Hampshire:											
Concord	1	0	0	0	0	0	0	0	0	0	4
Manchester	1	0	0	0	0	1	0	0	0	0	10
Vermont:											
Barre	0	0	0	0	0	1	0	0	0	0	3
Massachusetts:											
Boston	15	26	0	0	0	11	3	1	1	37	192
Fall River	1	0	0	0	0	1	1	0	0	1	15
Springfield	2	0	0	0	0	1	0	0	0	3	31
Worcester	3	1	0	0	0	1	0	0	0	16	40
Rhode Island:											
Pawtucket	0	----	0	----	----	----	0	----	----	----	----
Providence	2	----	0	----	----	----	0	----	----	----	----
Connecticut:											
Bridgeport	2	1	0	0	0	1	0	0	0	0	27
Hartford	1	1	0	0	0	3	0	0	0	0	42
New Haven	1	0	0	0	0	0	2	0	0	4	34
MIDDLE ATLANTIC											
New York:											
Buffalo	5	7	0	0	0	7	2	0	1	3	141
New York	27	21	0	0	0	86	45	34	3	50	1,299
Rochester	2	2	0	0	0	2	1	0	0	4	65
Syracuse	2	0	0	0	0	2	1	0	1	10	64
New Jersey:											
Camden	0	0	0	0	0	2	1	0	0	0	25
Newark	4	4	0	0	0	5	2	0	0	54	113
Trenton	1	4	0	0	0	2	0	0	0	3	33
Pennsylvania:											
Philadelphia	18	9	1	0	0	39	11	5	0	61	418
Pittsburgh	11	4	0	0	0	5	4	2	1	26	152
Reading	0	1	0	0	0	0	1	0	0	9	23
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	4	5	1	0	0	5	2	4	0	8	142
Cleveland	12	8	0	1	0	14	4	4	0	40	209
Columbus	3	0	0	1	0	2	2	0	1	9	80
Toledo	4	3	0	0	0	7	3	0	0	9	69
Indiana:											
Fort Wayne	1	0	0	0	0	2	2	1	0	2	31
Indianapolis	3	3	1	0	0	3	2	0	0	2	113
South Bend	1	1	0	0	0	1	0	0	0	6	11
Terre Haute	1	2	0	0	0	0	0	0	0	0	18
Illinois:											
Chicago	29	50	0	3	0	46	8	5	3	124	595
Springfield	1	0	0	0	0	1	1	0	0	0	15
Michigan:											
Detroit	26	28	0	0	0	27	4	2	1	51	290
Flint	5	2	0	10	0	0	1	0	0	9	26
Grand Rapids	4	2	0	0	0	1	0	0	0	6	25
Wisconsin:											
Kenosha	0	0	1	0	0	0	0	0	0	2	8
Madison	1	1	0	0	0	0	0	3	0	23	----
Milwaukee	9	7	0	0	0	6	0	3	0	58	99
Racine	2	1	0	1	0	0	1	1	0	8	7
Superior	1	0	0	0	0	1	0	0	0	1	14
WEST NORTH CENTRAL											
Minnesota:											
Duluth	4	0	0	0	0	2	0	0	0	5	21
Minneapolis	14	11	1	0	0	1	1	1	0	3	75
St. Paul	6	11	0	0	0	1	2	1	0	11	49

City reports for week ended September 7, 1929—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST NORTH CENTRAL—contd.											
Iowa:											
Davenport	1	1	0	2			0	0		0	
Des Moines	2		0	0			0	0		0	23
Sioux City	1	0	0	0			1	0		10	
Waterloo	0	0	0	1			0	0		4	
Missouri:											
Kansas City	3	4	0	0	0	3	2	1	1	3	85
St. Joseph	1	0	0	0	0	0	0	0	1	0	24
St. Louis	12	4	0	0	0	8	7	1	0	16	161
North Dakota:											
Fargo	1	0	0	0	0	1	1	0	0	0	4
Grand Forks	1	0	0	0			0	0		0	
South Dakota:											
Aberdeen	0	0	0	0			0	0		18	
Sioux Falls	1	1	0	0			0	1		0	6
Nebraska:											
Omaha	2	1	0	0	0	3	1	0	0	0	42
Kansas:											
Topeka	2		0				0				
Wichita	2	1	0	0	0	0	2	2	0	2	19
SOUTH ATLANTIC											
Delaware:											
Wilmington	0	0	0	0	0	0	0	0	0	1	28
Maryland:											
Baltimore	6	9	0	0	0	15	10	3	0	26	174
Cumberland	0	0	0	0	0	0	0	0	[1] 1	1	10
Frederick	0	1	0	0	0	0	0	0	0	0	2
District of Columbia:											
Washington	5	11	0	0	0	11	4	4	0	1	127
Virginia:											
Lynchburg	0	0	0	0	0	0	1	1	0	21	11
Norfolk	0	2	0	0	0	2	1	0	0	0	
Richmond	3	0	0	0	0	6	2	1	0	1	51
Roanoke	1	1	0	0	0	0	1	0	0	0	14
West Virginia:											
Charleston	1	3	0	0	0	0	2	1	0	4	6
Wheeling	1	0	0	0	0	1	1	0	0	3	16
North Carolina:											
Raleigh	1	1	0	0	0	0	0	0	0	3	10
Wilmington	0	0	0	0	0	0	0	3	1	2	9
Winston-Salem	1	1	0	0	0	1	2	0	1	20	24
South Carolina:											
Charleston	0	0	0	0	0	4	3	0	0	0	25
Columbia	1	1	0	0	0	0	1	0	0	1	22
Georgia:											
Atlanta	5	5	0	0	0	2	3	3	3	5	63
Brunswick	0		0				0				
Savannah	0	0	0	0	0	3	1	2	0	0	29
Florida:											
Miami	0	0	0	0	0	2	1	0	0	0	21
St. Petersburg	0		0		0	0	0		0		7
Tampa	0	1	0	0	0	1	0	0	0	0	28
EAST SOUTH CENTRAL											
Kentucky:											
Covington	1	0	0	0	0	0	0	1	0	0	25
Tennessee:											
Memphis	1	1	0	0	0	4	6	0	0	6	92
Nashville	2	0	0	0	0	4	6	6	1	6	49
Alabama:											
Birmingham	3	3	1	0	0	5	5	0	0	3	63
Mobile	1	0	0	0	0	1	0	0	0	0	21
Montgomery	0	2	0	0			0	1		0	

[1] Nonresident.

City reports for week ended September 7, 1929—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	0	1	0	0	----	----	0	0	----	0	----
Little Rock	1	1	0	0	0	1	2	1	0	1	----
Louisiana:											
New Orleans	1	1	0	0	0	15	4	1	1	1	130
Shreveport	1	0	0	0	0	0	1	0	0	0	26
Oklahoma:											
Oklahoma City	1	3	0	0	0	2	2	5	0	0	30
Tulsa	1	4	1	0	----	----	2	0	----	2	----
Texas:											
Dallas	2	2	0	0	0	3	1	1	0	3	47
Fort Worth	1	0	0	0	0	0	2	0	0	0	39
Galveston	0	0	0	0	0	3	1	0	0	0	16
Houston	1	4	0	0	0	6	1	1	0	0	56
San Antonio	1	0	0	0	0	7	0	0	1	0	49
MOUNTAIN											
Montana:											
Billings	0	0	0	0	0	0	0	0	0	0	4
Great Falls	0	0	1	0	0	0	0	0	0	2	10
Helena	0	0	0	0	0	0	0	0	0	0	4
Missoula	0	0	0	0	0	0	0	0	0	0	6
Idaho:											
Boise	0	0	0	0	0	0	0	0	0	0	6
Colorado:											
Denver	3	0	0	0	0	7	1	4	0	8	79
Pueblo	0	1	0	0	0	0	1	1	0	0	14
New Mexico:											
Albuquerque	0	0	0	0	0	8	1	1	1	1	13
Utah:											
Salt Lake City	1	1	0	1	0	1	2	0	0	3	22
Nevada:											
Reno	0	0	0	0	0	0	0	0	0	0	3
PACIFIC											
Washington:											
Seattle	3	9	0	0	----	----	2	1	----	21	----
Spokane	2	4	1	0	----	----	0	0	----	2	----
Tacoma	1	1	1	5	0	1	1	1	0	6	24
California:											
Los Angeles	8	9	2	0	0	21	4	2	1	24	294
Sacramento	1	2	0	0	0	3	1	0	0	4	27
San Francisco	6	7	1	1	0	11	1	2	0	9	129

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
NEW ENGLAND									
Massachusetts:									
Boston	1	0	0	0	0	0	4	1	0
Worcester	1	0	0	0	0	0	0	0	0
MIDDLE ATLANTIC									
New York:									
Buffalo	0	1	0	0	0	0	1	7	1
New York	11	8	8	2	0	0	17	5	3
Rochester	1	0	0	0	0	0	0	0	0
Syracuse	0	0	0	0	0	0	1	2	0
New Jersey:									
Newark	0	0	0	0	0	0	1	2	0
Pennsylvania:									
Philadelphia	2	3	0	0	0	0	1	4	0
Pittsburgh	1	0	0	0	0	0	1	0	0

City reports for week ended September 7, 1929—Continued

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
EAST NORTH CENTRAL									
Ohio:									
Cleveland	1	1	0	0	0	0	2	2	1
Toledo	1	0	0	0	0	0	1	0	0
Indiana:									
Indianapolis	0	1	0	0	0	0	0	1	0
Terre Haute	0	1	0	0	0	0	0	0	0
Illinois:									
Chicago	5	1	0	0	0	0	4	4	1
Michigan:									
Detroit	17	5	1	0	0	0	2	9	1
WEST NORTH CENTRAL									
Minnesota:									
Minneapolis	1	0	0	0	0	0	0	0	0
Iowa:									
Des Moines	0	0	0	0	0	0	1	1	0
Sioux City	1	0	0	0	0	0	1	0	0
Missouri:									
Kansas City	2	2	0	0	0	0	0	0	0
St. Louis	2	1	0	0	0	0	0	1	0
North Dakota:									
Fargo	6	1	0	0	0	0	0	0	0
SOUTH ATLANTIC									
Maryland:									
Baltimore	0	1	2	0	1	0	2	0	0
District of Columbia:									
Washington	0	0	0	0	0	0	0	1	0
Virginia:									
Lynchburg	0	0	0	0	0	1	0	3	0
Richmond	0	0	0	0	0	1	0	4	0
Roanoke	0	0	0	0	0	1	0	2	0
West Virginia:									
Wheeling	0	0	0	0	0	0	0	1	0
North Carolina:									
Winston-Salem	0	0	0	0	1	1	0	0	0
South Carolina:									
Charleston [1]	0	0	0	0	5	0	0	0	0
Georgia:									
Atlanta	0	0	0	0	0	3	0	0	0
Savannah [2]	0	0	0	0	1	1	0	0	0
Florida: [2]									
Miami	0	0	0	0	1	1	0	0	0
EAST SOUTH CENTRAL									
Tennessee:									
Memphis	0	2	0	0	0	2	0	0	0
Alabama:									
Birmingham	0	0	0	0	0	0	0	2	1
Montgomery	0	0	0	0	2	0	0	0	0
WEST SOUTH CENTRAL									
Louisiana:									
Shreveport	0	0	0	0	0	1	0	0	0
Texas:									
Fort Worth	0	0	0	0	0	1	0	0	0
MOUNTAIN									
Montana:									
Great Falls	0	1	0	0	0	0	0	0	0
Colorado:									
Denver	0	1	0	0	0	1	0	0	0
Utah:									
Salt Lake City	1	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Tacoma	1	0	0	0	0	0	1	0	0
California:									
Los Angeles	3	0	0	0	0	0	1	1	1
Sacramento	1	0	0	0	0	0	0	0	0
San Francisco	1	1	0	0	0	0	0	1	0

[1] Dengue; 2 cases at Charleston, S. C.
[2] Typhus fever, 3 cases; 2 cases at Savannah, Ga., and 1 case at Tampa, Fla.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended September 7, 1929, compared with those for a like period ended September 8, 1928. The population figures used in computing the rates are approximate estimates, authoritative figures for many of the cities not being available. The 98 cities reporting cases have an estimated aggregate population of more than 31,000,000. The 91 cities reporting deaths have nearly 30,000,000 estimated population. The number of cities included in each group and the estimated aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, August 4 to September 7, 1929—Annual rates per 100,000 population, compared with rates for the corresponding period of 1928 [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Aug. 10, 1929	Aug. 11, 1928	Aug. 17, 1929	Aug. 18, 1928	Aug. 24, 1929	Aug. 25, 1928	Aug. 31, 1929	Sept. 1, 1928	Sept. 7, 1929	Sept. 8, 1928
98 cities	[2] 63	61	62	55	61	65	62	[3] 57	[4] 64	51
New England	45	60	38	48	63	62	45	37	[5] 51	34
Middle Atlantic	70	60	59	55	58	66	54	59	45	49
East North Central	81	73	86	59	69	67	75	[3] 61	85	51
West North Central	31	59	23	57	25	65	25	51	[6] 39	70
South Atlantic	32	54	47	67	75	86	90	73	[7] 92	48
East South Central	[2] 30	14	81	49	54	49	115	35	75	42
West South Central	123	53	126	45	146	65	142	101	138	77
Mountain	35	35	44	27	26	44	17	44	70	53
Pacific	45	69	32	46	30	41	27	20	35	49

MEASLES CASE RATES

98 cities	[2] 29	59	24	37	20	29	14	[3] 22	[4] 13	20
New England	32	248	29	64	38	85	20	99	[5] 24	55
Middle Atlantic	15	51	15	40	13	21	8	16	7	18
East North Central	54	63	35	39	33	31	22	[3] 28	16	24
West North Central	33	18	13	22	8	16	8	4	[6] 2	2
South Atlantic	15	23	15	33	0	34	13	4	[7] 2	6
East South Central	[2] 7	35	0	28	14	14	7	14	14	0
West South Central	20	4	24	28	4	0	8	0	4	4
Mountain	61	44	52	44	52	9	44	18	26	35
Pacific	25	20	47	8	40	31	20	13	47	28

SCARLET FEVER CASE RATES

98 cities	[2] 45	37	39	30	41	34	41	[3] 32	[4] 52	37
New England	52	67	50	39	45	30	38	64	[5] 94	46
Middle Atlantic	23	21	17	21	15	18	16	14	25	18
East North Central	72	42	50	37	62	44	63	[3] 32	69	44
West North Central	44	68	40	61	56	49	44	55	[6] 63	39
South Atlantic	43	27	73	17	34	34	45	33	[7] 64	50
East South Central	[2] 15	49	14	14	68	63	34	91	41	70
West South Central	43	36	40	16	67	53	75	45	36	57
Mountain	44	18	78	27	44	62	61	35	17	27
Pacific	57	38	55	36	52	33	47	31	80	59

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1929 and 1928, respectively.
[2] Montgomery, Ala., not included.
[3] South Bend, Ind., not included.
[4] Pawtucket, and Providence, R. I., Topeka, Kans., and Brunswick, Ga., not included.
[5] Pawtucket and Providence, R. I., not included.
[6] Topeka, Kans., not included.
[7] Brunswick, Ga., not included.

Summary of weekly reports from cities, August 4 to September 7, 1929—Annual rates per 100,000 population, compared with rates for the corresponding period of 1928—Continued

SMALLPOX CASE RATES

	Week ended—									
	Aug. 10, 1929	Aug. 11, 1928	Aug. 17, 1929	Aug. 18, 1928	Aug. 24, 1929	Aug. 25, 1928	Aug. 31, 1929	Sept. 1, 1928	Sept. 7, 1929	Sept 8, 1928
98 cities	[3] 5	1	7	1	3	2	4	[3] 1	[4] 4	1
New England	0	0	0	0	0	0	0	0	[5] 0	0
Middle Atlantic	0	0	3	0	0	0	0	0	0	0
East North Central	12	1	16	1	4	5	10	[3] 1	10	1
West North Central	10	2	4	0	6	0	4	0	[6] 2	4
South Atlantic	0	2	0	0	0	0	0	0	[7] 0	0
East South Central	[2] 7	0	7	0	0	0	0	0	0	0
West South Central	0	0	0	0	8	0	4	0	0	0
Mountain	0	9	9	0	26	9	0	0	9	9
Pacific	17	8	12	3	17	0	15	5	15	8

TYPHOID FEVER CASE RATES

98 cities	[3] 17	27	20	27	30	31	27	[3] 29	[4] 18	24
New England	14	16	11	16	27	16	29	23	[5] 3	16
Middle Atlantic	11	15	19	17	34	23	27	18	20	25
East North Central	11	14	5	18	12	18	13	[3] 15	13	13
West North Central	15	25	6	41	13	25	23	39	[6] 12	20
South Atlantic	24	57	39	36	51	52	52	46	[7] 34	36
East South Central	[2] 44	245	122	98	102	231	102	175	54	105
West South Central	63	73	47	97	91	53	51	73	16	28
Mountain	9	9	61	35	70	62	17	44	44	80
Pacific	30	15	17	26	5	26	12	26	15	13

INFLUENZA DEATH RATES

91 cities	1	5	3	3	3	4	2	[3] 3	[4] 3	3
New England	0	0	0	2	2	2	0	0	[5] 0	0
Middle Atlantic	1	5	2	0	3	3	2	3	2	2
East North Central	1	1	2	4	4	3	2	[3] 3	6	2
West North Central	6	6	3	0	0	0	0	3	[6] 0	3
South Atlantic	0	8	0	0	2	10	2	4	[7] 4	8
East South Central	0	15	22	0	0	0	0	8	7	23
West South Central	8	29	12	29	8	17	4	4	0	8
Mountain	0	9	17	0	9	0	9	18	0	0
Pacific	0	0	3	10	0	3	0	3	3	7

PNEUMONIA DEATH RATES

91 cities	53	59	57	55	54	58	55	[3] 56	[4] 58	58
New England	38	48	52	37	25	44	50	30	[5] 46	48
Middle Atlantic	60	72	71	66	60	68	61	61	75	56
East North Central	43	33	35	42	47	41	51	[3] 50	44	60
West North Central	45	80	33	46	48	52	33	46	[6] 53	34
South Atlantic	43	54	62	59	73	61	56	75	[7] 64	71
East South Central	59	69	89	77	37	115	52	100	74	69
West South Central	126	108	81	58	69	87	101	67	32	58
Mountain	61	71	35	62	52	44	44	53	52	44
Pacific	43	57	75	61	52	51	30	40	33	78

[2] Montgomery, Ala., not included.
[3] South Bend, Ind., not included.
[4] Pawtucket and Providence, R. I., Topeka, Kans., and Brunswick, Ga., not included.
[5] Pawtucket and Providence, R. I., not included.
[6] Topeka, Kans., not included.
[7] Brunswick, Ga., not included.

Number of cities included in summary of weekly reports and aggregate population of cities of each group, approximated as of July 1, 1929 and 1928, respectively

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases		Aggregate population of cities reporting deaths	
			1929	1928	1929	1928
Total	98	91	31,568,400	31,052,700	29,995,100	29,498,600
New England	12	12	2,305,100	2,273,900	2,305,100	2,273,900
Middle Atlantic	10	10	10,809,700	10,702,200	10,809,700	10,702,200
East North Central	16	16	8,181,900	8,001,300	8,181,900	8,001,300
West North Central	12	9	2,712,100	2,673,300	1,736,900	1,708,100
South Atlantic	19	19	2,783,200	2,732,900	2,783,200	2,732,900
East South Central	6	5	767,900	745,500	704,200	682,400
West South Central	8	7	1,319,100	1,289,900	1,285,000	1,256,400
Mountain	9	9	598,800	590,200	598,800	590,200
Pacific	6	4	2,090,600	2,043,500	1,590,300	1,551,200

FOREIGN AND INSULAR

CANADA

Provinces—Communicable diseases—Week ended August 31, 1929.—The Department of Pensions and National Health reports cases of certain communicable diseases in eight Provinces of Canada for the week ended August 31, 1929, as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	Total
Cerebrospinal meningitis				1					1
Poliomyelitis	1			12	25	6	2	2	48
Smallpox					5		1		6
Typhoid fever		1	2	14	6	1	3	1	28

Ontario Province—Communicable diseases (comparative)—Five weeks ended August 31, 1929.—The following table shows the number of cases of certain communicable diseases for the five weeks ended August 31, 1929, as compared with the corresponding period of the year 1928:

Disease	1929		1928	
	Cases	Deaths	Cases	Deaths
Cerebrospinal meningitis	8	1	2	1
Chancroid	1			
Chicken pox	228		142	
Diphtheria	189	9	157	8
Dysentery	2	1	2	3
Erysipelas	1	1		
German measles	2			
Goiter			1	
Gonorrhea	223		152	
Influenza		2		5
Measles	203	1	265	1
Mumps	116		171	
Paratyphoid fever	1		4	
Pneumonia		102		24
Poliomyelitis	104	5	3	1
Scarlet fever	145		67	
Septic sore throat	4		2	1
Smallpox	17		5	
Syphilis	178	2	89	
Tetanus		1		
Tuberculosis	157	58	123	73
Typhoid fever	102	3	79	5
Whooping cough	486	2	430	1

Quebec Province—Communicable diseases—Week ended September 7, 1929.—The Bureau of Health of the Province of Quebec reports cases of certain communicable diseases for the week ended September 7, 1929, as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	3	Mumps	1
Chicken pox	5	Poliomyelitis	14
Diphtheria	45	Scarlet fever	54
German measles	1	Tuberculosis	51
Influenza	1	Typhoid fever	34
Measles	5	Whooping cough	48

Quebec Province—Vital statistics—May, 1929.—Births, deaths, and marriages for the month of May, 1929, in the Province of Quebec, Canada, with deaths from certain principal causes, are shown in the following table:

Estimated population	2,691,000	Deaths from—Continued	
Births	7,032	Influenza	109
Birth rate per 1,000 population	30.8	Lethargic encephalitis	1
Deaths	3,175	Measles	29
Death rate per 1,000 population	13.9	Pneumonia	305
Infant mortality rate	115.1	Poliomyelitis	1
Marriages	1,348	Scarlet fever	19
Deaths from—		Syphilis	5
Cancer	173	Tuberculosis (pulmonary)	228
Cerebrospinal meningitis	13	Tuberculosis (other forms)	64
Diabetes	27	Typhoid fever	19
Diarrhea	100	Violence	113
Diphtheria	33	Whooping cough	14
Heart disease	366		

CZECHOSLOVAKIA

Communicable diseases—June, 1929.—During the month of June, 1929, communicable diseases were reported in Czechoslovakia as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Anthrax	10	----	Paratyphoid fever	29	----
Cerebrospinal meningitis	23	10	Puerperal fever	32	13
Diphtheria	869	67	Scarlet fever	1,297	26
Dysentery	10	1	Trachoma	307	----
Malaria	115	----	Typhoid fever	342	29

DENMARK

Communicable diseases—June, 1929.—During the month of June, 1929, cases of communicable diseases were reported in Denmark, as follows:

Disease	Cases	Disease	Cases
Broncho-pneumonia	1,229	Paratyphoid fever	26
Cerebrospinal meningitis	6	Puerperal fever	16
Chicken pox	19	Scabies	564
Diphtheria and croup	277	Scarlet fever	125
Erysipelas	167	Syphilis	127
German measles	2	Tetanus	5
Influenza	2,358	Tuberculosis	237
Jaundice	75	Typhoid fever	5
Lethargic encephalitis	7	Undulant fever [1]	68
Measles	388	Whooping cough	717
Mumps	1,503		

[1] Reported from State serum laboratory. Population, 3,537,805.

GREAT BRITAIN

Scotland—Vital statistics—Quarter ended June 30, 1929.—The Registrar General of Scotland has published the following statistics for the second quarter of the year 1929:

Population, estimated	4,896,600	Deaths from—Continued.	
Births	24,382	Influenza	191
Birth rate per 1,000 population	20.0	Lethargic encephalitis	30
Marriages	8,122	Malaria	2
Deaths	15,894	Measles	11
Death rate per 1,000 population	13.0	Nephritis (acute)	58
Deaths under 1 year	1,842	Nephritis (chronic)	422
Infant mortality rate per 1,000 live births	76	Paratyphoid fever	4
Deaths from—		Pneumonia	809
Bronchitis	768	Poliomyelitis	3
Broncho-pneumonia	572	Puerperal septicemia	55
Cancer	1,745	Scarlet fever	25
Cerebrospinal meningitis	96	Syphilis	35
Diabetes	146	Tetanus	4
Diarrhea and enteritis under 2 years	143	Tuberculosis, pulmonary	850
Diphtheria	101	Tuberculosis, other forms	397
Dysentery	1	Typhoid fever	4
Erysipelas	55	Whooping cough	241
Heart disease	2,164		

ITALY

Communicable diseases—Four weeks ended June 9, 1929.—During the four weeks ended June 9, 1929, communicable diseases were reported in the Kingdom of Italy, as follows:

Disease	May 13–19		May 20–26		May 27–June 2		June 3–9	
	Cases	Communes affected	Cases	Communes affected	Cases	Communes affected	Cases	Communes affected
Anthrax	16	15	15	11	30	29	34	31
Cerebrospinal meningitis	22	16	5	5	26	25	22	18
Chicken pox	379	144	316	123	460	145	366	161
Diphtheria	378	186	280	161	368	192	356	201
Dysentery	9	5	8	6	10	4	14	5
Lethargic encephalitis	5	5	3	3	2	2	1	1
Measles	3,239	387	1,734	319	3,238	407	2,739	395
Poliomyelitis	10	6	9	9	16	11	10	8
Rabies			1	1	1	1		
Scarlet fever	393	114	292	114	362	133	386	129
Typhoid fever	280	140	199	115	348	180	325	168

JAMAICA

Communicable diseases—Four weeks ended August 17, 1929.—During the four weeks ended August 17, 1929, cases of certain communicable diseases were reported in Kingston, Jamaica, and in the island of Jamaica outside of Kingston, as follows:

Disease	Kingston	Other localities	Disease	Kingston	Other localities
Chicken pox	1	10	Puerperal fever		3
Dysentery	1	4	Tuberculosis (pulmonary)	45	47
Erysipelas		1	Typhoid fever	24	77
Leprosy		1			

TRINIDAD (BRITISH WEST INDIES)

Siparia—Poliomyelitis—July 12–August 17, 1929.—Eleven cases of poliomyelitis were reported in Siparia district, Trinidad, from July 12 to August 17, 1929.

UNION OF SOUTH AFRICA

Cape Province—Meningococcus meningitis—July–August, 1929.—A report dated August 12, 1929, states that a total of 14 cases of meningococcus meningitis with 8 deaths had been reported within a few weeks on scattered farms in the Van Rhynsdorp district, Cape Province, Union of South Africa. All of the patients were Europeans.

YUGOSLAVIA

Communicable diseases—July, 1929.—During the month of July, 1929, certain communicable diseases were reported in Yugoslavia as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Anthrax	116	12	Poliomyelitis	6	1
Cerebrospinal meningitis	10	10	Rabies	1	1
Diphtheria	223	32	Scarlet fever	1,124	185
Dysentery	86	7	Tetanus	49	24
Glanders	1	1	Typhoid fever	279	27
Measles	378	8	Typhus fever	3	1

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

From medical officers of the Public Health Service, American consuls, International Office of Public Hygiene, Pan American Sanitary Bureau, health section of the League of Nations, and other sources. The reports contained in the following table must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

CHOLERA

[C indicates cases; D, deaths; P, present]

Place		Feb. 10–Mar. 9, 1929	Mar. 10–Apr. 6, 1929	Apr. 7–May 4, 1929	May 5–June 1, 1929	June 2–29, 1929	Week ended— July, 1929 6	13	20	27	August, 1929 3	10	17	24	31	Sept. 7, 1929
Ceylon	C	4			3											
	D	4			3											
Colombo	C			1	3	1										
	D				3	1										
China:																
Amoy	C					4	1	2	4		1					
Canton	C		3	3	2	10	3	1		2	1	2	2			
	D			3	1	5	3	1		1	1		2			
Manchuria:																
Kwantung—Dairen	C											1				
Newchwang	C															P
Shanghai	C						1		1				797	500	483	360
	D								1	2	4	24		29		
Swatow	C					P										
	D					4	2	1	3	1	2	5	3			
India	C	7,627	9,046	18,521	30,616	29,449	7,315	6,946	8,271							
	D	4,425	4,997	11,069	20,311	19,910	4,783	4,431	5,166							
Bassein	D	6	45	118	38	2					3		3			
Bombay	C		6	3		2					1					
	D	1	2		2	2					1					
Calcutta	C	261	552	788	924	354	82	69	59	65	65					
	D	144	307	461	605	176	41	29	59	28	24	28		18		
Karachi	C											1	3	6		
Madras	C	9			1				1							
	D	4							1	1						
Moulmein	D	1	7	6	31	5			1							
Negapatam	C	3				1			1							
Rangoon	C	13	15	8	13	8			1		1					
	D	6	37	10	7	8			1		1					
Tuticorin	C	6				34	4	2								
	D	4				30		2								
Vizagapatam	D								1							

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

CHOLERA—Continued

[C indicates cases; D, deaths; P, present]

Place		Feb. 10-Mar. 9, 1929	Mar. 10-Apr. 6, 1929	Apr. 7-May 4, 1929	May 5-June 1, 1929	June 2-29, 1929	Week ended— July, 1929 6	13	20	27	August, 1929 3	10	17	24	31	Sept. 7, 1929
India (French):																
Chandernagor	C		3	3	3	3	1	1				1				
	D		3	1	3	3	1			1						
Karikal	C	88	20	3								1				
	D	71	15	3												
Pondicherry Province	C	86	46		3	3										
	D	74	38		3	3										
Indo-China (see also table below):																
Pnompenh	C	42	13	15	14	11	2	2	3				1	2		
	D	36	10	9	10	4	1	1	2	1			1	2		
Saigon and Cholon	C		12	13	71	188	0	6	1	2	2					
	D		2	8	37	139	8	4	1	1	2					
Japan:																
Kobe	C												P	2	4	
Osaka	C												1	4	18	
Shimonoseki	C													P	2	
Siam	C	165	397	619	619	469	214	49	54	54		29	13		12	
	D	117	269	404	436	285	112	38	26	26		17	10		11	
Anthoang	C	3								4				10		
	D	2								4				3		
Ayudhaya	C	4	1	29	2	25			6	11		2				
	D	4	1	19		11			3	8						
Bangkok	C	61	38	111	131	30	2	2	1	2		2		4	1	
	D	36	21	74	77	13		1						1	1	
Chaxoengsao	C	1			1											
	D	1			1											
Dhannapuri	C	3		17												
	D	1		7												
Lobpuri	C	3		1										2		
	D	1		1										2		
Nagara Pathom	C	2		36	13											
	D	2		20	10											
Singhapuri	C	1														
	D	1														

Smud Prakar	C	1															
Smud Songram	C								2	1							
	D								2	1							
Sridharmaraj Province [1]	C										2	13					
	D										2	11					
On vessel:																	
S. S. Angby, at Saigon-Cholon	C					1											
	D					1											
S. S. Cap. St. Jacques, at Singapore, from Saigon-Cholon	C						P										
S. S. Ekma, at Penang, from Singapore	C	P															
S. S. Elephanta, at Penang, from Calcutta	C		P														
S. S. Erinpura, at Madras	C				2												
S. S. Media, at Colombo, from Calcutta	C				1												
S. S. Saka Maru, at Calcutta	C				6												
S. S. Tilawa, at Penang, from Singapore	C		P														
S. S. Tokushima, at Hong Kong	C					2											
	D					2											
S. S. Texas Maru, at Nagasaki, from Shanghai	C												1				

Place		February, 1929	March, 1929	April, 1929	May, 1929	June, 1929			July, 1929			August, 1929	
						1-10	11-20	21-30	1-10	11-20	21-31	1-10	11-20
Indo-China (French) (see also table above):													
Annam	C		6	20	[2] 20				2	5	2		3
Cambodia	C	69	29	84	[2] 215				55	71	60		21
Cochin-China	C	223	183	88	[2] 123				146	123	46		45
Laos	C								1		12		
Tonkin	C				5								

[1] There were 98 cases of cholera with 16 deaths in Nagara Sridharmaraj Province, Siam, from May 16 to July 7, 1929.
[2] Reports incomplete.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

PLAGUE

[C indicates cases; D, deaths; P, present]

Place		Feb. 10–Mar. 9, 1929	Mar. 10–Apr. 6, 1929	Apr. 7–May 4, 1929	May 5–June 1, 1929	June 2–29, 1929	Week ended— July, 1929 6	13	20	27	August, 1929 3	10	17	24	31	September, 1929 7	14
Algeria:																	
Algiers	C															1	1
Philippeville	C									3	3						
Argentina:																	
Buenos Aires	C		2	1													
	D		2														
Rosario	C		31	5													
Azores: St. Michaels Island	C		1						1								
Belgian Congo:																	
Blukwa	C					3											
	D					3											
Buki	C						1	1									
	D						1	1									
Djugu	C	4			2	3				5			1				
	D	1			3	3				5			1				
Rekwa	C						2										
	D						2										
Brazil: Porto Alegre	C			1													
British East Africa (see also table below): Uganda	C	112	130	231	450	1,437	255	357	393	432							
	D	108	124	219	409	1,072	220	359	301	319							
Canary Islands: Tenerife	D							1									
Laguna	C				1												
Ceylon:																	
Colombo	C	4	4	5	7	2		P	P							P	
	D	3	1	4	6	3											
Plague-infected rats		2		1				1		5							
Galle	C							1	1	1					P		
	D							1	1	1							
Kandy	C													1	1		
	D													1	1		
Matara	C							7	4	1							
	D							3	3	5							

China:																	
Amoy	C										P						
Foochow	C									P		P					
Hainan	C	1														1	
Hong Kong	C													1		1	
	D													1			
Plague-infected rats												1		3		1	
Manchuria—Tungliao District	C									P	13	3					
Suyuan Province	C	1															
Dutch East Indies:																	
Java—																	
Batavia and West Java	C	70	64	63	58	47		12	15								
	D	69	65	63	56	47		11	16								
Plague-infected rats		4	5	8													
East Java and Madura	C		3														
	D		3														
Surabaya	C					3	2	5	4								
	D					3	2	5	4								
Ecuador (see table below).																	
Egypt:																	
Alexandria	C				1	1	2		3	2	1		1	3	3	2	4
	D					1	1		1	1					1	1	2
Assuan	C							1	1	2							1
	D							1	1	2							
Beheira	C									2							
	D									2							
Beni Suef	C	4	2	7		6	1	1	1	1	1						1
	D	1	2	2		2											
Daqahliya	C				9	1				1							2
	D				1								1				2
Gharbia	C						1	5	1	2			1				
	D							1					1				
Girga	C						2	1									
Kena	C						1	1									
	D						1	1									
Menufia Province	C									3							
Miniah	C								4	3			1				
Port Said	C			2	3	2	1	1	1		2	1	2	1	2		
	D			1	2	1	1			1	1		3		3		
Suez	C	1	2							1							
Greece (see also table below):																	
Patras	C														1		
Piræus	C														1	1	1
Hawaii: Hamakua—Kukuihaele—Plague-infected rats					6	1											
India	C	16,570	16,011	6,884	1,394	677	222	366	507								
	D	12,064	12,592	5,623	1,205	414	120	236	312								
Bassein	C			1				3		6	4	3		4			
	D	3	6	2	2	4	1				5	3		4			
Bombay	C	4	8	8	1						1						
	D	4	6	6	1	4					1						
Plague-infected rats		38	57	81	44	35	6	7	4	6	7			3			
Madras Presidency	C	333	132	38	64	85	43		54		29						
	D	189	80	14	40	38	26		26		18						

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place		Feb. 10–Mar. 9, 1929	Mar. 10–Apr. 6, 1929	Apr. 7–May 4, 1929	May 5–June 1, 1929	June 2–29, 1929	Week ended— July, 1929 6	13	20	27	August, 1929 3	10	17	24	31	September, 1929 7	14
India—Continued.																	
Rangoon	C	4	12	11	2		2			4	5	4					
	D	4	9	15	3	9	3	3	8	4	5	2		2			
Plague-infected rats		11	15	10	5	6	4	2	3					10			
Indo-China (see also table below):																	
Pnompenh	C	5	10	8	5	4	5		2		1	5	2		1		
	D	3	10	8	3	3	5			3	1	5	2		1		
Saigon and Cholon	C	1				1	5			1	2	1		1			
Tourane	C	5															
Iraq:																	
Baghdad	C	10	11	8	14	12		1				1	1				
	D	3	3	7	5	2											
Plague-infected rats		22	14	2	1												
Diyalah Liwa	C			7	12	1	1										
	D			7	7												
Naudham	C					1		1									
Japan: Osaka—Plague-infected rats					2												
Madagascar (see also table below):																	
Tamatave	C				P	2	2	2		1							
	D	2	1	1		2											
Plague-infected rats						4											
Morocco	C		106	31	42	16	3	21	15					4			
	D		73	16	4	5		11	6								
Nigeria: Lagos	C	11	4	8	5	2			1			1	2				
	D	11	4	8	4	1			1			1	2				
Plague-infected rats		50	18	6	8	4	2	2	5	4	3	8					
Peru (see table below).																	
Senegal (see table below).																	
Siam	C	9	9	10	9	1			4								
	D	9	8	8	5	1			3								
Bangkok	C	1			2				1			3				P	
	D	1			1				1			3					
Nagara Pathom	C	3	4	2	3												
	D	2	4	2	2												

Straits Settlements: Singapore	C	1		1													1
	D	1		1	1												1
Tunisia: Tunis	C							P	P	P						4	2
Turkey:																	
Adalia	C											1					
Constantinople	C					P			2								
Union of Socialist Soviet Republics:																	
Caucasia	C					1	3	1		3		2					
	D					1	3					1					
Ural—Kirghiz	C					4											
	D					4											
Union of South Africa:																	
Cape Province	C		1	2					3								
	D		1	1					2								
Orange Free State	C	2	3	4													
	D		2	1													
Transvaal	C		8														
	D		8														
Uruguay: Montevideo	C		4														
On vessel:																	
S. S. Chaban, at Port Said, from Jaffa	C													1			
	D													1			
S. S. Chenonceaux, at Singapore, from Colombo	C		1														
	D		1														
S. S. Tokio, at Shanghai, from Singapore	C									1							
	D									1							
S. S. Ganzan Maru, at Osaka, from Haipong	C				1												
S. S. Seigo Maru, at Osaka, from Bombay—Plague-infected rats					1												
S. S. Soudades, at Hamburg, from Rosario, Argentina—Plague-infected rats				2													
S. S. Sumatra, at Osaka, from Bombay	C			1	1												

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place		March, 1929	April, 1929	May, 1929	June, 1929	July, 1929	August, 1929
British East Africa (see also table above):							
Kenya	C	10	4	22	69	------	------
Uganda	C	121	282	------	1,215	1,203	------
	D	113	264	------	932	973	------
Ecuador: Guayaquil	C	26	19	2	------	------	------
	D	4	5	1	------	------	------
Plague-infected rats		14	13	3	1	------	------
Greece	C	------	1	------	------	3	------
	D	------	------	------	------	1	------
Indo-China (see also table above)	C	3	13	------	------	42	------
Madagascar (see also table above)	C	196	92	------	------	------	------
	D	194	88	------	------	------	------
Ambositra Province	C	90	8	------	------	------	------
	D	90	8	------	------	------	------
Antisirabe Province	C	13	------	------	------	------	------
	D	13	------	------	------	------	------
Itasy Province	C	8	2	------	------	------	------
	D	7	2	------	------	------	------
Moramanga Province	C	5	3	------	------	------	------
	D	5	3	------	------	------	------
Tananarive Province	C	120	78	------	11	------	------
	D	119	74	------	11	------	------
Peru	C	35	------	10	16	11	------
	D	13	------	5	8	3	------
Senegal:							
Baol [1]	C	6	1	21	43	22	5
	D	3	1	6	18	9	1
Dakar [1]	C	------	6	17	67	62	20
	D	------	4	11	45	45	20
Louga [1]	C	------	------	------	------	59	46
	D	------	------	------	------	39	31
Rufisque [1]	C	------	------	------	------	22	------
	D	------	------	------	------	7	------
Thies [1]	C	4	20	6	10	61	17
	D	3	20	3	6	34	10
Tivaouane [1]	C	------	------	22	93	161	86
	D	------	------	10	50	96	58

[1] Incomplete reports.

SMALLPOX

[C indicates cases; D, deaths; P, present]

Place		Feb. 10–Mar. 9, 1929	Mar. 10–Apr. 6, 1929	Apr. 7–May 4, 1929	May 5–June 1, 1929	June 2–29, 1929	Week ended— July, 1929 6	13	20	27	August, 1929 3	10	17	24	31	Sept. 7, 1929
Algeria:																
Algiers	C		3	5	5	6	1	2	2	2		1				
Cherchell	C	21	42	1		1										
Oran	C	1	1	2	5	1				1						
Angola (see table below).																
Arabia: Aden	C		30	69	40	110	18	21	42	22	11	17	6	4		
	D		8	20	20	20	18	4	17	17	20	10	4	3		
Australia: Fremantle Quarantine Station	C									1						
Bermuda: Hamilton	C					1										
Brazil:																
Porto Alegre	C				1											
Rio de Janeiro	C				3											
British East Africa (see also table below):																
Tanganyika	C	3		3	4	7	2	2	2	4						
British South Africa:																
Northern Rhodesia	C								73							
	D								4							
Southern Rhodesia	C	17	69	13	12				5							
Canada:																
Alberta	C	5	7	8		12					1	2	1			
Calgary	C	1		2							1	1				
Edmonton	C	2	12	5		4							1			
British Columbia—Vancouver	C	70	64	46	23	13	4	8	2		5		2			
Manitoba	C	15	3	12	6	6			1							
Winnipeg and vicinity	C					2										
New Brunswick	C		3													
Nova Scotia	C			1							2					
Ontario	C	83	57	113	40	84	25	5	13	14		2	5			
Niagara Falls	C		1		3											
North Bay	C	4		3	8	2	2	2	2	1						
Ottawa	C	1				1				1		1				
Toronto	C		2	1		5	5		1	1					1	1
Windsor	C			3	3	2	1	1								

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place		Feb. 10-Mar. 9, 1929	Mar. 10-Apr. 6, 1929	Apr. 7-May 4, 1929	May 5-June 1, 1929	June 2-29, 1929	Week ended— July, 1929 6	13	20	27	August, 1929 3	10	17	24	31	Sept. 7, 1929
Canada—Continued.																
Prince Edward Island	C	2									1	1				
Quebec	C	26	14	34	12	10	2				1	1	1			
Montreal	C	16	4	4	1	1										
Quebec	C		3	1	1	2					1					
Riviere du Loup	C			1												
Saskatchewan	C	70	13	13	14								1			
Moose Jaw	C		1													
Saskatoon	C		1													
China:																
Amoy	C	5	3	4	2											
Canton	C	86	135	85	46	16	5	3	3	1	2					
	D	15	15	12	4	1	1	1								
Chefoo	C			P	P											
Foochow	C	P	P	P				1		P		P				
Hong Kong	C	189	92	53	29	10					1		3	1		
	D	246	137	97	25	6	3	2				1	2	1		
Manchuria—																
Changshun	C	2		1												
Harbin	C		1	4												
Kwangtung—																
Dairen	C	9	1	11	21	11	4	6	4							
	D	3		4	8	3	4	2	3							
Port Arthur	C				3											
Mukden	C		1													
Nanking	C								P	P	P	P	P			
Shanghai—																
Foreigners only	C	11	4	1	6	7	1	1	1							
Including natives	D	41	25	16	16	5			1							
Swatow	D	9	33	93	62	24	2	6	5	2	2					
Tientsin	C	2	8	6	12											
Tsingtao	C	P	P	P	P	P										
Yunnanfu	C		P	P												
Chosen (see table below).																

Colombia:																
Barranquilla	D								2							
Cartagena	D	7														
Curacao (alastrim)	C			1												
Dutch East Indies:																
Balikpapan	C	1	5	3	4	1										
Belawan Deli	C	9	7	4		1		1		1				1		
	D	6	2							1						
Borneo	C	26														
Samarinda	C	47	2	1		3	9	2	2		7					
	D		3			1										
Celebes—Makassar	C		6	39	43	20	6	4	5	6	2	1		1		
	D		2	25	33	15	3	3	3	2	1	1		1		
Java—Batavia and West Java	C				1	6		6	1			2				
	D					1			2			2				
Sumatra—																
Baros	C	36	16													
	D	5	2													
Medan	C	9	7	2	1	1		1	1							
	D	6	3		1				1							
Palembang	C	9														
	D	2														
Ecuador (see table below).																
Egypt:																
Gharbieh	C	1														
Port Said	C			1		1										
Suez	C			5											3	
France (see table below).																
Great Britain:																
England and Wales	C	1,083	1,156	1,423	1,179	789	153	115	144	129	129	114	120	139		
Ashton under Lyne	C									7		2	1			
Birmingham	C			1	1											
Bradford	C	2	3	1	4	4			2	1					1	
Bristol	C							1								
Cardiff	C		1	1	4									1		
Castleford	C	85	56	31	12	3		1								
Leeds	C	6	8	3		1				1				1		
Liverpool	C		1													
London	C	54	58	201	193	167	43	16	30	18	31	19		28	37	
London and Great Towns	C	425	598	888	656	496	103	64	109	87	73	60	74	90	79	
	D		3	6	3	1	1	2		1						
Newcastle-on-Tyne	C	6	10	3	37	20	9	4		2	1	2		1	2	
Nottingham	C		2													
Stoke-on-Trent	C	18	72	133	86	62	5	7	11	9	1	10	1	6	2	
West Ham	C									26	22	17	20			
Scotland—																
Aberdeen	C			2												
Glasgow	C		1	19	1											
Greece (see table below).																
Hedjaz	C	108	84	77	40	83	27	8	7	11	4	2		5	17	
	D	40	52	52	24	53	21	2	4	8	3	2		14	3	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place		Feb. 10–Mar. 9, 1929	Mar. 10–Apr. 6, 1929	Apr. 7–May 4, 1929	May 5–June 1, 1929	June 2–29, 1929	Week ended— July, 1929 6	13	20	27	August, 1929 3	10	17	24	31	Sept. 7, 1929
Honduras: Puerto Castilla	C				1											
India	C	14,890	19,120	22,556	17,011	11,549	2,249	1,966	1,669							
	D	3,285	3,983	5,060	4,185	3,006	533	534	479							
Bombay	C	397	441	315	208	147	28	21	22	21	18	18	16	11		
	D	188	206	175	131	99	13	15	12	15	7	9	12	3		
Calcutta	C	104	127	101	39	27	6	3	2	5	13	2	9	7		
	D	29	77	74	36	24	4	3	1	3	11	2	3	6		
Karachi	C	147	206	144	84	35	6	3	12	4	6	1	2	6		
	D	14	70	59	59	25	6	1	6		1	1	1	4		
Madras	C	260	392	327	174	88	25	39	24	34	28	16	33	12		
	D	61	83	84	61	20	6	12	10	4	8	6	2	6		
Moulmein	C	14	18	7	8	6	1	4		5	2	8	1			
	D	4	4	6	6	5	1	3		1	1	3	1			
Negapatam	C	5	9	7	2	6	1	1	2							
	D	4	1													
Rangoon	C	17	13	7	1		1	2			1					
	D	6	6	3	1		1									
Tuticorin	C	1		1		1										
Vizagapatam	C	52	26	28	2	4	2			1						
	D	9	5	8		2				2						
India (French):																
Karikal	C		2	2	3	5			1		2	10				
	D		2	2	3	5			1		2					
Pondicherry Province	C	79	70	60	32	18	5	4	8	4	6	3	2	1		
	D	61	60	51	30	15	5	4	3	4	1	3	2	1		
India (Portuguese)	C				3	9		1	1	2						
Indo-China (see also table below):																
Pnompenh	C	62	68	40	22	8	5	1	3			2	1		1	
	D	36	33	24	12	2	1	1	1		1	1	1		1	
Saigon and Cholon	C	2	2	2	1					1						
	D				1	1										

Iraq:																
Baghdad	C	7	6	6	3	1			1							
	D	5	1													
Basra	C	7	9	8	8	9			1							
	D	5	2	6	8	1										
Diyalah Liwa	C				48		8							13		
	D				13		2							12		
Kirkuk Liwa	C	18														
	D	4														
Mossoul	C	28				20	12				21			60	35	
	D	4									1			12	12	
Italy: Turin	C	1														
Ivory Coast (see table below).																
Jamaica (outside Kingston) (alastrim)	C			1	1			7								
Japan:																
Kobe	C	1														
Niigata	C				12	2										
Osaka	C	1			1											
Shimane Province	C		16	3												
Tokyo	C				2	1										
Macao	D	75	32	20	5	2										
Mexico:																
Acapulco	C			1	1	2		3			1	2				
	D			1	1	2		3			1	2				
Aguascalientes	D	3	5	9	6	17	3	5	2	1	2	3	1	1	3	
Chiapas Province	C		P													
Coahuila	D					1										
Jalisco (State): Guadalajara	D	8	13	12	15	11	5		1		1	2		2	5	
Juarez	D	1	3											3	P	
Mexico City and surrounding territory	C	2	1		1	9	3	2	3	5	5	5	7	4		
Oaxaca—Zacatepec	C			P		10	1			2		3	3			
Palomas	C	1														
Tampico	C	1	2													
Vera Cruz	D		2													
Morocco (see table below).																
Netherlands: Rotterdam	C									40	30	53	58		33	
Nicaragua: Managua	C			P												
Nigeria: Lagos	C		1	1	2					1						
Norway: Stavanger	C			2												
Palestine	C				1											
Panama [1]	C						7		7			1		4	4	14
Panama Canal Zone	C		P		1	1										
Persia (see table below).																
Poland	C			6	2	66							1			
	D					2										
Portugal:																
Lisbon	C		3	4	1	6	3			1		1				
Oporto	C		1	2		2		2								
Senegal (see table below).																
Siam	C	4		55	32	27	23	43	3	2	1					
	D			8	9	7	2	11	1							

[1] 106 cases of smallpox were reported from June 16 to Sept. 14, 1929, in Panama City, Panama.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place		Feb. 10–Mar. 9, 1929	Mar. 10–Apr. 6, 1929	Apr. 7–May 4, 1929	May 5–June 1, 1929	June 2–29, 1929	Week ended— July, 1929 6	13	20	27	August, 1929 3	10	17	24	31	Sept. 7, 1929
Somaliland, British: Boales	C					11		1	3							
	D					4										
Somaliland, French: Jibuti	C				3	16	8	7	25	83	8	10	6	7	5	1
	D				1	8	2	1	2	16	11	1	6	3	5	3
Spain: Valencia	C	2	5			1										
Straits Settlements: Singapore	C	3	1													
Sudan (Anglo-Egyptian)	C	188	245	377	1,570	1,172	323	25	724	49	55	11	12	9	10	580
	D	54	29	26	132	195	28	9	115	12	51	1	5	16	16	79
Sudan (French) (see table below).																
Syria (see table below).																
Tunisia: Tunis	C	5		2		2	1									
Turkey (see table below).																
Union of Socialist Soviet Republics: Vladivostok	C				2											
Union of South Africa:																
Cape Province	C			P	P	P										
Transvaal	C		P	P	P	P										
Upper Volta	C	4	4	15	2	10										
On vessel:																
S. S. Aorangi, at Sydney	C					1										
S. S. Assyria, at Suez, from Bombay	C				1											
S. S. City of Hereford, at Brisbane, from Calcutta	C								1							
S. S. City of Venice, at Suez, from Calcutta	C				1											
S. S. Fern, at Port Said, from Abadan	C				P											
S. S. British Birch, at Suez, from Abadan	C					1										
S. S. Keneh, at Suakim, from Jeddah	C					4										
S. S. La Panto, at Suez, Egypt	C				4											
S. S. Lopez-Lopez, at Suez	C			1												
S. S. Malwa, at Suez	C			1												
S. S. Mancar, at Suez, from Calcutta	C			1												
Tantalus (motor ship), at Amsterdam	C		3													
S. S. Tuscania, at Glasgow, from Bombay	C			P												

Place		February, 1929	March, 1929	April, 1929	May, 1929			June, 1929			July, 1929			August, 1929		
					1-10	11-20	21-31	1-10	11-20	21-30	1-10	11-20	21-31	1-10	11-20	21-31
Indo-China (see also table above)	C	364	561	755	343	67					87	72			123	
Ivory Coast	C		4										22			
Senegal	C	80	70	57		1										
	D	8	11	15												
Sudan (French)	C		26	83	2					57	2	13				
	D		3							15						
Syria: Beirut	C	48	12	18	4		8	18	12	6	26	1		16	6	7

Place		February, 1929	March, 1929	April, 1929	May, 1929	June, 1929	July, 1929
British East Africa (see also table above):							
Kenya	C		23	91	38	45	
Chosen: Chinampo	C	1					
Ecuador: Guayaquil	C	4	2	2	1		
	D	1					
France	C	3	5	5	11	15	

Place		February, 1929	March, 1929	April, 1929	May, 1929	June, 1929	July, 1929
Greece	C	5	2	4	5	2	
	D	1					
Morocco	C	11	8	12	39	2	9
Persia	D	23	8				
Turkey	C	7		1		11	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

TYPHUS FEVER

[C indicates cases; D, deaths; P, present]

Place		Feb. 10–Mar. 9, 1929	Mar. 10–Apr. 6, 1929	Apr. 7–May 4, 1929	May 5–June 1, 1929	June 2–29, 1929	Week ended— July, 1929 6	13	20	27	August, 1929 3	10	17	24	31	September, 1929 7	14
Algeria:																	
Algiers	C		6	11	1	1		1	6	2		3	1				
Constantine Department	C	13	3			11						2					
Oran	C	2		8	14	5	3		6			2					
British South Africa: Northern Rhodesia	C				3												
	D				3												
Bulgaria	C	39	40	28	21	4	1	2	2	7					7		
	D	2	5	2	1	1		1	1								
Sofia	C								1								
Chile:																	
Concepcion	C		2		1												
Valparaiso	C						1				1						
China: Manchuria	C		1														
Chosen (see table below).																	
Czechoslovakia (see table below).																	
Egypt:																	
Alexandria	C		1	1													
	D		1		1												
Assouan Province	C	2															
	D	2															
Beheira Province	C	13	67	50	159	13	5			3	25		6				
	D		9	9	24	6	2			2							
Cairo	C				2		1		1					4	1		
Daqahliya Province	C		34														
Gharbieh	C	2															
	D	1															
Menoufieh Province	C			35													
Port Said	C				2	2	3	1			1						
Suez	C													1			
Greece (see table below).																	
Hungary	C				1												
Indo-China (see table below).																	
Ireland (Irish Free State):																	
Cavan County—Carrickmacross	C				1												
Cork County	C	1															

Place																	
Donegal County—																	
Inishower	C			1													
Stranorlar	C					1											
Kerry County—																	
Dingle	C		2	2													
Killarney	C	1		2													
Tyrone County, Strabane.[1]																	
Latvia (see table below).																	
Lithuania (see table below).																	
Mexico:																	
Aguascalientes	D		5				1						1				
Mexico City, including municipalities in Federal District	C	7	4	4	8	14	4	2		5		7	2	2			
	D	2		1	2	1								1			
Morocco	C	17	19	28	5	12		27			3		3				
	D			4				11									
Norway: Oslo	C			12	2												
Palestine	C		2		2	2	1	1	1	1				1	1	3	1
Persia	C					5	18										
	D					4	6										
Poland	C	202	295	314	264	177	25	24	25	16	16	12	12				
	D	16	20	25	19	7	1	1	2		3	1	3				
Portugal:																	
Lisbon	C					1											
Oporto	C					1							1				
Rumania	C	211	220	135	179	91	7	19	2	5		5					
	D	26	30	16	31	13	1	1				1					
Tunisia	C	3	20	19	22	23	1	2				4					
Turkey (see table below).																	
Union of South Africa:																	
Cape Province	C	P	P	P	P	P	P	P	P	P	1						
Natal	C	2	P	P	P	P											
Orange Free State	C	P		P	P	P	P			P							
Transvaal	C		P	P	P	P				P							
Yugoslavia (see table below).																	

Place		February, 1929	March, 1929	April, 1929	May, 1929	June, 1929	July, 1929
Canada: Ontario	C					1	
Chosen: Seoul	C		3	2	1	2	
Czechoslovakia	C	7	41	25	18		
	D	1	1		1		
Greece: Athens	C	4	4	2		3	
Indo-China: Tonkin	C			2			
Latvia	C		1	10	7	5	

Place		Feb. ruary, 1929	March, 1929	April, 1929	May, 1929	June, 1929	July, 1929
Lithuania	C	24	62	101	63	27	10
	D	3	1	7	5	4	1
Turkey	C	3	11	3	7	10	
	D	1			1	3	
Yugoslavia	C	13	7		19		3
	D	2			1		1

[1] During the period from Apr. 14 to May 21, 1929, 18 cases of typhus fever with 4 deaths were reported in Strabane, Tyrone County, Ireland.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

YELLOW FEVER

[C indicates cases; D, deaths; P, present]

Place		Feb. 10–Mar. 9, 1929	Mar. 10–Apr. 6, 1929	Apr. 7–May 4, 1929	May 5–June 1, 1929	June 2–29, 1929	Week ended— July, 1929 6	13	20	27	August, 1929 3	10	17	24	31	September, 1929 7	14
Belgian Congo: Tumba	C			1													
Brazil:																	
Bahia	C		1				1										
	D		1				1										
Guaratinguета	C	[1] 1															
	D	[1] 1															
Nictheroy	C															1	
Para	C		5														
Pernambuco	C		4														
Porto Alegre	C				[1] 1												
Rio de Janeiro	C	92	252	180	70	7	0	1	0	0	0	0	0				1
	D	67	132	94	38	5		1									
Colombia:																	
Simacota	C									4							
Socorro [2]	C						6			6							
Liberia: Monrovia	C	7	10	2		4	4										
	D	4	4			3	1										
On vessel:																	
S. S. Skogland, at Porto Alegre, from Rio de Janeiro	C				1												

[1] Imported.
[2] From June 19 to July 8, 1929, 41 cases of yellow fever with 23 deaths were reported in Socorro, Colombia.