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CURRENT PREVALENCE OF COMMUNICABLE DISEASES IN THE UNITED STATES ¹

May 24-June 20, 1931

The prevalence of certain important communicable diseases, as indicated by weekly telegraphic reports from State health departments to the Public Health Service, is summarized in this report. The underlying statistical data are published weekly in the Public Health Reports under the section entitled "Prevalence of Disease."

Measles.—The rather high incidence of measles since the beginning of the current year reached its peak the latter part of April and has declined rapidly in all sections of the country. The number of cases (63,199) reported for the 4-week period ended June 20 was only about 5 per cent in excess of the number reported for the corresponding period last year. In 1929 the number of cases totaled 51,490—approximately 20 per cent less than for the current period.

The greatest number of cases of measles has been continuously reported from the States along the Atlantic coast and in the Great Lakes region. In the South Atlantic group almost four times as many cases were reported during the current period as were recorded last year at that time.

While many cases have been reported from the other sections of the country, in none of them has the number exceeded that of last year. In the West North Central group an average of 45 per cent decrease from last year's figure has been maintained during the five preceding 4-week periods of the year, and in the Mountain and Pacific group an average of 58 per cent decrease.

Poliomyelitis.—Reports from the various geographic regions indicate an increase in the occurrence of poliomyelitis over the preceding 4-week period. Each geographic group contributed to the increase, but the largest number of cases was reported from the North Atlantic and Mountain and Pacific groups. Each of these groups reported 30 of the total of 124 cases. In the former group Massachusetts reported 8 cases and New York 16; in the latter region, California reported 23.

¹ From the Office of Statistical Investigations, U. S. Public Health Service. The number of States included for the various diseases are as follows: Typhoid fever, 47; poliomyelitis, 48; meningococcus meningitis, 48; smallpox, 48; measles, 45; diphtheria, 47; scarlet fever, 47; influenza, 39 States and New York City. The District of Columbia is counted as a State in these reports.

Comparing the incidence of poliomyelitis with previous experience, the number of cases was about 35 per cent less than that for the same period of last year, but was 30 per cent higher than was reported in 1929—a more nearly normal year. This period in 1930 marked the beginning of the epidemic wave of 1930–31.

While in the North Atlantic and West North Central groups the number of cases was two and five-tenths times that for last year, in the other regions, although considerable increases over the preceding 4-week period were noted, the number of cases fell considerably below last year's figures.

Typhoid fever.—Increases in typhoid fever incidence were noted in all regions of the country during the 4-week period ended June 20. Of the 1,053 cases reported, the South Atlantic group reported 283 and the South Central groups 347—about two-thirds of the total number. These numbers represent approximately 50 per cent and 40 per cent increases, respectively, over the preceding 4-week period. The other groups showed minor increases.

Typhoid fever is still maintaining its favorable low level as compared with previous years, the total number of cases being only about 88 per cent of the number reported last year and 78 per cent of the number reported in 1929.

Meningococcus meningitis.—The incidence of meningococcus meningitis continued to decline in all sections of the country during the current period. The number of cases reported (338) amounted to only 68 per cent of the number reported in 1930 for the same period and to only 37 per cent of the number in 1929.

A decrease of 68 per cent from the preceding 4-week period was noted in the number of cases occurring in the South Atlantic States during the current period, but the number of cases (41) was still 32 per cent in excess of last year's figure. This is the only region of the country not participating in the favorable comparison of the incidence of this disease with last year.

Scarlet fever.—A decrease in scarlet fever of approximately 6,000 cases occurred during the 4-week period ended June 20 as compared with the preceding 4-week period. Comparison, however, with last year's data indicates that the disease is still considerably more prevalent than in that year. For all reporting regions the number of cases totaled 15,299, as compared with 11,424 cases reported for this period last year.

The North Atlantic and East North Central groups appear to be mostly responsible for the excess in this disease which has prevailed since the first of the year. During the current period the excess over last year in the first named group was 53 per cent and in the second about 43 per cent. Other regions compared more favorably.

Diphtheria.—The steady decline in diphtheria which has prevailed throughout the year continued through the current period. The number of cases reported (3,079) represented a decrease of approximately 17 per cent from last year's figure and of 40 per cent from the number reported in 1929 for the corresponding period.

Smallpox.—For smallpox the comparison with previous years was very favorable. The number of cases reported was 3,001, as compared with 4,042 last year and 3,775 in 1929 for the corresponding period. All regions participated in the decline except the North Atlantic and South Central groups. In the North Atlantic group the number of cases was two and four-tenths times the number reported last year and in the South Central groups was one and four-tenths times last year's figure. In the other groups decreases ranged from 22 per cent in the South Atlantic group to 62 per cent in the East North Central group.

Influenza.—The incidence of influenza declined approximately 55 per cent during the 4-week period ended June 20. The number of cases, however (1,887), was still 24 per cent in excess of the number occurring at this time last year, and slightly exceeded that for 1929. As compared with last year, the South Atlantic and Mountain and Pacific groups showed 40 per cent and 44 per cent increases, respectively, while the incidence for the other geographic divisions was approximately the same for the two years.

Mortality, all causes.—The mortality from all causes in a group of large cities, as summarized by the Bureau of the Census, showed an average rate of 11.0 per thousand population (annual basis) during the 4-week period ended June 20, which was not only the lowest rate for the current year but was below any rate for the corresponding period in the preceding five years.

SOME ESSENTIAL CONSIDERATIONS IN CONNECTION WITH THE RURAL HEALTH PROGRAM ¹

By W. F. DRAPER, *Assistant Surgeon General, United States Public Health Service*

On February 6, 1931, an appropriation of \$2,000,000 became available to the Public Health Service for cooperation with the States in the drought-stricken areas in studies of and demonstration work in rural sanitation. The appropriation is for use from the date of passage of the act until June 30, 1932. The provisions of the act are similar to those of the regular rural sanitation act with the following exceptions:

1. The funds are limited to the drought-stricken areas.

¹ Presented at the Twenty-ninth Annual Conference of State and Territorial Health Officers with the United States Public Health Service, April 27, 1931.

2. It is not required that at least 50 per cent of the total cost of any cooperative project shall be defrayed from State and local sources.

3. The appropriation is also available for the purchase and distribution of medical supplies.

4. It is strictly an emergency appropriation to meet emergency conditions resulting from the unprecedented drought and terminates upon a specific date.

5. It is to be expended in accordance with regulations prescribed by the Public Health Service.

6. A report of the extent and circumstances of the several cooperative projects is to be made to Congress at the beginning of each regular session.

Telegraphic dispatches were immediately issued by the Surgeon General to all of the State health officers concerned, calling for a conference in Memphis on February 10, 1931, to consider plans for carrying out the provisions of the act. Twenty-two States were considered as being included in the drought-stricken areas, of which 20 were represented at the conference. The conference approved plans submitted by the Public Health Service for cooperation with State and local health authorities under the provisions of the act (see Appendix).

In addition the following resolutions were passed by the conference:

1. *Resolved*, That the public health officials of the States of the drought-stricken areas of the United States in assembly in the city of Memphis ask the Surgeon General of the Public Health Service, immediately upon his return to Washington, to confer with and urge the American Red Cross to continue to furnish necessary medicines, also surgical supplies, to the indigent sick in the areas as an emergency measure. It is the sense of the body that this great international relief organization, designated as an official agency by the Congress, has always met the actual needs everywhere and has never failed to afford the basic elements of disaster relief, whether cyclone, flood, fire or famine. The first essentials are considered to be necessary food, medicines, and clothes for the needy. Nothing less can be expected of the American Red Cross by the American people.

2. That it is the sense of this body that the distribution of medical supplies referred to in the bill is construed as meaning biological supplies used in the prevention and control of disease as a public health measure.

The first cooperative budgets under this appropriation became effective March 1, 1931, and extend to June 30, 1931, at which time new budgets will be put in operation for the year July 1, 1931, to June 30, 1932.

The States in which cooperative projects are being conducted for the period ending June 30, 1931, together with the allocations to each State under approved budgets, with other essential data, are as follows:

Authorizations in drought-stricken area

| State | Allocation | Number of counties | Number of health districts | Number of towns | Mobile units | Central administrations | Biologics |
|--------------------|-------------|--------------------|----------------------------|-----------------|--------------|-------------------------|------------|
| Alabama..... | \$21,618.33 | 31 | ----- | ----- | ----- | 1 | \$1,500.00 |
| Arkansas..... | 73,830.18 | 69 | ----- | ----- | ----- | 2 | 7,685.00 |
| Georgia..... | 16,887.00 | 3 | ----- | ----- | 3 | 2 | 1,687.00 |
| Illinois..... | 19,060.00 | ----- | ----- | ----- | 2 | 1 | 0 |
| Indiana..... | 2,876.50 | 5 | ----- | 1 | ----- | ----- | 626.50 |
| Kentucky..... | 45,163.91 | 34 | ----- | ----- | ----- | 1 | 2,200.00 |
| Louisiana..... | 36,851.08 | ¹ 20 | ----- | ----- | ----- | 2 | 7,174.00 |
| Mississippi..... | 22,338.30 | 15 | ----- | ----- | ----- | 2 | 3,333.33 |
| Missouri..... | 39,600.00 | ----- | 5 | ----- | ----- | ----- | 1,000.00 |
| Montana..... | 3,325.00 | 4 | ----- | ----- | ----- | 1 | 1,000.00 |
| Oklahoma..... | 27,297.00 | 7 | ----- | ----- | ----- | 2 | 8,491.00 |
| Pennsylvania..... | 31,580.04 | ----- | ----- | ----- | 1 | 2 | 0 |
| Tennessee..... | 62,455.07 | 22 | 5 | ----- | 1 | ----- | 1,000.00 |
| Texas..... | 24,514.75 | 3 | 15 | ----- | 1 | 2 | 2,319.75 |
| Virginia..... | 19,935.59 | 20 | 2 | ----- | 1 | 2 | 4,985.00 |
| West Virginia..... | 31,575.00 | 33 | 4 | ----- | ----- | 1 | 0 |
| Total..... | 478,897.75 | 266 | 31 | 1 | 9 | 21 | 43,001.58 |

¹ Parishes.

It was the opinion of the conference that the character and extent of future cooperative county health work, as far as the Federal Government is concerned, would be determined largely by the manner in which this appropriation was administered, the uses to which it was put, and the results accomplished. It is with deep gratitude and satisfaction that I am able to report to this conference to-day that, without exception, every State which has requested cooperation under the provisions of this act has made an earnest and successful endeavor to comply with the principles which were adopted at the Memphis meeting, and in spirit and in practice to organize the work upon a rational, conservative basis, which may be relied upon to fulfill the hopes and ambitions of those concerned with the making and administration of the appropriation and to merit their confidence in future undertakings.

On our part we have devoted our best efforts to serving the States promptly and effectively and to meeting their needs as completely as possible under the limitations of the regulations which apply to all agencies of the Federal Government. If we have seemed at times to be unduly insistent upon exactness of detail regarding nominations, dates of appointment, vouchers, pay rolls, and the like, it is only because it is required of us and is essential for the accomplishment of our common purpose. If we have questioned or failed to approve certain supplies which have been requested, it is because we were lacking sufficient evidence to enable us to prove their justification and because it seemed advisable for the sake of all concerned not to force the issue. We are confident that any of you in our position would probably have done the same.

During the fiscal year beginning July 1, 1931, we shall have available for cooperative work in the drought-stricken area approximately

\$1,500,000, or such part thereof as may be necessary. For the counties not included in this area, there will be available the regular rural sanitation appropriation of \$338,000. Estimates and budgets for proposed projects under each of these appropriations will be requested early in May for the coming fiscal year, and those approved will become effective July 1, 1931. The possible total, therefore, which the Public Health Service may have invested in cooperative county health work during the year July 1, 1931, to June 30, 1932, is approximately \$1,838,000.

While this is gratifying and stimulating in some respects, there are nevertheless future problems which should begin to receive serious consideration right now. As already stated, the appropriation for the drought-stricken area is an emergency measure and will cease on June 30, 1932. It is essential, therefore, that the cooperative projects should be planned in such a manner that work other than that made necessary by the drought may continue without embarrassment, and that personnel may not experience undue hardship when the emergency appropriation ceases.

The emergency funds will suffice to meet the needs during the coming fiscal year in several hundred counties. Such portion of the regular rural sanitation appropriation as might, under ordinary circumstances, be used in some of these counties will therefore be available for use in other counties. However, when the emergency appropriation is exhausted, a number of the counties which have been aided by it will again be eligible for cooperative projects under the regular appropriation. This will necessitate a withdrawal or curtailment of funds in a number of the counties in which the regular appropriation will be invested during the year beginning July 1, 1931. The plans for these counties in 1932 should therefore provide for a replacement from State or local sources of the Federal funds to be withdrawn, or for a revised program to meet the changes.

It is suggested also that the policy of the Rockefeller Foundation in regard to future cooperation in counties now receiving assistance through emergency funds should be determined as far in advance as possible.

FUTURE PLANS REGARDING COOPERATIVE COUNTY HEALTH WORK

The failure, in the last Congress, of legislation providing for a permanent plan of cooperative county health work is now ancient history. I do not know at this time what action regarding the introduction of new or old legislation at the next session of Congress is contemplated by the proponents of the maternity and infancy measure and the proponents of the measure in behalf of cooperative county health work. I wish, however, to outline briefly certain possibilities in connection with plans of future work which, judging

from my own knowledge and experience, might prove worth while. I believe that there is urgent need for the further development in the Public Health Service of the following three lines of cooperative service to State and local health agencies:

1. An adequate consultation and advisory service.
2. A service to develop better trained and better qualified public health personnel in official health agencies, national, State, and local.
3. The accretion by means of studies, surveys, and experimental demonstrations of additional knowledge and improved methods which may receive practical application and thereby increase the effectiveness of public health administration generally and produce more satisfactory results.

Time does not permit, nor is it necessary for understanding by the members of this conference, to present a detailed description of the significance of such a program in relation to State and local health activities.

As regards the consultation and advisory service, there can be no doubt of the value of professional advice and assistance to communities and States by competent experts in the several special phases of public health. Such service is now being organized on a modest scale in connection with the drought relief work, and its value and possibilities will be readily apparent to those of you to whom it is possible to extend it. As the first new member of this developing consultant staff we have been most fortunate in securing Dr. Estella Ford Warner, who is acting as consultant to State and local communities in the child hygiene work in our cooperative county health projects. Doctor Warner has thus far had time to visit only Alabama, but Doctor Baker will doubtless be glad to give any of you who care to make inquiry of him his appraisal of the value and desirability of this type of service. At a later session of this conference Doctor Warner will present an outline of her work. Should the Public Health Service be made responsible for a permanent program of county health work in the future, it would be disposed to give serious consideration to the maintenance of a definite consultation service on all public health problems that might arise in which expert knowledge and broad experience were required for solution.

Closely related to this consultation service would be additional executive personnel from the Public Health Service to assist in the development of programs of public health work in underdeveloped States and localities in order that their citizens and their children might have the advantages of health protection and health promotion similar to such advantages enjoyed by those in the better developed and more prosperous States and localities. Some of you have already been provided with such personnel and know the desirability of extending this service. At the present time we are totally unable to

meet your requests for its extension, which in itself may be considered another part of a possible future program.

The need for better qualified and better trained personnel in all departments is only too well known to you. In a future program consideration might be given to cooperating with State and local communities by the temporary assignment of Public Health Service personnel to act as substitute health officers for a sufficient period to enable the permanent public health officers to accept scholarships in the accredited schools of public health. This would have the double advantage of adding greatly to the public health training and experience of both the permanent official and the substitute, and in the course of a few years would contribute vastly to the elevation of the public health standards of this country.

Little need be said at this time of the value in a future program of additional studies and investigations for the purpose of extending scientific information and perfecting more effective methods for the application of present knowledge for the prevention and control of disease. Such work on a much more nearly adequate scale must of necessity be included in any well-conceived plan of cooperative county health work on the part of the Federal Government.

Appendix

PRINCIPLES OF ADMINISTRATION OF STUDIES OF RURAL SANITATION IN DROUGHT-STRICKEN AREAS

The deficiency act approved February 6, 1931, contains the following provision:

"For special studies of, and demonstration work in, rural sanitation, including the purchase and distribution of medical supplies, in the drought-stricken areas, and including personal services, fiscal years 1931 and 1932, \$2,000,000: *Provided*, That no part of this appropriation shall be available for demonstration work in rural sanitation unless the State, county, or municipality affected agrees to pay such proportion of the expenses of such demonstration work as shall be required in regulations to be prescribed by the Public Health Service, in which due consideration shall be given to State and local economic conditions and human needs, the extent and circumstances of such cooperation in each case to be reported to Congress at the beginning of each regular session."

The general plan to be followed by the Public Health Service in cooperation with State and local health authorities under the provisions of this act are as follows:

1. Supplementing existing county or local health departments—
 - (a) By assuming obligations of local authorities in county or local health department budgets when local funds are lacking on account of inability to collect taxes, bank failures, or other equally justifiable causes.
 - (b) By employing additional personnel to meet emergency needs as a temporary measure only.
2. Aiding in the support of county health units in counties which have no such existing organization. Such aid will be based upon the following conditions:
 - (a) That at least one-half of the expense be borne by the local authorities.
 - (b) Or that at least one-fourth of the expense be borne by the local authorities and one-fourth by the State.
 - (c) In cases in which the county can contribute only less than the amounts mentioned above, but which require public health personnel for

emergency work, the Public Health Service will assist the State health department in providing temporary personnel. Such personnel should not be construed as constituting a county health department. It is temporary personnel supplied through the State health department for the limited period of the emergency, and will be withdrawn when the emergency ends.

3. Aiding in the support of mobile health units—

These units will be considered to be a part of the State Central Administration and will be supported by State funds to the greatest extent possible. They are for use in providing temporary health services in local communities which require such services.

4. By aiding in the support of individual county nurses and sanitary inspectors:

Such personnel may be utilized in counties which require their services and in which organized health departments can not at present be maintained. The salaries will be defrayed as largely as possible from State and local funds. Such personnel should be regarded as State personnel and strictly of a temporary character.

5. By supplementing State boards of health by supervisory personnel required for emergency work (assistant directors of rural health work, assistant directors of child hygiene, assistant sanitary engineers, and the like).

6. By aiding in supplying biologic products:

The Public Health Service will assist when necessary in providing biologic products for use in preventing the spread of communicable diseases. The cost of such products will be defrayed as largely as possible from State and local funds. Arrangements regarding biologic products will be made by the Public Health Service through the State health departments, and not through local authorities.

EXPERIMENTS WITH CERTAIN FUMIGANTS USED FOR THE DESTRUCTION OF COCKROACHES

By J. R. RIDLON, *Surgeon, United States Public Health Service*

The officers of the United States Public Health Service fumigate nearly 4,000 vessels each year in connection with the enforcement of the Federal maritime quarantine regulations. The purpose of these fumigations is the destruction of rats on shipboard in order to prevent the spread of bubonic plague. It is also important, for several reasons, that vermin, including cockroaches, be killed by these fumigations. It is customary for ships' officers and agents to judge the efficiency of fumigation by the success shown in the destruction of cockroaches. While such insects are ordinarily of little or no quarantine importance, evidence is available that they may be of some sanitary importance on account of their contamination of foodstuffs and for other reasons.

Cockroaches are extremely common on many vessels, especially during warm weather and on those vessels running to the warmer climates. These insects particularly frequent the galleys, pantries, and provision storerooms. They are especially likely to be found in warm places. The smaller species are able to squeeze into the narrow cracks and crevices behind woodwork, such as ceilings, moldings,

closets, and in cupboards. It is very difficult to eradicate them by the use of the ordinary sprays and powders found on the market.

The roaches belong to a large family, the Blattidæ. Three species have been noted on vessels at the port of San Francisco; namely, *Blattella germanica*, *Blatta orientalis*, and *Periplaneta americana*.

Blattella germanica is by far the most common species. It is the smallest of the three species; the males measure about 13 millimeters and the females 11 millimeters in length. The females carry the eggs in tough capsules attached to their bodies. These capsules may be deposited before the eggs hatch or the eggs may hatch while the capsule is still attached. It is reported that under favorable conditions the young pass through several molts and attain full growth in about six months. This species is often called the Croton bug.

The *Blatta orientalis* is not uncommon on vessels coming from Mexican and Central American ports. Both the males and females are from 20 to 23 millimeters in length and are dark brown in color. The egg capsule usually contains 16 eggs. It is said that full development may take three to four years.

The *Periplaneta americana* is the largest of the three, measuring 28 to 32 millimeters both in male and female. These are only occasionally seen in vessels from warm climates. The female lays an egg capsule containing about 30 eggs. It is said that the egg pod is always deposited before the eggs hatch.

Fox (1) says:

Roaches are a sanitary menace because they are potential carriers of infection mechanically by means of their feet and bodies. They soil everything they come in contact with, leaving a nauseous roachy odor.

Pryor (2) says:

As cockroaches crawl almost everywhere and grovel in filth, they readily may spread filth and sputum-borne diseases by infecting food and water * * *. Aboard ship they frequently destroy considerable foodstuff, and if permitted to develop in numbers, ruin foods to which they have had access. The disagreeable roachy odor comes from a dark fluid exuded from the mouth and also from the excrement.

Toda (3) fed cockroaches (*B. germanica*) on cholera cultures and recovered viable vibrios from their feces or intestines in 15 per cent of 94 insects examined. He states that the feces may contain viable vibrios for 24 to 48 or even 72 hours after the infective feed. He suggests the possibility that the cockroach might act as a vector of cholera vibrios under conditions prevailing on shipboard.

Barber (4) reports that cockroaches which have fed on human cholera feces may discharge viable vibrios for at least two days after the insects have fed, and in reduced numbers even 79 hours after ingestion. In Barber's opinion cockroaches may convey infection to human food either through infected vomit or feces; and in human

food so infected, vibrios may survive at least 16 hours after discharge from the insect.

Macfie (5) reports feeding experiments on roaches species *Periplaneta americana*, which show that they may transmit many intestinal diseases mechanically. The bacilli of tuberculosis and the bacilli of leprosy as well as cysts of *Entamoeba histolytica*, *Entamoeba coli*, and *Giardia* were passed through roaches unharmed and virulent. The eggs of hookworm, *Ascaris* and *Trichuris* were also passed readily. In experiments with the bacilli of typhoid, paratyphoid, and dysentery, these organisms were not recovered from the feces of roaches.

Morrell (6) conducted experiments with roaches collected from the galley on shipboard. He found them to be naturally infected with *Bacillus lactis aerogenes* and *Bacillus cloacae* and certain molds. When the roaches were fed artificially he was able to recover tubercle bacilli and staphylococci from pus and spores from fungi. He reports that roaches can readily cause contamination of food by tubercle bacilli and other organisms and can cause the souring of milk, and he considers them a domestic pest.

Longfellow (7) incriminates roaches as mechanical carriers of common pathogenic bacteria which they deposit on foodstuffs and considers them as dangerous as the flies.

Rice (8) carefully observed routine ship fumigation by hydrocyanic acid-cyanogen chloride mixture and concluded that "with a ship properly closed and sealed, the cyanogen chloride and hydrocyanic gas developed by 120 gm. (4 ounces) of sodium cyanide to each 1,000 cubic feet, in conjunction with sodium chlorate and hydrochloric acid, will kill practically all Croton bugs in a 2-hour exposure. A 4-hour exposure would be more efficient, as the gas would then reach the roaches that were too well protected by cover to be reached by a shorter exposure. The same gas in the same time will kill the eggs of the Croton bug unless they are too well protected."

Neifert and Garrison (9) conducted careful experiments and found that the roach *Blattella germanica* was killed by a 30-minute exposure to 0.5 per cent concentration of cyanogen chloride gas and that the eggs were devitalized by a 60-minute exposure to 2 per cent concentration of the same gas. The roaches were also killed by a 15-minute exposure to a 0.2 per cent concentration of straight hydrocyanic acid gas.

The experiments here described were conducted at the San Francisco Quarantine Station, Angel Island, Calif., in a tightly sealed room containing approximately 500 cubic feet. The room was not heated, and so conditions were comparable as to temperature with those prevailing on shipboard at this port.

The tests extended from August, 1929, to February, 1930. The room opened off the laboratory, and apertures were arranged so that

roaches or chemicals could be placed in the room without opening the door. There was a glass in the door through which one could observe the effect of the gas upon the roaches. All of the roaches had been captured alive on shipboard. They were kept in wooden cages with screened sides, 6 by 4 by 4 inches, and were subjected to the gases in these containers. The cages contained varying numbers of roaches, from 2 to 200.

The following chemicals were used for fumigation: Hydrocyanic acid gas, generated from sodium cyanide, sulphuric acid, and water; hydrocyanic acid-cyanogen chloride gas mixture, generated from sodium cyanide, sodium chlorate, hydrochloric acid, and water; liquid hydrocyanic acid with 10 per cent chloropicrin; liquid hydrocyanic acid with 20 per cent cyanogen chloride, liquid hydrocyanic acid with 5 per cent chloropicrin, and Zyklon-B with 5 per cent chloropicrin.

After being subjected to fumigation, all roaches were kept in petri dishes at room temperature for two months to see whether any eggs would hatch.

Table 1 shows the result of 332 exposures of 304 lots of *Blattella germanica* to various fumigants. The table shows the amount of chemical used, the time of exposure, the number of roaches in the cage, the number of roaches killed, and the number alive after the exposure. The amount of chemical is recorded in avoirdupois units.

TABLE 1.—Results of exposure of *Blattella germanica* to various fumigants

| No. | Chemical | Amount | Time | Number of roaches | Number killed | Number alive | Remarks |
|-----|---------------|---------------------------|------------|-------------------|---------------|--------------|---|
| 1 | Zyklon-B..... | 15 gm. to 500 cubic feet. | Hours ¾ | 21 | 19 | 2 | 6 females; eggs hatched, several on fourth day. |
| | do..... | do..... | 32½ | 2 | 2 | 0 | Eggs hatched on second day. |
| 2 | do..... | do..... | 1½ | 5 | 4 | 1 | No females. |
| 3 | do..... | do..... | 32½ | 50 | 48 | 2 | 3 females. |
| | do..... | do..... | 15½ | 2 | 1 | 1 | |
| 4 | do..... | do..... | ½ | 20 | 17 | 3 | 2 females. |
| | do..... | do..... | 15½ | 3 | 1 | 2 | |
| | do..... | do..... | 8½ | 2 | 1 | 1 | Survived 3 exposures. |
| 5 | do..... | do..... | 1 | 12 | 7 | 5 | 3 females; 1 egg hatched. |
| | do..... | do..... | 8½ | 5 | 0 | 5 | |
| | do..... | do..... | 8 | 5 | 0 | 5 | Survived 3 exposures. |
| 6 | do..... | do..... | 16 | 10 | 9 | 1 | 3 females. |
| | do..... | do..... | 8½ | 1 | 0 | 1 | Young ones hatched on third day, 50 in number. |
| 7 | do..... | 30 gm. to 500 cubic feet. | ½ | 5 | 5 | 0 | No females. |
| 8 | do..... | do..... | 1 | 10 | 10 | 0 | Do. |
| 9 | do..... | do..... | 2 | 10 | 10 | 0 | Do. |
| 10 | do..... | do..... | 4 | 10 | 10 | 0 | Do. |
| 11 | do..... | do..... | 18 | 100 | 100 | 0 | 3 females. |
| 12 | do..... | 22 gm. to 500 cubic feet. | ½ | 9 | 5 | 4 | No females. |
| | do..... | do..... | 10 | 4 | 1 | 3 | |
| 13 | do..... | do..... | 1 | 25 | 19 | 6 | 2 females. |
| | do..... | do..... | 24 | 6 | 4 | 2 | |
| | do..... | do..... | 1 | 2 | 1 | 1 | Survived 3 exposures. |
| 14 | do..... | do..... | 2 | 12 | 11 | 1 | No females. |
| 15 | do..... | do..... | 28 | 5 | 4 | 1 | Do. |
| | do..... | do..... | 2 | 1 | 0 | 1 | |

TABLE 1.—Results of exposure of *Blatella germanica* to various fumigants—Con.

| No. | Chemical | Amount | Time | Number of roaches | Number killed | Number alive | Remarks |
|------|---------------------------------------|-----------------------------|-------|-------------------|---------------|--------------|--|
| | | | Hours | | | | |
| 16 | Zyklon-B..... | 22 gm. to 500 cubic feet. | 28 | 8 | 4 | 4 | No females. |
| | do..... | do..... | 1 | 4 | 2 | 2 | |
| | do..... | do..... | 8 | 2 | 0 | 0 | |
| 17 | Liquid HCN, 10 per cent chloropicrin. | 15 gm. to 500 cubic feet. | 1 | 3 | 3 | 0 | 1 female. |
| 18 | do..... | do..... | 1 | 200 | 170 | 30 | Several females. |
| | do..... | do..... | 2 | 30 | 10 | 20 | |
| | do..... | do..... | 1 | 20 | 17 | 3 | |
| 19 | do..... | do..... | 1 | 10 | 10 | 0 | 1 female; young ones hatched on third day. |
| 20 | do..... | do..... | 1½ | 20 | 20 | 0 | Several females. |
| 21 | do..... | do..... | 1½ | 40 | 37 | 3 | 6 females; young ones hatched on third day. |
| | do..... | do..... | ½ | 3 | 2 | 1 | 16 young ones hatched on twenty-eighth day. |
| | do..... | do..... | 2 | 1 | 0 | 1 | |
| 22 | do..... | do..... | 1½ | 15 | 15 | 0 | 3 females; young ones hatched on third day. |
| 23 | do..... | do..... | 1½ | 30 | 30 | 0 | 5 females; young ones hatched on third day. |
| 24 | do..... | do..... | ½ | 15 | 15 | 0 | 2 females. |
| 25 | do..... | do..... | ½ | 5 | 5 | 0 | No females. |
| 26 | do..... | do..... | ½ | 7 | 7 | 0 | 3 females. |
| 27 | do..... | do..... | ½ | 7 | 7 | 0 | 2 females. |
| 28 | do..... | do..... | ½ | 25 | 24 | 1 | 1 female. |
| 29 | do..... | do..... | ¾ | 5 | 3 | 2 | No females. |
| 30 | do..... | do..... | ¾ | 6 | 6 | 0 | 2 females; 10 young ones hatched on seventeenth day. |
| 31 | do..... | do..... | ¾ | 6 | 6 | 0 | 2 females. |
| 32 | do..... | do..... | ¾ | 20 | 20 | 0 | 3 females. |
| 33 | do..... | do..... | ¾ | 4 | 4 | 0 | 1 female. |
| 34 | do..... | do..... | ½ | 8 | 8 | 0 | No female. |
| 35 | do..... | do..... | ½ | 30 | 30 | 0 | 10 females. |
| 36 | do..... | do..... | ½ | 6 | 6 | 0 | 3 females; young ones hatched on sixteenth day. |
| 37 | do..... | 7.5 gm. to 500 cubic feet. | ½ | 8 | 2 | 6 | 2 females. |
| | do..... | do..... | 1 | 6 | 0 | 6 | |
| 38 | do..... | do..... | ½ | 10 | 4 | 6 | 1 female. |
| | do..... | do..... | 1 | 6 | 0 | 6 | |
| | do..... | do..... | 19 | 6 | 0 | 6 | |
| 37-A | do..... | 13 gm. to 500 cubic feet. | ½ | 6 | 3 | 3 | 2 females. |
| | do..... | do..... | 1 | 3 | 2 | 1 | |
| 38-A | do..... | do..... | ½ | 6 | 3 | 3 | 1 female. |
| | do..... | do..... | 1 | 3 | 0 | 3 | |
| | do..... | do..... | 5 | 3 | 0 | 3 | |
| | do..... | do..... | 15 | 3 | 1 | 2 | Young ones hatched on fifteenth day. |
| 39 | do..... | 7.5 gm. to 500 cubic feet. | ½ | 40 | 20 | 20 | Several females. |
| 39-A | do..... | 13 gm. to 500 cubic feet. | ½ | 10 | 10 | 0 | Do. |
| 40 | do..... | 22.5 gm. to 500 cubic feet. | ½ | 8 | 4 | 4 | 2 females. |
| | do..... | do..... | 1 | 4 | 0 | 4 | |
| 41 | do..... | do..... | ½ | 12 | 5 | 7 | 1 female. |
| | do..... | do..... | 1 | 7 | 0 | 7 | |
| 42 | do..... | do..... | ½ | 3 | 1 | 2 | No females. |
| 43 | do..... | do..... | ½ | 6 | 4 | 2 | Do. |
| | do..... | do..... | 1 | 2 | 0 | 2 | |
| 44 | do..... | 15 gm. to 500 cubic feet. | ½ | 8 | 8 | 0 | 2 females. |
| 45 | do..... | do..... | ½ | 13 | 13 | 0 | 4 females. |
| 46 | do..... | do..... | ½ | 12 | 12 | 0 | Do. |
| 47 | do..... | do..... | ½ | 6 | 6 | 0 | No females. |
| 48 | Liquid HCN, 20 per cent CNCl. | do..... | ½ | 8 | 5 | 3 | 2 females. |
| | do..... | do..... | ½ | 3 | 0 | 3 | |
| | do..... | do..... | 2 | 3 | 2 | 1 | |
| 49 | do..... | do..... | ½ | 3 | 1 | 2 | 2 females. |
| | do..... | do..... | ½ | 2 | 0 | 2 | |
| 50 | do..... | do..... | ½ | 6 | 6 | 0 | No females. |
| 51 | do..... | do..... | ½ | 5 | 3 | 2 | 2 females. |

TABLE 1.—Results of exposure of *Blatella germanica* to various fumigants—Con.

| No. | Chemical | Amount | Time | Number of roaches | Number killed | Number alive | Remarks |
|-----|---------------------------------------|---|----------|-------------------|---------------|--------------|-------------|
| 52 | Liquid HCN, 20 per cent CNCl. | 15 gm. to 500 cubic feet. | Hours 3½ | 4 | 3 | 1 | No females. |
| 53 | do. | do. | 1 | 3 | 1 | 2 | 2 females. |
| 54 | do. | do. | 22 | 2 | 0 | 2 | |
| 55 | do. | do. | 1 | 4 | 1 | 3 | 1 female. |
| 56 | do. | 22.5 gm. to 500 cubic feet. | 1 | 4 | 3 | 1 | 2 females. |
| 58 | do. | do. | 1 | 12 | 7 | 5 | 1 female. |
| 59 | Liquid HCN, 10 per cent chloropicrin. | do. | 1 | 5 | 3 | 2 | Do. |
| 60 | do. | do. | 2 | 5 | 4 | 1 | No females. |
| 61 | do. | do. | 2 | 12 | 11 | 1 | 3 females. |
| 62 | do. | do. | 2 | 10 | 8 | 2 | 1 female. |
| 63 | do. | do. | 2 | 20 | 19 | 1 | Do. |
| 64 | do. | do. | 2 | 7 | 6 | 1 | No females. |
| 65 | Zyklon-B, 5 per cent chloropicrin. | 30 gm. to 500 cubic feet. | 1 | 30 | 29 | 1 | 8 females. |
| 66 | do. | do. | 1 | 4 | 4 | 0 | 1 female. |
| 67 | do. | do. | 1 | 2 | 2 | 0 | Do. |
| 68 | do. | do. | 1 | 10 | 10 | 0 | Do. |
| 69 | do. | do. | 1 | 1 | 1 | 0 | Do. |
| 70 | do. | do. | 1 | 30 | 30 | 0 | 7 females. |
| 71 | do. | do. | 1 | 7 | 7 | 0 | 1 female. |
| 72 | do. | do. | 1 | 5 | 5 | 0 | Do. |
| 73 | do. | do. | 1 | 8 | 8 | 0 | No females. |
| 74 | Liquid HCN, 10 per cent chloropicrin. | do. | 1 | 5 | 5 | 0 | 1 female. |
| 75 | do. | do. | 1 | 2 | 2 | 0 | No females. |
| 76 | do. | do. | 1 | 7 | 7 | 0 | Do. |
| 77 | do. | do. | 1 | 5 | 0 | 5 | 1 female. |
| 78 | do. | do. | 1 | 4 | 4 | 0 | Do. |
| 79 | do. | do. | 2 | 18 | 13 | 0 | 6 females. |
| 80 | do. | do. | 2 | 7 | 7 | 0 | 1 female. |
| 81 | do. | do. | 2 | 6 | 4 | 2 | No females. |
| 82 | do. | 22.5 gm. to 500 cubic feet. | 4 | 2 | 2 | 0 | Do. |
| 83 | Zyklon-B, 5 per cent chloropicrin. | 30 gm. to 500 cubic feet. | 1 | 6 | 6 | 0 | Do. |
| 84 | do. | do. | 1 | 2 | 2 | 0 | Do. |
| 85 | do. | do. | 1 | 3 | 3 | 0 | Do. |
| 86 | HCN generated. | Sod. cy., 60 gm.; sulphuric acid, 90 gm.; water, 120 gm. | 1 | 5 | 5 | 0 | Do. |
| 87 | do. | do. | 1 | 5 | 3 | 2 | 1 female. |
| 88 | do. | do. | 1 | 3 | 3 | 0 | No females. |
| 89 | do. | do. | 1 | 4 | 4 | 0 | Do. |
| 90 | do. | do. | 1 | 10 | 8 | 2 | Do. |
| 91 | do. | do. | 1 | 9 | 9 | 0 | 3 females. |
| 92 | do. | Sod. cy., 45 gm.; sulphuric acid, 67.5 gm.; water, 90 gm. | 1 | 6 | 6 | 0 | 2 females. |
| 93 | do. | do. | 1 | 6 | 6 | 0 | No females. |
| 94 | do. | do. | 1 | 2 | 2 | 0 | Do. |
| 95 | do. | do. | 1 | 3 | 2 | 1 | 1 female. |
| 96 | do. | do. | 1 | 4 | 3 | 1 | No females. |
| 97 | do. | do. | 2 | 4 | 2 | 2 | 3 females. |
| 98 | do. | do. | 2 | 3 | 1 | 2 | 1 female. |
| 99 | do. | do. | 2 | 8 | 6 | 2 | No females. |
| 100 | do. | do. | 2 | 11 | 11 | 0 | 4 females. |
| 101 | do. | Sod. cy., 60 gm.; sulphuric acid, 90 gm.; water, 120 gm. | 2 | 1 | 1 | 0 | No females. |
| 102 | do. | do. | 2 | 21 | 21 | 0 | 4 females. |
| 103 | do. | do. | 2 | 35 | 35 | 0 | 7 females. |
| 104 | do. | do. | 2 | 20 | 20 | 0 | 2 females. |
| 105 | do. | do. | 2 | 20 | 20 | 0 | 4 females. |
| 106 | do. | do. | 2 | 22 | 22 | 0 | No females. |
| 107 | do. | do. | 2 | 14 | 14 | 0 | 1 female. |
| 108 | do. | do. | 2 | 18 | 18 | 0 | 2 females. |
| 109 | do. | do. | 2 | 30 | 30 | 0 | 6 females. |
| 110 | do. | do. | 2 | 40 | 40 | 0 | 7 females. |
| 111 | do. | do. | 2 | 11 | 11 | 0 | 8 females. |
| 112 | do. | do. | 2 | 7 | 7 | 0 | 2 females. |
| 113 | do. | do. | 2 | 45 | 45 | 0 | 8 females. |
| 114 | Liquid HCN, 20 per cent CNCl. | 30 gm. to 500 cubic feet. | 2 | 10 | 10 | 0 | 2 females. |
| 115 | do. | do. | 2 | 5 | 4 | 1 | 1 female. |
| 116 | do. | do. | 2 | 8 | 8 | 0 | No females. |
| | do. | do. | 2 | 4 | 4 | 0 | Do. |

TABLE 1.—Results of exposure of *Blatella germanica* to various fumigants—Con.

| No. | Chemical | Amount | Time | Number of roaches | Number killed | Number alive | Remarks |
|-----|-------------------------------|---|-------|-------------------|---------------|--------------|-------------|
| | | | Hours | | | | |
| 117 | Liquid HCN, 20 per cent CNCl. | 30 gm. to 500 cubic feet. | 2 | 1 | 6 | 2 | 4 females. |
| 118 | do. | do. | 2 | 26 | 23 | 3 | 7 females. |
| 119 | do. | do. | 2 | 18 | 18 | 0 | 8 females. |
| 120 | do. | do. | 2 | 20 | 15 | 5 | 6 females. |
| 121 | do. | do. | 2 | 20 | 19 | 1 | 7 females. |
| 122 | do. | do. | 2 | 12 | 12 | 0 | 8 females. |
| 123 | do. | do. | 2 | 20 | 20 | 0 | 16 females. |
| 124 | do. | do. | 2 | 12 | 10 | 2 | 1 female. |
| 125 | do. | do. | 2 | 16 | 15 | 1 | 4 females. |
| 128 | do. | do. | 2 | 3 | 2 | 1 | 1 female. |
| 129 | do. | do. | 2 | 22 | 21 | 1 | 8 females. |
| 131 | do. | do. | 2 | 6 | 5 | 1 | 3 females. |
| 132 | do. | do. | 2 | 2 | 2 | 0 | No females. |
| 133 | do. | do. | 2 | 6 | 6 | 0 | Do. |
| 134 | do. | do. | 2 | 24 | 22 | 2 | 5 females. |
| 135 | do. | do. | 2 | 10 | 10 | 0 | 4 females. |
| 136 | do. | 45 gm. to 500 cubic feet. | 2 | 6 | 6 | 0 | 1 female. |
| 138 | do. | 30 gm. to 500 cubic feet. | 2 | 9 | 8 | 1 | No females. |
| 139 | do. | do. | 2 | 10 | 8 | 2 | 3 females. |
| 140 | do. | do. | 2 | 5 | 4 | 1 | 1 female. |
| 141 | do. | 45 gm. to 500 cubic feet. | 7 | 11 | 11 | 0 | Do. |
| 142 | do. | do. | 7 | 5 | 5 | 0 | No females. |
| 143 | do. | do. | 7 | 18 | 18 | 0 | 8 females. |
| 144 | do. | do. | 7 | 16 | 16 | 0 | 4 females. |
| 145 | do. | do. | 7 | 18 | 18 | 0 | 2 females. |
| 146 | do. | do. | 7 | 30 | 30 | 0 | 11 females. |
| 147 | do. | do. | 7 | 20 | 20 | 0 | 3 females. |
| 148 | do. | do. | 2 | 22 | 21 | 1 | Do. |
| 149 | do. | do. | 2 | 27 | 25 | 2 | No females. |
| 150 | do. | do. | 2 | 15 | 13 | 2 | Do. |
| 151 | do. | do. | 2 | 12 | 12 | 0 | 1 female. |
| 152 | do. | do. | 2 | 8 | 8 | 0 | No females. |
| 153 | do. | do. | 2 | 12 | 9 | 3 | 1 female. |
| 154 | do. | do. | 2 | 12 | 10 | 2 | No females. |
| 155 | do. | do. | 2 | 13 | 13 | 0 | Do. |
| 156 | do. | do. | 2 | 30 | 30 | 0 | 2 females. |
| 157 | do. | do. | 2 | 20 | 20 | 0 | 1 female. |
| 158 | do. | do. | 2 | 44 | 44 | 0 | 12 females. |
| 159 | do. | do. | 2 | 37 | 37 | 0 | 4 females. |
| 160 | do. | do. | 2 | 9 | 9 | 0 | 2 females. |
| 161 | do. | do. | 2 | 11 | 11 | 0 | 3 females. |
| 162 | do. | do. | 2 | 15 | 15 | 0 | 4 females. |
| 163 | do. | do. | 2 | 16 | 16 | 0 | 5 females. |
| 164 | do. | do. | 2 | 10 | 10 | 0 | 3 females. |
| 165 | do. | do. | 2 | 17 | 17 | 0 | 5 females. |
| 166 | do. | do. | 2 | 10 | 4 | 6 | 2 females. |
| 167 | do. | do. | 2 | 16 | 15 | 1 | Do. |
| 168 | do. | do. | 2 | 23 | 23 | 0 | 6 females. |
| 169 | do. | do. | 2 | 14 | 14 | 0 | 2 females. |
| 170 | do. | do. | 2 | 12 | 12 | 0 | 1 female. |
| 171 | do. | do. | 2 | 15 | 11 | 4 | 3 females. |
| 172 | do. | do. | 2 | 11 | 5 | 6 | 7 females. |
| 173 | HCN-CNCl generated. | Sod. cy., 60 gm.; sod. chlor., 45 gm.; HCl, 255 gm.; water, 255 gm. | 2 | 18 | 17 | 1 | 4 females. |
| 174 | do. | do. | 2 | 16 | 15 | 1 | No females. |
| 175 | do. | do. | 2 | 17 | 14 | 3 | 1 female. |
| 176 | do. | do. | 2 | 18 | 16 | 2 | 3 females. |
| 177 | do. | do. | 2 | 14 | 12 | 2 | Do. |
| 178 | do. | do. | 2 | 8 | 4 | 4 | 4 females. |
| 179 | do. | do. | 2 | 35 | 35 | 0 | 9 females. |
| 180 | do. | do. | 2 | 12 | 0 | 12 | 7 females. |
| 181 | do. | do. | 2 | 12 | 4 | 8 | 3 females. |
| 182 | do. | do. | 2 | 16 | 13 | 3 | 7 females. |
| 183 | do. | do. | 2 | 6 | 0 | 6 | 3 females. |
| 184 | do. | do. | 2 | 8 | 2 | 6 | 4 females. |
| 185 | do. | do. | 2 | 12 | 8 | 4 | Do. |
| 186 | do. | do. | 2 | 12 | 6 | 6 | 8 females. |
| 187 | do. | do. | 2 | 10 | 10 | 0 | No females. |
| 189 | do. | do. | 2 | 13 | 12 | 1 | 6 females. |
| 190 | do. | do. | 2 | 38 | 36 | 2 | 3 females. |
| 191 | do. | do. | 2 | 7 | 6 | 1 | Do. |
| 192 | do. | do. | 2 | 10 | 10 | 0 | 7 females. |

TABLE 1.—Results of exposure of *Blatella germanica* to various fumigants—Con.

| No. | Chemical | Amount | Time | Number of roaches | Number killed | Number alive | Remarks |
|-----|--------------------------------------|---|------------|-------------------|---------------|--------------|-------------|
| 193 | HCN-CNCl generated. | Sod. cy., 90 gm.; sod. chlor., 60 gm.; HCl, 255 gm.; water, 255 gm. | Hours 2 | 9 | 4 | 5 | 4 females. |
| 194 | do. | do. | 2 | 5 | 3 | 2 | 3 females. |
| 195 | do. | do. | 2 | 9 | 8 | 1 | No females. |
| 196 | do. | do. | 2 | 9 | 8 | 1 | Do. |
| 197 | do. | do. | 2 | 8 | 7 | 1 | Do. |
| 198 | do. | do. | 2 | 11 | 8 | 3 | 2 females. |
| 199 | do. | do. | 2 | 26 | 21 | 5 | Do. |
| 200 | HCN generated. | Sod. cy., 60 gm.; sulphuric acid, 90 gm.; water, 120 gm. | 2 | 9 | 8 | 1 | 4 females. |
| 201 | do. | do. | 2 | 10 | 8 | 2 | Do. |
| 202 | do. | do. | 2 | 9 | 8 | 1 | 1 female. |
| 203 | do. | do. | 2 | 8 | 8 | 0 | No females. |
| 204 | do. | do. | 2 | 7 | 7 | 0 | Do. |
| 205 | do. | do. | 2 | 7 | 6 | 1 | 1 female. |
| 206 | do. | do. | 2 | 7 | 7 | 0 | No females. |
| 207 | do. | do. | 2 | 13 | 13 | 0 | 4 females. |
| 208 | do. | do. | 2 | 10 | 10 | 0 | 2 females. |
| 209 | do. | do. | 2 | 12 | 11 | 1 | 3 females. |
| 210 | do. | do. | 2 | 7 | 7 | 0 | 2 females. |
| 211 | do. | do. | 2 | 9 | 8 | 1 | 3 females. |
| 212 | do. | do. | 2 | 14 | 11 | 3 | 6 females. |
| 213 | do. | do. | 2 | 12 | 9 | 3 | 7 females. |
| 214 | do. | do. | 2 | 8 | 8 | 0 | 1 female. |
| 215 | do. | do. | 2 | 11 | 11 | 0 | Do. |
| 216 | do. | do. | 2 | 9 | 9 | 0 | Do. |
| 217 | do. | do. | 2 | 10 | 8 | 2 | No females. |
| 218 | do. | do. | 2 | 18 | 18 | 0 | Do. |
| 219 | do. | do. | 2 | 20 | 17 | 3 | 3 females. |
| 220 | do. | do. | 2 | 20 | 20 | 0 | 4 females. |
| 221 | do. | do. | 2 | 5 | 4 | 1 | No females. |
| 222 | do. | do. | 2 | 9 | 9 | 0 | Do. |
| 223 | do. | do. | 2 | 5 | 5 | 0 | Do. |
| 224 | do. | do. | 4 | 8 | 7 | 1 | 4 females. |
| 225 | do. | do. | 4 | 11 | 9 | 2 | Do. |
| 226 | do. | do. | 4 | 14 | 11 | 3 | 3 females. |
| 227 | do. | do. | 4 | 12 | 9 | 3 | No females. |
| 228 | do. | do. | 4 | 12 | 10 | 2 | 3 females. |
| 229 | do. | do. | 4 | 9 | 9 | 0 | 2 females. |
| 230 | do. | do. | 4 | 10 | 9 | 1 | No females. |
| 231 | Liquid HCN, 20 per cent CNCl. | 30 gm. to 500 cubic feet. | 4 | 12 | 11 | 1 | 1 female. |
| 232 | do. | do. | 4 | 10 | 9 | 1 | 3 females. |
| 233 | do. | do. | 4 | 10 | 8 | 2 | 1 female. |
| 234 | do. | do. | 4 | 12 | 10 | 2 | 4 females. |
| 235 | do. | do. | 4 | 13 | 11 | 2 | 2 females. |
| 236 | do. | do. | 4 | 7 | 3 | 4 | 3 females. |
| 237 | do. | do. | 4 | 13 | 13 | 0 | Do. |
| 238 | do. | do. | 4 | 17 | 17 | 0 | Do. |
| 239 | do. | do. | 4 | 9 | 9 | 0 | 1 female. |
| 240 | do. | do. | 4 | 7 | 7 | 0 | Do. |
| 241 | do. | do. | 4 | 11 | 10 | 1 | No females. |
| 242 | do. | do. | 4 | 11 | 11 | 0 | Do. |
| 243 | do. | do. | 4 | 6 | 6 | 0 | Do. |
| 244 | do. | do. | 4 | 6 | 5 | 1 | 1 female. |
| 245 | do. | do. | 4 | 10 | 10 | 0 | 2 females. |
| 246 | do. | do. | 4 | 9 | 9 | 0 | 3 females. |
| 247 | do. | do. | 4 | 10 | 8 | 2 | Do. |
| 248 | do. | do. | 4 | 17 | 17 | 0 | 7 females. |
| 249 | do. | do. | 4 | 8 | 8 | 0 | No females. |
| 250 | do. | do. | 4 | 9 | 9 | 0 | 2 females. |
| 251 | do. | do. | 4 | 11 | 11 | 0 | 4 females. |
| 252 | do. | do. | 5 | 20 | 18 | 2 | 2 females. |
| 253 | do. | do. | 5 | 13 | 13 | 0 | Do. |
| 254 | do. | do. | 5 | 7 | 7 | 0 | 1 female. |
| 255 | do. | do. | 5 | 12 | 11 | 1 | 4 females. |
| 256 | do. | do. | 5 | 16 | 14 | 2 | 8 females. |
| 257 | do. | do. | 5 | 16 | 11 | 5 | 6 females. |
| 258 | do. | do. | 5 | 10 | 9 | 1 | 4 females. |
| 259 | Liquid HCN, 5 per cent chloropicrin. | do. | 4 | 18 | 18 | 0 | No females. |
| 260 | do. | do. | 4 | 10 | 10 | 0 | Do. |
| 261 | do. | do. | 4 | 7 | 7 | 0 | Do. |
| 262 | do. | do. | 4 | 6 | 6 | 0 | 1 female. |
| 263 | do. | do. | 4 | 7 | 7 | 0 | Do. |
| 264 | do. | do. | 4 | 6 | 6 | 0 | No females. |
| 265 | do. | do. | 4 | 8 | 8 | 0 | 2 females. |

TABLE 1.—Results of exposure of *Blatella germanica* to various fumigants—Con.

| No. | Chemical | Amount | Time | Number of roaches | Number killed | Number alive | Remarks |
|-----|--------------------------------------|---------------------------|-------|-------------------|---------------|--------------|-------------|
| | | | Hours | | | | |
| 266 | Liquid HCN, 20 per cent CNCL. | 30 gm. to 500 cubic feet. | 4 | 6 | 5 | 1 | 1 female. |
| 267 | do. | do. | 4 | 7 | 6 | 1 | 2 females. |
| 268 | do. | do. | 4 | 6 | 5 | 1 | Do. |
| 269 | do. | do. | 4 | 9 | 9 | 0 | No females. |
| 270 | Liquid HCN, 5 per cent chloropicrin. | do. | 4 | 26 | 26 | 0 | 2 females. |
| 272 | do. | do. | 4 | 14 | 14 | 0 | Do. |
| 275 | do. | do. | 4 | 2 | 2 | 0 | 1 female. |
| 276 | do. | do. | 4 | 7 | 7 | 0 | 2 females. |
| 277 | do. | do. | 17 | 7 | 7 | 0 | Do. |
| 278 | do. | do. | 17 | 6 | 7 | 0 | No females. |
| 279 | do. | do. | 17 | 7 | 7 | 0 | 3 females. |
| 281 | do. | do. | 17 | 10 | 10 | 0 | 4 females. |
| 283 | do. | do. | 4 | 18 | 18 | 0 | 2 females. |
| 284 | do. | do. | 4 | 15 | 15 | 0 | 3 females. |
| 285 | do. | do. | 4 | 12 | 12 | 0 | 2 females. |
| 286 | do. | do. | 4 | 16 | 16 | 0 | 9 females. |
| 287 | do. | do. | 4 | 16 | 16 | 0 | 4 females. |
| 288 | do. | do. | 4 | 12 | 12 | 0 | 1 female. |
| 289 | do. | do. | 4 | 14 | 14 | 0 | 3 females. |
| 290 | do. | do. | 2 | 16 | 16 | 0 | Do. |
| 291 | do. | do. | 2 | 12 | 11 | 1 | 2 females. |
| 292 | do. | do. | 2 | 10 | 10 | 0 | 1 female. |
| 293 | do. | do. | 2 | 12 | 12 | 0 | 5 females. |
| 294 | do. | do. | 2 | 13 | 13 | 0 | 4 females. |
| 295 | do. | do. | 2 | 18 | 18 | 0 | 3 females. |
| 296 | do. | do. | 2 | 34 | 34 | 0 | 5 females. |
| 297 | do. | do. | 2 | 6 | 6 | 0 | No females. |
| 298 | do. | do. | 2 | 7 | 7 | 0 | 2 females. |
| 299 | do. | do. | 2 | 9 | 9 | 0 | 1 female. |
| 300 | do. | do. | 2 | 14 | 14 | 0 | 3 females. |
| 301 | do. | do. | 2 | 7 | 6 | 1 | 1 female. |
| 302 | do. | do. | 2 | 5 | 5 | 0 | No females. |
| 303 | do. | do. | 2 | 22 | 22 | 0 | 10 females. |
| 304 | do. | do. | 2 | 8 | 8 | 0 | 2 females. |
| 305 | do. | do. | 2 | 6 | 6 | 0 | 1 female. |
| 306 | do. | do. | 2 | 3 | 3 | 0 | Do. |
| 307 | do. | do. | 2 | 7 | 7 | 0 | 2 females. |
| 308 | do. | do. | 2 | 6 | 6 | 0 | Do. |
| 309 | do. | do. | 2 | 12 | 12 | 0 | 6 females. |

TABLE 2.—Results of exposure of *Periplaneta americana* to certain fumigants

| Number | Chemical | Amount | Time | Number of roaches | Number killed | Number alive | Remarks |
|--------|--|--|---------------|-------------------|---------------|--------------|-------------|
| | | | Hours | | | | |
| 1 | Zyklon-B. | 15 gm. to 500 cubic feet. | $\frac{3}{4}$ | 1 | 1 | 0 | No females. |
| 57 | Liquid HCN, 20 per cent CNCL. | 22.5 gm. to 500 cubic feet. | 1 | 5 | 2 | 3 | Do. |
| | do. | do. | 4 | 3 | 1 | 2 | |
| 158-A | Generated HCN-CNCL. | Sod. cy., 60 gm., sod. chlor. 45 gm., HCl, 255 gm., water, 255 gm. | 2 | 7 | 6 | 1 | 1 female. |
| 271 | Liquid HCN with 5 per cent chloropicrin. | 30 gm. to 500 cubic feet. | 4 | 9 | 9 | 0 | No females. |
| 274 | do. | do. | 4 | 4 | 4 | 0 | Do. |
| 280 | do. | do. | 17 | 3 | 3 | 0 | Do. |

TABLE 3.—Results of exposure of *Blatta orientalis* to various fumigants

| Number | Chemical | Amount | Time | Number of roaches | Number killed | Number alive | Remarks |
|--------|---------------------------------------|--|---------|-------------------|---------------|--------------|-----------------------|
| 17 | Liquid HCN, 10 per cent chloropicrin. | 15 gm. to 500 cubic feet.... | Hours 1 | 6 | 1 | 5 | No females. |
| | do..... | do..... | 2 | 5 | 3 | 2 | |
| | do..... | do..... | 1 | 2 | 0 | 2 | |
| | do..... | do..... | 14½ | 2 | 0 | 2 | |
| | do..... | do..... | ½ | 2 | 1 | 1 | |
| | do..... | do..... | 2 | 1 | 0 | 1 | |
| | do..... | do..... | 21 | 1 | 0 | 1 | |
| | Liquid HCN, 20 per cent CNCl. | do..... | 2 | 1 | 0 | 1 | Survived 8 exposures. |
| 36-A | Liquid HCN, 10 per cent chloropicrin. | do..... | ½ | 1 | 0 | 1 | No females. |
| 126 | Liquid HCN, 20 per cent CNCl. | 30 gm. to 500 cubic feet.... | 2 | 3 | 0 | 3 | Do. |
| 127 | do..... | do..... | 2 | 3 | 0 | 3 | Do. |
| 130 | do..... | do..... | 2 | 3 | 0 | 3 | Do. |
| 137 | do..... | 45 gm. to 500 cubic feet.... | 2 | 12 | 8 | 4 | Do. |
| 188 | Generated HCN-CNCl. | Sod. cy. 60 gm., sod. chlor. 45 gm., HCl, 255 gm., water 255 gm. | 2 | 4 | 3 | 1 | Do. |
| 273 | Liquid HCN, 5 per cent chloropicrin. | 30 gm. to 500 cubic feet.... | 4 | 2 | 2 | 0 | Do. |
| 282 | do..... | do..... | 17 | 4 | 4 | 0 | Do. |

TABLE 4.—Results of exposure of *Blattella germanica* to generated straight hydrocyanic acid

| Amount of fumigant | Time of exposure | Number of exposures | Positive results, all killed | Negative results, some survived |
|--|------------------|---------------------|------------------------------|---------------------------------|
| | Hours | | | |
| Sodium cyanide 60 gm., sulphuric acid 90 gm., water 120 gm., to 500 cubic feet. | 1 | 5 | 3 | 2 |
| | 2 | 38 | 27 | 11 |
| | 4 | 7 | 1 | 6 |
| Sodium cyanide 45 gm., sulphuric acid 67.5 gm., water 90 gm., to 500 cubic feet. | 1 | 5 | 3 | 2 |
| | 2 | 4 | 1 | 3 |

TABLE 5.—Results of exposure of *Blattella germanica* to generated hydrocyanic acid-cyanogen chloride mixture

| Amount of fumigant | Time of exposure | Number of exposures | Positive results, all killed | Negative results, some survived |
|---|------------------|---------------------|------------------------------|---------------------------------|
| | Hours | | | |
| Sodium cyanide 60 gm., sodium chlorate 45 gm., hydrochloric acid 255 gm., water 255 gm. | 2 | 19 | 3 | 16 |
| Sodium cyanide 90 gm., sodium chlorate 60 gm., hydrochloric acid 255 gm., water 255 gm. | 2 | 7 | 0 | 7 |

TABLE 6.—*Results of exposure of Blattella germanica to liquid hydrocyanic acid with 10 per cent chloropicrin as tear gas*

| Amount of fumigant | Time of exposure | Number of exposures | Positive results, all killed | Negative results, some survived or eggs hatched |
|---------------------------------|------------------|---------------------|------------------------------|---|
| | <i>Hours</i> | | | |
| 7.5 gm. to 500 cubic feet..... | 1/2 | 3 | 0 | 3 |
| | 1 | 2 | 0 | 2 |
| | 19 | 1 | 0 | 1 |
| 13 gm. to 500 cubic feet..... | 1/2 | 3 | 1 | 2 |
| | 1 | 2 | 0 | 2 |
| | 5 | 1 | 0 | 1 |
| | 15 | 1 | 0 | 1 |
| 15 gm. to 500 cubic feet..... | 1/2 | 13 | 10 | 3 |
| | 3/4 | 5 | 3 | 2 |
| | 1 | 4 | 1 | 3 |
| | 1 1/2 | 4 | 1 | 3 |
| | 2 | 2 | 0 | 2 |
| 30 gm. to 500 cubic feet..... | 1 | 5 | 3 | 2 |
| | 2 | 3 | 2 | 1 |
| 22.5 gm. to 500 cubic feet..... | 1/2 | 4 | 0 | 4 |
| | 1 | 3 | 0 | 3 |
| | 2 | 5 | 0 | 5 |
| | 4 | 2 | 2 | 0 |

TABLE 7.—*Results of exposure of Blattella germanica to liquid hydrocyanic acid with 20 per cent cyanogen-chloride as tear gas*

| Amount of fumigant | Time of exposure | Number of exposures | Positive results, all killed | Negative results, some survived |
|---------------------------------|------------------|---------------------|------------------------------|---------------------------------|
| | <i>Hours</i> | | | |
| 15 gm. to 500 cubic feet..... | 1/2 | 7 | 1 | 6 |
| | 1 | 3 | 0 | 3 |
| | 2 | 1 | 0 | 1 |
| | 22 | 1 | 0 | 1 |
| 22.5 gm. to 500 cubic feet..... | 1 | 2 | 0 | 2 |
| 30 gm. to 500 cubic feet..... | 2 | 22 | 8 | 14 |
| Do..... | 4 | 25 | 16 | 9 |
| Do..... | 5 | 7 | 2 | 5 |
| 45 gm. to 500 cubic feet..... | 2 | 26 | 17 | 9 |
| | 7 | 7 | 7 | 0 |

TABLE 8.—*Results of exposure of Blattella germanica to liquid hydrocyanic acid with 5 per cent chloropicrin as tear gas*

| Amount of fumigant | Time of exposure | Number of exposures | Positive results, all killed | Negative results, some survived |
|-------------------------------|------------------|---------------------|------------------------------|---------------------------------|
| | <i>Hours</i> | | | |
| 30 gm. to 500 cubic feet..... | 2 | 20 | 18 | 2 |
| Do..... | 4 | 18 | 18 | 0 |
| Do..... | 17 | 4 | 4 | 0 |

TABLE 9.—Results of exposure of *Blattella germanica* to Zyklon-B with 5 per cent chloropicrin

| Amount of fumigant | Time of exposure | Number of exposures | Positive results, all killed | Negative results, some survived or eggs hatched |
|---------------------------------|------------------|---------------------|------------------------------|---|
| | Hours | | | |
| 15 gm. to 500 cubic feet..... | 1½ | 2 | 0 | 2 |
| | ¾ | 1 | 0 | 1 |
| | 1 | 1 | 0 | 1 |
| | 8 | 1 | 0 | 1 |
| | 8½ | 3 | 0 | 3 |
| | 15½ | 2 | 0 | 2 |
| | 16 | 1 | 0 | 1 |
| 22.5 gm. to 500 cubic feet..... | 32½ | 2 | 0 | 2 |
| | ½ | 1 | 0 | 1 |
| | 1 | 3 | 0 | 3 |
| | 2 | 2 | 0 | 2 |
| | 8 | 1 | 0 | 1 |
| | 10 | 1 | 0 | 1 |
| | 24 | 1 | 0 | 1 |
| | 28 | 2 | 0 | 2 |
| 30 gm. to 500 cubic feet..... | ½ | 1 | 1 | 0 |
| | 1 | 13 | 13 | 0 |
| | 2 | 1 | 1 | 0 |
| | 4 | 1 | 1 | 0 |
| | 18 | 1 | 1 | 0 |

TABLE 10.—Results of exposure of *Periplaneta americana* to certain fumigants

| Fumigant | Amount | Time of exposure | Number of exposures | Positive results, all killed | Negative results, some survived |
|--------------------------------------|---|------------------|---------------------|------------------------------|---------------------------------|
| | | Hours | | | |
| Generated HCN-CNCl..... | Sodium cyanide 60 gm., sodium chlorate 45 gm., hydrochloric acid 255 gm., water 255 gm. | 2 | 1 | 0 | 1 |
| Liquid HCN, 20 per cent CNCl. | 22.5 gm. to 500 cubic feet..... | 1 | 1 | 0 | 1 |
| | | 4 | 1 | 0 | 1 |
| Zyklon-B, 5 per cent chloropicrin. | 15 gm. to 500 cubic feet..... | ¾ | 1 | 1 | 0 |
| Liquid HCN, 5 per cent chloropicrin. | 30 gm. to 500 cubic feet..... | 4 | 2 | 2 | 0 |
| | | 17 | 1 | 1 | 0 |

TABLE 11.—Results of exposure of *Blatta orientalis* to certain fumigants

| Fumigant | Amount | Time of exposure | Number of exposures | Positive results, all killed | Negative results, some survived |
|---------------------------------------|---|------------------|---------------------|------------------------------|---------------------------------|
| | | Hours | | | |
| Generated HCN-CNCl..... | Sodium cyanide 60 gm., sodium chlorate 45 gm., hydrochloric acid 255 gm., water 255 gm. | 2 | 1 | 0 | 1 |
| Liquid HCN, 10 per cent chloropicrin. | 15 gm. to 500 cubic feet..... | ½ | 2 | 0 | 2 |
| | | 1 | 2 | 0 | 2 |
| | | 2 | 2 | 0 | 2 |
| | | 14½ | 1 | 0 | 1 |
| | | 21 | 1 | 0 | 1 |
| Liquid HCN, 20 per cent CNCl. | 15 gm. to 500 cubic feet..... | 2 | 1 | 0 | 1 |
| | 30 gm. to 500 cubic feet..... | 2 | 3 | 0 | 3 |
| | 45 gm. to 500 cubic feet..... | 2 | 1 | 0 | 1 |
| Liquid HCN, 5 per cent chloropicrin. | 30 gm. to 500 cubic feet..... | 4 | 1 | 1 | 0 |
| | | 17 | 1 | 1 | 0 |

COMMENT

It will be noted from the tables that negative results are recorded when only one or two roaches from a cage survived the exposure. It has happened many times that all roaches were apparently dead immediately after the exposure, but a few recovered enough to move about by the next day. Many roaches appeared to be partly paralyzed after fumigation, able only to kick their legs or move feebly, and never become active. Roaches were not fed before or after fumigation, and yet many survived for two weeks or more apparently without food. They were never observed to feed upon the dead roaches in the same container.

These experiments indicate that the amount of straight hydrocyanic acid gas generated from 120 gm. of sodium cyanide per 1,000 cubic feet can not be depended upon to kill all the roaches in a 2 or 4 hour exposure. Several live roaches were seen after exposure, but eggs were not observed to hatch.

After a 2-hour exposure to the gas generated from 180 gm. of sodium cyanide and 120 gm. of sodium chlorate per 1,000 cubic feet, live roaches were observed, but no eggs hatched.

Exposure to liquid hydrocyanic acid with 10 per cent chloropicrin in the proportion of 60 gm. or less per 1,000 cubic feet was not thoroughly effective in killing all roaches. Eggs hatched after exposure to 30 gm. per 1,000 cubic feet.

Exposure to liquid hydrocyanic acid with 20 per cent cyanogen-chloride in the proportion of 90 gm. or less per 1,000 cubic feet was not entirely effective in killing all roaches after a 2-hour exposure. Neither was an exposure in the proportion of 60 gm. per 1,000 cubic feet for 4 or 5 hours effective. Exposure to 90 gm. per 1,000 cubic feet for 7 hours was effective.

Liquid hydrocyanic acid with 5 per cent chloropicrin was effective in killing roaches in 18 out of 20 tests using 60 gm. per 1,000 cubic feet for 2 hours. This same amount was entirely effective in 18 tests when the exposure was for 4 hours.

Zyklon-B in the proportion of 60 gm. per 1,000 cubic feet for 1 hour exposure was effective in killing all roaches in 13 tests. Eggs were seen to hatch after exposure to this chemical in the amount of 30 gm. per 1,000 cubic feet.

It is thus seen that Zyklon-B and liquid hydrocyanic acid with 5 per cent chloropicrin probably have equal lethal effect and are effective in killing roaches in the proportion of 60 gm. per 1,000 cubic feet during a 2-hour exposure. This is the usual time of exposure for an empty vessel.

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PUBLIC HEALTH SERVICE PUBLICATIONS

A List of Publications Issued During the Period January-June, 1931

There is printed herewith a list of publications of the United States Public Health Service issued during the period January-June, 1931.

The most important articles that appear each week in the Public Health Reports are reprinted in pamphlet form, making possible a wider and more economical distribution of information that is of especial value and interest to public-health workers and the general public.

All of the publications listed below except those marked with an asterisk (*) are available for free distribution and, as long as the supply lasts, may be obtained by addressing the Surgeon General, United States Public Health Service, Washington, D. C. Those publications marked with an asterisk are not available for free distribution but may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D. C., *at the prices noted*. (No remittances should be sent to the Public Health Service.)

Reprints from the Public Health Reports

1439. *Studies on Leptospira Icterohemorrhagiae*. By J. R. Ridlon. January 2, 1931. 5 pages.
1440. *The National Leper Home (United States Marine Hospital), Carville, La. Review of the more important activities during the fiscal year ended June 30, 1930*. By O. E. Denney. January 2, 1931. 8 pages.
1441. *The Occurrence of Tularaemia in British Columbia*. By R. R. Parker, Eric Hearle, and E. A. Bruce. January 9, 1931. 2 pages.
1442. *Effect on Life Insurance Mortality Rates of Rejection of Applicants on the Basis of Medical Examination*. By Rollo H. Britten. January 9, 1931. 17 pages.

1443. Age Incidence of Communicable Diseases in a Rural Population. By Edgar Sydenstricker and Selwyn D. Collins. January 16, 1931. 14 pages.
1444. The Incidence of Influenza Among Persons of Different Economic Status During the Epidemic of 1918. By Edgar Sydenstricker. January 23, 1931. 17 pages.
1445. The Stillbirth Problem in the United States. By E. Blanche Sterling. January 30, 1931. 8 pages.
1446. Public Health Service publications. A list of publications issued during the period July-December, 1930. January 30, 1931. 5 pages.
1447. The Work of the United States Public Health Service. February 6, 1931. 30 pages.
1448. Typhus Fever. A Virus of the Typhus Type Derived from Fleas Collected from Wild Rats. By R. E. Dyer, A. Rumreich, and L. F. Badger. February 13, 1931. 5 pages.
1449. The Influence of Arsenicals and Crystalline Glutathione on the Oxygen Consumption of Tissues. By Carl Voegtlin, Sanford M. Rosenthal, and J. M. Johnson. February 13, 1931. 16 pages.
1450. Studies on the Biochemistry of Sulphur. IX. The Estimation of Cysteine in the Presence of Glutathione. By M. X. Sullivan and Walter C. Hess. February 20, 1931. 4 pages.
1451. Experimental Studies of Natural Purification in Polluted Waters. IV. The Influence of the Plankton on the Biochemical Oxidation of Organic Matter. By C. T. Butterfield, W. C. Purdy, and E. J. Theriault. February 20, 1931. 34 pages.
1452. An Infection of the Rocky Mountain Spotted Fever Type. Identification in the Eastern part of the United States. By L. F. Badger, R. E. Dyer, and A. Rumreich. February 27, 1931. 8 pages.
1453. The Typhus-Rocky Mountain Spotted Fever Group. An Epidemiological and Clinical Study in the Eastern and Southeastern States. By A. Rumreich, R. E. Dyer, and L. F. Badger. February 27, 1931. 11 pages.
1454. Note on an Outbreak of Malaria in a Railroad Camp, Rawson Switch, Calif. By J. C. Geiger and J. P. Gray. March 6, 1931. 3 pages.
1455. Measurements for Jaeger's Test Types Used in Near Vision Tests. March 6, 1931. 3 pages.
1456. The Action of Sulphydryl, Iron, and Cyanide Compounds on the Oxygen Consumption of Living Cells. By Sanford M. Rosenthal and Carl Voegtlin. March 6, 1931. 19 pages.
1457. A Limited Rat Flea Survey of Savannah, Ga. By Carroll Fox. March 13, 1931. 2 pages.
1458. A Public-Health Survey of Oklahoma. By A. J. McLaughlin. March 13, 1931. 24 pages.
- *1459. Conference on Medicinal and Scientific Requirements of Narcotic Drugs, Washington, D. C., August 12, 1930. A summary of the proceedings. October 3, 1930. 14 pages. 5 cents.
1460. The Fundamentals of Public Health Law. By James E. Bauman. March 20, 1931. 10 pages.
1461. Phosphorus, Total Calcium, and Diffusible Calcium Content of the Blood Sera of Lepers and Their Relation to Bone Changes. By Jerald G. Wooley, with the technical assistance of Hilary Ross. March 20, 1931. 18 pages.
1462. Antigenic Value of Scarlet Fever Streptococcus Toxin Modified by the Action of Formalin. By M. V. Veldee. March 27, 1931. 6 pages.

1463. Experimental Addiction of Animals to Opiates. By Lawrence Kolb and A. G. DuMez. March 27, 1931. 28 pages.
1464. Act Extending the Hours of Quarantine Inspection. March 27, 1931. 3 pages.
1465. Sickness Among Industrial Employees in the Second Half of 1930. April 3, 1931. 3 pages.
1466. Preliminary Report of Committee on Milk Production and Control. White House conference on child health and protection. April 3, 1931. 42 pages.
1467. The Psittacosis Outbreak in Maryland, December, 1929, and January, 1930. By V. L. Ellicott and Charles H. Halliday. April 10, 1931. 8 pages.
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1470. Observations on the Assay of the Antineuritic Vitamin. Some of the Factors Involved in the Use of the Rat Method. By W. H. Sebrell and E. Elvove. April 17, 1931. 9 pages.
1471. Significance of Positive Wassermann and Kahn Reactions in Leprosy. By L. F. Badger. April 24, 1931. 14 pages.
1472. The County Health Unit of Yesterday and To-day. By Fred T. Foard. April 24, 1931. 7 pages.
1473. Fumigants. By C. L. Williams. May 1, 1931. 19 pages.
1474. Criteria for Maintaining Balance of Program in County Health Departments. By F. L. Roberts. May 8, 1931. 6 pages.
1475. Experimental Studies of Natural Purification in Polluted Waters. V. The Selection of Dilution Waters for Use in Oxygen Demand Tests. By Emery J. Theriault, Paul D. McNamee, and Chester T. Butterfield. May 8, 1931. 32 pages.
1476. Public Health Progress in Knoxville, Tenn. By Joseph W. Mountin. May 15 and 22, 1931. 61 pages.
1477. The Epidemic of So-called Ginger Paralysis in Southern California in 1930-31. By Maurice I. Smith and E. Elvove. May 22, 1931. 9 pages.
1478. Development of the Proposed Morbidity Reporting Area. By R. C. Williams. May 29, 1931. 6 pages.
1479. Studies on the Biochemistry of Sulphur. XI. The Substitution of Dithioethylamine (Cystine Amine) for Cystine in the Diet of the White Rat. By M. X. Sullivan, W. C. Hess, and W. H. Sebrell. May 29, 1931. 7 pages.
1480. Experimental Studies of Natural Purification in Polluted Waters. VI. Rate of Disappearance of Oxygen in Sludge. By Emery J. Theriault and Paul D. McNamee. May 29, 1931. 18 pages.
1481. Résumé of Report on Sanitation and Yellow Fever Control in Liberia. By H. F. Smith. June 5, 1931. 7 pages.
1482. Venereal Disease Among Coast Guard Enlisted Personnel During the Fiscal Year 1930. By W. W. King. June 5, 1931. 6 pages.
1483. Rocky Mountain Spotted Fever (Eastern type). Transmission by the American Dog Tick (*Dermacentor variabilis*). By R. E. Dyer, L. F. Badger, and A. Rumreich. June 12, 1931. 11 pages.
1484. Results of the Operation of the Standard Milk Ordinance in Missouri. By Franklin A. Clark and W. Scott Johnson. June 12, 1931. 12 pages.

1485. Report of Committee on Milk. Conference of State and Provincial Health Authorities of North America. By Earle G. Brown. June 19 1931. 5 pages.
1486. An epidemiological Study of Typhoid Fever in Six Ohio River Cities. By M. V. Veldee. June 19, 1931. 27 pages.
1487. Prevalence of Undulant Fever in the United States. By H. E. Hasseltine. June 26, 1931. 5 pages.
1488. Studies in Asphyxia. I. Neuropathology Resulting from Comparatively Rapid Carbon-Monoxide Asphyxia. By John Chornyak and R. R. Sayers. June 26, 1931. 8 pages.

Supplements to the Public Health Reports

88. The Notifiable Diseases. Prevalence During 1929 in States. 1931. 70 pages.
89. Studies on the Biochemistry of Sulphur. VIII. The Rate of Absorption of Cystine from the Gastrointestinal Tract of the White Rat. By M. X. Sullivan and W. C. Hess. 1931. 16 pages.
90. Detailed Instructions for the Performance of the Dissolved Oxygen and Biochemical Oxygen Demand Tests. By Emery J. Theriault. 1931. 34 pages.
91. State Laws Relating to the Control of Narcotic Drugs and the Treatment of Drug Addiction. 1931. 330 pages.
92. Studies on Oxidation-Reduction. XVI. The Oxazines, Nile Blue, Brilliant Cresyl Blue, Methyl Capri Blue, and Ethyl Capri Blue. By Barnett Cohen and Paul W. Preisler. 1931. 67 pages.
94. Studies on the Biochemistry of Sulphur. X. The Cystine Content of Meat and Fish. By M. X. Sullivan and W. C. Hess. 1931. 13 pages.
95. A Nomogram for the Calculation of Dissolved Oxygen. By C. T. Wright and Emery J. Theriault. 1931. 3 pages.

Public Health Bulletins

198. A Study of the Pollution and Natural Purification of the Illinois River. II. The Plankton and Related Organisms. By W. C. Purdy. 1930. 212 pages.
199. Studies in Physical Development and Posture. IV. Postural Relations as Noted in Twenty-two Hundred Boys and Men. By Louis Schwartz, Rollo H. Britten, and Lewis R. Thompson. 1931. 54 pages.

National Institute of Health Bulletin

158. Undulant Fever. With Special Reference to a Study of "Brucella" Infection in Iowa. By A. V. Hardy, C. F. Jordan, I. H. Borts, and Grace Campbell Hardy. 1930. 89 pages.

Reprints from Venereal Disease Information

27. Prevalence of Venereal Disease in the United States. By Lida J. Usilton. From Venereal Disease Information, Vol. XI, No. 12. 20 pages.
28. Comparative Effect of Stock Vaccine With Convalescent Serum and Stock Vaccine with Commercial Antigonococcal Serum in the Treatment of Gonorrheal Arthritis and Epididymitis. By Charles Ferguson, Robert A. Mee, and Lida J. Usilton. From Venereal Disease Information, Vol. XII, No. 1. 7 pages.

29. Cutaneous and Mucosal Relapse in Early Syphilis and its Differentiation from Reinfection. By John H. Stokes, Harold N. Cole, Joseph Earle Moore, Paul A. O'Leary, Thomas Parran, and Udo J. Wile. From Venereal Disease Information, Vol. XII, No. 2. 12 pages.
30. The Use of Bismuth in the Treatment of Syphilis. By H. N. Cole, in collaboration with J. Earle Moore, Paul A. O'Leary, Thomas Parran, John H. Stokes, and Udo J. Wile. From Venereal Disease Information, Vol. XII, No. 4. 13 pages.

SPECIAL COURSE IN CLINICAL TROPICAL MEDICINE

Hospital for Tropical Diseases, London

The Fellowship of Medicine and Post-Graduate Medical Association announces that a special course in clinical tropical medicine will be given at the Hospital for Tropical Diseases, London, during the period October 5-23, 1931. The course will consist of special lectures and demonstrations, with specimens, charts, lantern slides, and demonstrations of clinical cases where possible, and will include the following subjects: Enteric fever, undulant fever, phlebotomus fever, dengue fever, yellow fever, beriberi, pellagra, amebic abscess, heat-stroke, yaws, ulcerating granuloma, climatic bubo, filariasis, differential diagnosis of fevers, etc.

Further information regarding this course may be obtained by addressing the secretary, Fellowship of Medicine and Post-Graduate Medical Association, No. 1 Wimpole Street, W. 1., London.

DEATHS DURING WEEK ENDED JUNE 20, 1931

Summary of information received by telegraph from industrial insurance companies for the week ended June 20, 1931, and corresponding week of 1930. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce.)

| | Week ended June 20, 1931 | Corresponding week, 1930 |
|---|-----------------------------|-----------------------------|
| Policies in force..... | 75, 172, 566 | 75, 896, 166 |
| Number of death claims..... | 13, 023 | 13, 544 |
| Death claims per 1,000 policies in force, annual rate.. | 9. 0 | 9. 3 |

Deaths¹ from all causes in certain large cities of the United States during the week ended June 20, 1931, infant mortality, annual death rate, and comparison with corresponding week of 1930. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

[The rates published in this summary are based upon mid-year population estimates derived from the 1930 census]

| City | Week ended June 20, 1931 | | | | Corresponding week, 1930 | | Death rate ² for the first 25 weeks | |
|------------------------|--------------------------|-------------------------|---------------------|------------------------------------|--------------------------|---------------------|--|------------------|
| | Total deaths | Death rate ² | Deaths under 1 year | Infant mortality rate ³ | Death rate ² | Deaths under 1 year | 1931 | 1930 |
| Total (82 cities)..... | 7, 210 | 10. 5 | 602 | 4 45 | 11. 0 | 653 | 13. 0 | 12. 9 |
| Akron..... | 33 | 6. 7 | 2 | 20 | 7. 5 | 3 | 8. 2 | 8. 4 |
| Albany..... | 28 | 11. 3 | 2 | 40 | 11. 0 | 2 | 15. 1 | 15. 9 |
| Atlanta..... | 74 | 13. 9 | 7 | 72 | 15. 7 | 11 | 15. 9 | 16. 7 |
| White..... | 34 | | 1 | 16 | | 3 | | |
| Colored..... | 40 | (⁹) | 1 | 172 | (⁹) | 8 | (⁹) | (⁹) |
| Baltimore..... | 169 | 10. 8 | 15 | 51 | 10. 6 | 13 | 15. 8 | 14. 9 |
| White..... | 136 | | 10 | 45 | | 10 | | |
| Colored..... | 33 | (⁹) | 5 | 78 | (⁹) | 3 | (⁹) | (⁹) |
| Birmingham..... | 63 | 12. 2 | 3 | 30 | 12. 6 | 3 | 14. 7 | 14. 2 |
| White..... | 33 | | 2 | 34 | | 3 | | |
| Colored..... | 30 | (⁹) | 1 | 24 | (⁹) | 0 | (⁹) | (⁹) |
| Boston..... | 163 | 10. 8 | 17 | 49 | 13. 3 | 21 | 15. 5 | 15. 7 |
| Bridgeport..... | 28 | 9. 9 | 1 | 17 | 8. 2 | 4 | 12. 2 | 12. 4 |
| Buffalo..... | 120 | 10. 8 | 13 | 53 | 10. 3 | 11 | 14. 3 | 14. 0 |
| Cambridge..... | 27 | 12. 3 | 0 | 0 | 12. 8 | 2 | 13. 5 | 13. 4 |
| Camden..... | 26 | 11. 4 | 3 | 52 | 14. 9 | 4 | 15. 9 | 14. 8 |
| Canton..... | 25 | 12. 2 | 0 | 0 | 8. 4 | 0 | 11. 2 | 11. 0 |
| Chicago..... | 657 | 9. 9 | 55 | 49 | 9. 3 | 49 | 11. 4 | 11. 3 |
| Cincinnati..... | 125 | 14. 3 | 5 | 30 | 15. 0 | 13 | 16. 8 | 16. 4 |
| Cleveland..... | 163 | 9. 3 | 15 | 44 | 10. 0 | 8 | 12. 0 | 12. 1 |
| Columbus..... | 75 | 13. 2 | 7 | 63 | 14. 0 | 2 | 14. 8 | 17. 5 |
| Dallas..... | 49 | 9. 4 | 4 | | 12. 1 | 8 | 12. 1 | 12. 1 |
| White..... | 32 | | 3 | | | 7 | | |
| Colored..... | 17 | (⁹) | 1 | | (⁹) | 1 | (⁹) | (⁹) |
| Dayton..... | 42 | 10. 6 | 1 | 14 | 12. 4 | 2 | 12. 9 | 10. 5 |
| Denver..... | 74 | 13. 2 | 5 | 48 | 11. 6 | 6 | 15. 0 | 15. 1 |
| Des Moines..... | 36 | 13. 0 | 0 | 0 | 9. 8 | 1 | 11. 6 | 12. 5 |
| Detroit..... | 270 | 8. 5 | 25 | 40 | 8. 6 | 33 | 9. 2 | 10. 3 |
| Duluth..... | 20 | 10. 2 | 1 | 25 | 11. 3 | 2 | 11. 3 | 11. 8 |
| El Paso..... | 37 | 18. 4 | 7 | | 16. 7 | 8 | 17. 4 | 18. 4 |
| Erie..... | 26 | 11. 5 | 1 | 19 | 9. 4 | 0 | 11. 4 | 11. 4 |
| Fall River..... | 19 | 8. 6 | 0 | 0 | 11. 3 | 4 | 13. 2 | 13. 5 |
| Flint..... | 18 | 5. 7 | 3 | 38 | 9. 9 | 6 | 7. 9 | 10. 0 |
| Forth Worth..... | 25 | 7. 8 | 1 | | 10. 5 | 7 | 11. 8 | 11. 7 |
| White..... | 18 | | 0 | | | 5 | | |
| Colored..... | 7 | (⁹) | 1 | | (⁹) | 2 | (⁹) | (⁹) |
| Grand Rapids..... | 26 | 7. 9 | 2 | 30 | 12. 6 | 1 | 9. 7 | 11. 4 |
| Houston..... | 69 | 11. 6 | 10 | | 13. 2 | 11 | 11. 6 | 12. 8 |
| White..... | 46 | | 8 | | | 5 | | |
| Colored..... | 23 | (⁹) | 2 | | (⁹) | 6 | (⁹) | (⁹) |
| Indianapolis..... | 96 | 13. 5 | 4 | 33 | 12. 4 | 3 | 14. 5 | 15. 3 |
| White..... | 74 | | 4 | 38 | | 3 | | |
| Colored..... | 22 | (⁹) | 0 | 0 | (⁹) | 0 | (⁹) | (⁹) |
| Jersey City..... | 61 | 10. 0 | 6 | 53 | 8. 2 | 5 | 12. 7 | 12. 5 |
| Kansas City, Kans..... | 27 | 11. 5 | 1 | 21 | 9. 8 | 2 | 14. 2 | 11. 7 |
| White..... | 20 | | 0 | 0 | | 2 | | |
| Colored..... | 7 | (⁹) | 1 | 127 | (⁹) | 0 | (⁹) | (⁹) |
| Kansas City, Mo..... | 95 | 12. 1 | 2 | 15 | 13. 2 | 14 | 14. 3 | 13. 7 |
| Knoxville..... | 25 | 11. 9 | 4 | 85 | 14. 2 | 5 | 13. 7 | 14. 7 |
| White..... | 21 | | 4 | 95 | | 4 | | |
| Colored..... | 4 | (⁹) | 0 | 0 | (⁹) | 1 | (⁹) | (⁹) |
| Long Beach..... | 31 | 10. 6 | 2 | 48 | 7. 6 | 3 | 10. 5 | 10. 1 |
| Los Angeles..... | 237 | 9. 4 | 25 | 73 | 12. 3 | 20 | 11. 3 | 11. 6 |
| Louisville..... | 90 | 15. 2 | 8 | 69 | 13. 0 | 5 | 15. 6 | 14. 2 |
| White..... | 60 | | 4 | 39 | | 3 | | |
| Colored..... | 30 | (⁹) | 4 | 265 | (⁹) | 2 | (⁹) | (⁹) |
| Lowell..... | 32 | 16. 6 | 2 | 51 | 13. 5 | 2 | 13. 5 | 14. 8 |
| Lynn..... | 15 | 7. 6 | 0 | 0 | 13. 7 | 2 | 11. 1 | 11. 9 |
| Memphis..... | 72 | 14. 5 | 10 | 106 | 16. 6 | 4 | 17. 2 | 17. 9 |
| White..... | 37 | | 3 | 50 | | 2 | | |
| Colored..... | 35 | (⁹) | 7 | 203 | (⁹) | 2 | (⁹) | (⁹) |
| Miami..... | 21 | 9. 7 | 0 | 0 | 9. 9 | 0 | 13. 1 | 12. 1 |
| White..... | 13 | | 0 | 0 | | 0 | | |
| Colored..... | 8 | (⁹) | 0 | 0 | (⁹) | 0 | (⁹) | (⁹) |

Footnotes at end of table.

Deaths¹ from all causes in certain large cities of the United States during the week ended June 20, 1931, infant mortality, annual death rate, and comparison with corresponding week of 1930. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)—Continued

| City | Week ended June 20, 1931 | | | | Corresponding week, 1930 | | Death rate ² for the first 26 weeks | |
|-------------------------------------|--------------------------|-------------------------|---------------------|------------------------------------|--------------------------|---------------------|--|------------------|
| | Total deaths | Death rate ² | Deaths under 1 year | Infant mortality rate ³ | Death rate ² | Deaths under 1 year | 1931 | 1930 |
| Milwaukee..... | 90 | 8.0 | 16 | 69 | 9.1 | 11 | 10.0 | 10.5 |
| Minneapolis..... | 87 | 9.6 | 8 | 52 | 10.8 | 4 | 11.8 | 11.2 |
| Nashville..... | 41 | 13.7 | 5 | 74 | 17.6 | 6 | 17.4 | 16.5 |
| White..... | 25 | | 4 | 80 | | 6 | | |
| Colored..... | 16 | (⁴) | 1 | 59 | (⁴) | 0 | (⁴) | (⁴) |
| New Bedford ⁵ | 23 | 10.7 | 0 | 0 | 13.4 | 1 | 13.3 | 12.3 |
| New Haven..... | 29 | 9.3 | 1 | 19 | 15.7 | 4 | 12.7 | 14.5 |
| New Orleans..... | 126 | 14.1 | 11 | 60 | 17.0 | 17 | 18.0 | 18.7 |
| White..... | 63 | | 4 | 33 | | 12 | | |
| Colored..... | 63 | (⁴) | 7 | 114 | (⁴) | 5 | (⁴) | (⁴) |
| New York..... | 1,277 | 9.4 | 100 | 42 | 9.9 | 131 | 12.4 | 11.9 |
| Bronx Borough..... | 172 | 6.7 | 14 | 32 | 7.3 | 8 | 9.0 | 8.5 |
| Brooklyn Borough..... | 435 | 8.6 | 44 | 47 | 8.9 | 49 | 11.4 | 10.9 |
| Manhattan Borough..... | 501 | 14.4 | 33 | 56 | 14.7 | 60 | 19.0 | 17.8 |
| Queens Borough..... | 129 | 5.8 | 6 | 16 | 6.5 | 10 | 8.0 | 7.7 |
| Richmond Borough..... | 40 | 12.8 | 3 | 54 | 13.7 | 4 | 14.3 | 15.0 |
| Newark, N. J..... | 89 | 10.4 | 9 | 47 | 9.2 | 7 | 12.8 | 13.4 |
| Oakland..... | 59 | 10.5 | 1 | 13 | 11.5 | 2 | 11.2 | 11.7 |
| Oklahoma City..... | 42 | 11.1 | 3 | 41 | 10.8 | 6 | 12.0 | 10.5 |
| Omaha..... | 47 | 11.3 | 6 | 67 | 13.1 | 3 | 14.7 | 13.8 |
| Paterson..... | 29 | 10.9 | 2 | 34 | 7.1 | 0 | 14.7 | 13.4 |
| Philadelphia..... | 453 | 12.0 | 42 | 61 | 11.1 | 29 | 14.8 | 13.5 |
| Peoria..... | 24 | 11.5 | 2 | 53 | 9.9 | 2 | 13.0 | 13.1 |
| Pittsburgh..... | 165 | 12.7 | 13 | 45 | 11.4 | 14 | 16.4 | 15.1 |
| Portland, Oreg..... | 72 | 12.2 | 6 | 73 | 13.4 | 2 | 12.4 | 13.1 |
| Providence..... | 50 | 10.2 | 5 | 46 | 11.5 | 4 | 14.2 | 14.6 |
| Richmond..... | 43 | 12.2 | 2 | 29 | 15.4 | 5 | 16.9 | 15.9 |
| White..... | 29 | | 2 | 44 | | 2 | | |
| Colored..... | 14 | (⁴) | 0 | 0 | (⁴) | 3 | (⁴) | (⁴) |
| Rochester..... | 63 | 9.9 | 3 | 27 | 10.6 | 7 | 13.0 | 12.5 |
| St. Louis..... | 174 | 11.0 | 8 | 27 | 13.9 | 13 | 16.4 | 14.6 |
| St. Paul..... | 51 | 9.6 | 2 | 21 | 10.1 | 4 | 11.4 | 10.9 |
| Salt Lake City ⁶ | 30 | 10.9 | 4 | 60 | 11.9 | 2 | 13.0 | 13.7 |
| San Antonio..... | 74 | 16.1 | 24 | | 18.3 | 18 | 16.2 | 18.7 |
| San Diego..... | 37 | 12.3 | 3 | 61 | 12.6 | 0 | 14.8 | 14.8 |
| San Francisco..... | 146 | 11.7 | 0 | 0 | 10.8 | 11 | 13.8 | 13.5 |
| Schenectady..... | 11 | 6.0 | 1 | 29 | 9.8 | 0 | 10.9 | 12.2 |
| Seattle..... | 71 | 10.0 | 2 | 19 | 11.9 | 4 | 12.3 | 11.5 |
| Somerville..... | 17 | 8.4 | 2 | 74 | 6.0 | 1 | 10.4 | 11.1 |
| South Bend..... | 15 | 7.2 | 2 | 50 | 5.0 | 2 | 8.9 | 9.5 |
| Spokane..... | 29 | 13.0 | 5 | 130 | 14.4 | 2 | 12.9 | 13.3 |
| Springfield, Mass..... | 27 | 9.2 | 4 | 61 | 11.1 | 3 | 13.3 | 13.5 |
| Syracuse..... | 46 | 11.3 | 5 | 59 | 11.4 | 0 | 12.5 | 13.0 |
| Tacoma..... | 16 | 7.7 | 0 | 0 | 9.3 | 0 | 13.3 | 13.0 |
| Toledo..... | 55 | 9.7 | 11 | 101 | 11.3 | 12 | 12.9 | 13.6 |
| Trenton..... | 25 | 10.5 | 2 | 35 | 14.4 | 3 | 18.3 | 17.7 |
| Utica..... | 18 | 9.2 | 0 | 0 | 10.8 | 1 | 15.4 | 16.4 |
| Washington, D. C..... | 132 | 14.0 | 10 | 55 | 14.4 | 8 | 17.0 | 16.0 |
| White..... | 85 | | 7 | 57 | | 7 | | |
| Colored..... | 47 | (⁴) | 3 | 52 | (⁴) | 1 | (⁴) | (⁴) |
| Waterbury..... | 19 | 9.8 | 2 | 60 | 10.4 | 6 | 10.5 | 10.4 |
| Wilmington, Del. ⁷ | 18 | 8.8 | 3 | 65 | 13.2 | 1 | 15.5 | 15.5 |
| Worcester..... | 34 | 9.0 | 3 | 41 | 7.5 | 2 | 13.8 | 14.2 |
| Yonkers..... | 28 | 10.5 | 0 | 0 | 10.0 | 2 | 9.5 | 8.7 |
| Youngstown..... | 39 | 11.8 | 5 | 70 | 7.0 | 3 | 11.0 | 10.8 |

¹ Deaths of nonresidents are included. Stillbirths are excluded.

² These rates represent annual rates per 1,000 population, as estimated for 1931 and 1930 by the arithmetical method.

³ Deaths under 1 year of age per 1,000 live births. Cities left blank are not in the registration area for births.

⁴ Data for 77 cities.

⁵ Deaths for week ended Friday.

⁶ For the cities for which deaths are shown by color, the percentage of colored population in 1920 was as follows: 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; Miami, 31; Nashville, 30; New Orleans, 26; Richmond, 32; and Washington, D. C., 25.

⁷ Population Apr. 1, 1930; decreased 1920 to 1930, no estimate made.

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 June 27, 1931, and June 28, 1930

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended June 27, 1931, and June 28, 1930

| Division and State | Diphtheria | | Influenza | | Measles | | Meningococcus meningitis | |
|-----------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Week ended June 27, 1931 | Week ended June 28, 1930 | Week ended June 27, 1931 | Week ended June 28, 1930 | Week ended June 27, 1931 | Week ended June 28, 1930 | Week ended June 27, 1931 | Week ended June 28, 1930 |
| New England States: | | | | | | | | |
| Maine..... | 2 | 1 | 1 | 2 | 45 | 39 | 1 | 0 |
| New Hampshire..... | | 1 | | | 17 | 18 | 0 | 0 |
| Vermont..... | | 1 | | | 55 | 21 | 0 | 0 |
| Massachusetts..... | 44 | 48 | 1 | | 452 | 717 | 1 | 6 |
| Rhode Island..... | 2 | 7 | | | 102 | 25 | 0 | 0 |
| Connecticut ¹ | 4 | 4 | 1 | | 206 | 24 | 1 | 0 |
| Middle Atlantic States: | | | | | | | | |
| New York..... | 94 | 106 | 15 | 15 | 1,920 | 1,306 | 12 | 6 |
| New Jersey..... | 24 | 74 | 3 | 2 | 629 | 838 | 2 | 10 |
| Pennsylvania..... | 71 | 76 | | | 1,410 | 907 | 16 | 10 |
| East North Central States: | | | | | | | | |
| Ohio..... | 31 | 32 | 12 | 10 | 933 | 378 | 6 | 7 |
| Indiana..... | 16 | 11 | 3 | | 162 | 123 | 6 | 4 |
| Illinois..... | 115 | 122 | 5 | 25 | 1,157 | 265 | 5 | 5 |
| Michigan..... | 27 | 58 | | 4 | 205 | 530 | 1 | 12 |
| Wisconsin..... | 6 | 5 | 9 | 6 | 442 | 429 | 1 | 2 |
| West North Central States: | | | | | | | | |
| Minnesota..... | 9 | 11 | | 1 | 108 | 74 | 0 | 0 |
| Iowa..... | 2 | 3 | | | 23 | 51 | 0 | 2 |
| Missouri..... | 19 | 27 | | | 92 | 61 | 2 | 3 |
| North Dakota..... | 11 | 1 | | | 45 | 9 | 2 | 0 |
| South Dakota..... | 5 | 2 | | | 5 | 46 | 0 | 0 |
| Nebraska..... | 8 | 6 | | | 3 | 30 | 0 | 0 |
| Kansas..... | 4 | 7 | | | 59 | 187 | 1 | 2 |
| South Atlantic States: | | | | | | | | |
| Delaware..... | 4 | | | | 60 | 3 | 0 | 0 |
| Maryland ¹ | 13 | 10 | 1 | 2 | 274 | 25 | 2 | 0 |
| District of Columbia..... | 9 | 6 | 1 | | 32 | 48 | 0 | 0 |
| Virginia ¹ | | | | | | | | |
| West Virginia..... | 5 | 3 | 3 | 3 | 204 | 40 | 0 | 1 |
| North Carolina..... | 8 | 7 | 1 | 34 | 343 | 72 | 1 | 2 |
| South Carolina..... | 5 | 5 | 142 | 126 | 60 | | 0 | 0 |
| Georgia ¹ | 5 | 4 | 5 | 9 | 44 | 84 | 0 | 4 |
| Florida..... | 7 | 8 | | | 28 | 36 | 1 | 0 |
| East South Central States: | | | | | | | | |
| Kentucky..... | | 3 | | | 24 | 22 | 2 | 0 |
| Tennessee..... | 2 | 3 | 3 | 20 | 21 | 47 | 3 | 1 |
| Alabama ¹ | 6 | 9 | | 7 | 28 | 56 | 2 | 2 |
| Mississippi..... | 4 | 2 | | | | | 1 | 0 |
| West South Central States: | | | | | | | | |
| Arkansas..... | 2 | 1 | 1 | | 15 | 11 | 1 | 3 |
| Louisiana..... | 19 | 9 | 4 | 10 | 2 | 8 | 0 | 2 |
| Oklahoma ¹ | 5 | 20 | 5 | 3 | 14 | 47 | 0 | 0 |
| Texas..... | 9 | 21 | 12 | 6 | 69 | 54 | 0 | 2 |

¹ Typhus fever: 1931, 6 cases; 1 case in Connecticut; 1 case in Virginia; 1 case in Georgia; and 3 cases in Alabama.

² New York City only.

³ Week ended Friday.

⁴ Figures for 1931 are exclusive of Oklahoma City and Tulsa.

*Cases of certain communicable diseases reported by telegraph by State health officers
for weeks ended June 27, 1931, and June 28, 1930—Continued*

| Division and State | Diphtheria | | Influenza | | Measles | | Meningococcus meningitis | |
|-----------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Week ended June 27, 1931 | Week ended June 28, 1930 | Week ended June 27, 1931 | Week ended June 28, 1930 | Week ended June 27, 1931 | Week ended June 28, 1930 | Week ended June 27, 1931 | Week ended June 28, 1930 |
| Mountain States: | | | | | | | | |
| Montana..... | 2 | ----- | ----- | ----- | 21 | 3 | 0 | 0 |
| Idaho..... | ----- | 2 | ----- | ----- | 6 | 2 | 1 | 1 |
| Wyoming..... | ----- | 1 | ----- | ----- | 24 | 38 | 0 | 0 |
| Colorado..... | 5 | 1 | ----- | ----- | 68 | 171 | 0 | 1 |
| New Mexico..... | 6 | 3 | ----- | ----- | 30 | 15 | 0 | 2 |
| Arizona..... | 4 | 4 | ----- | ----- | 5 | 48 | 1 | 1 |
| Utah ¹ | ----- | 2 | 3 | 4 | 10 | 68 | ----- | 1 |
| Pacific States: | | | | | | | | |
| Washington..... | 7 | 6 | ----- | ----- | 36 | 250 | 0 | 0 |
| Oregon..... | 2 | ----- | 5 | 1 | 30 | 96 | 0 | 0 |
| California..... | 54 | 52 | 12 | 26 | 393 | 924 | 3 | 3 |
| Division and State | Poliomyelitis | | Scarlet fever | | Smallpox | | Typhoid fever | |
| | Week ended June 27, 1931 | Week ended June 28, 1930 | Week ended June 27, 1931 | Week ended June 28, 1930 | Week ended June 27, 1931 | Week ended June 28, 1930 | Week ended June 27, 1931 | Week ended June 28, 1930 |
| New England States: | | | | | | | | |
| Maine..... | 0 | 0 | 6 | 13 | 0 | 0 | 2 | 1 |
| New Hampshire..... | 0 | 1 | 1 | 9 | 0 | 0 | 0 | 0 |
| Vermont..... | 0 | 0 | 7 | 2 | 12 | 0 | 0 | 0 |
| Massachusetts..... | 5 | 1 | 178 | 112 | 0 | 0 | 5 | 5 |
| Rhode Island..... | 0 | 0 | 25 | 6 | 0 | 0 | 0 | 1 |
| Connecticut ¹ | 2 | 1 | 26 | 20 | 0 | 0 | 1 | 1 |
| Middle Atlantic States: | | | | | | | | |
| New York..... | 7 | 4 | 378 | 136 | 15 | 9 | 13 | 14 |
| New Jersey..... | 1 | 0 | 149 | 63 | 0 | 0 | 6 | 6 |
| Pennsylvania..... | 0 | 1 | 426 | 202 | 1 | 0 | 14 | 23 |
| East North Central States: | | | | | | | | |
| Ohio..... | 2 | 3 | 221 | 152 | 32 | 58 | 9 | 7 |
| Indiana..... | 1 | 0 | 45 | 47 | 62 | 114 | 8 | 2 |
| Illinois..... | 2 | 3 | 266 | 209 | 51 | 63 | 12 | 13 |
| Michigan..... | 1 | 1 | 274 | 151 | 13 | 53 | 3 | 4 |
| Wisconsin..... | 0 | 2 | 38 | 65 | 4 | 14 | 3 | 1 |
| West North Central States: | | | | | | | | |
| Minnesota..... | 1 | 0 | 29 | 36 | 5 | 4 | 2 | 4 |
| Iowa..... | 0 | 0 | 15 | 17 | 14 | 73 | 1 | 3 |
| Missouri..... | 0 | 0 | 28 | 48 | 9 | 26 | 6 | 1 |
| North Dakota..... | 1 | 2 | 13 | 17 | 19 | 20 | 1 | 1 |
| South Dakota..... | 0 | 0 | 8 | 6 | 4 | 19 | 1 | 1 |
| Nebraska..... | 0 | 0 | 13 | 8 | 12 | 21 | 0 | 3 |
| Kansas..... | 0 | 0 | 11 | 26 | 59 | 57 | 6 | 3 |
| South Atlantic States: | | | | | | | | |
| Delaware..... | 0 | 0 | 1 | 7 | 0 | 0 | 0 | 0 |
| Maryland ³ | 0 | 0 | 35 | 24 | 0 | 0 | 6 | 7 |
| District of Columbia..... | 0 | 0 | 8 | 7 | 0 | 0 | 0 | 0 |
| Virginia ¹ | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| West Virginia..... | 2 | 0 | 15 | ----- | 4 | 15 | 6 | 10 |
| North Carolina..... | 2 | 6 | 22 | 13 | 0 | 13 | 31 | 46 |
| South Carolina..... | 1 | 1 | 3 | 4 | 4 | 1 | 47 | 60 |
| Georgia ¹ | 1 | 0 | 15 | 8 | 0 | 0 | 26 | 40 |
| Florida..... | 1 | 0 | 1 | 1 | 0 | 1 | 6 | 3 |
| East South Central States: | | | | | | | | |
| Kentucky..... | 1 | 0 | 35 | 23 | 4 | 2 | 1 | 10 |
| Tennessee..... | 0 | 2 | 11 | 15 | 2 | 3 | 13 | 35 |
| Alabama ¹ | 1 | 2 | 9 | 2 | 6 | 0 | 20 | 18 |
| Mississippi..... | 0 | 0 | 6 | 4 | 20 | 2 | 23 | 37 |
| West South Central States: | | | | | | | | |
| Arkansas..... | 0 | 0 | 1 | 4 | 14 | 3 | 8 | 14 |
| Louisiana..... | 2 | 8 | 7 | 16 | 2 | 3 | 34 | 21 |
| Oklahoma ⁴ | 1 | 1 | 9 | 18 | 45 | 73 | 12 | 14 |
| Texas..... | 0 | 3 | 7 | 14 | 7 | 27 | 5 | 38 |

¹ Typhus fever: 1931, 6 cases; 1 case in Connecticut; 1 case in Virginia; 1 case in Georgia; and 3 cases in Alabama.

³ Week ended Friday.

⁴ Figures for 1931 are exclusive of Oklahoma City and Tulsa.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended June 27, 1931, and June 28, 1930—Continued

| Division and State | Poliomyelitis | | Scarlet fever | | Smallpox | | Typhoid fever | |
|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Week ended June 27, 1931 | Week ended June 28, 1930 | Week ended June 27, 1931 | Week ended June 28, 1930 | Week ended June 27, 1931 | Week ended June 28, 1930 | Week ended June 27, 1931 | Week ended June 28, 1930 |
| Mountain States: | | | | | | | | |
| Montana..... | 1 | 0 | 5 | 5 | 3 | 3 | 3 | 1 |
| Idaho..... | 0 | 0 | 2 | 1 | 6 | 3 | 3 | 2 |
| Wyoming..... | 0 | 0 | 2 | 2 | 1 | 2 | 0 | 0 |
| Colorado..... | 0 | 1 | 18 | 10 | 5 | 2 | 4 | 2 |
| New Mexico..... | 0 | 0 | 0 | 7 | 0 | 1 | 4 | 0 |
| Arizona..... | 0 | 0 | 0 | 5 | 1 | 4 | 4 | 15 |
| Utah ¹ | 0 | 0 | 7 | 8 | 0 | 0 | 1 | 1 |
| Pacific States: | | | | | | | | |
| Washington..... | 0 | 0 | 16 | 13 | 8 | 31 | 2 | 2 |
| Oregon..... | 0 | 0 | 9 | 10 | 9 | 21 | 5 | 3 |
| California..... | 4 | 77 | 73 | 66 | 17 | 41 | 18 | 21 |

¹ Week ended Friday.

SUMMARY OF MONTHLY REPORTS FROM STATES

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

| State | Cerebro-spinal meningitis | Diphtheria | Influenza | Malaria | Measles | Pellagra | Poliomyelitis | Scarlet fever | Smallpox | Typhoid fever |
|-------------------|---------------------------|------------|-----------|---------|---------|----------|---------------|---------------|----------|---------------|
| <i>May, 1931</i> | | | | | | | | | | |
| Idaho..... | 6 | 9 | | | 22 | | 0 | 52 | 10 | 5 |
| Louisiana..... | 14 | 74 | 101 | 20 | 22 | 160 | 3 | 84 | 74 | 48 |
| Montana..... | 6 | 7 | 31 | | 70 | | 1 | 80 | 4 | 5 |
| Oregon..... | | 31 | 90 | | 424 | | | 74 | 90 | 8 |
| South Dakota..... | 1 | 41 | 24 | | 186 | | 4 | 52 | 59 | 3 |
| Virginia..... | 7 | 67 | 749 | 31 | 3,605 | 92 | 2 | 159 | 13 | 39 |
| Washington..... | 2 | 36 | 149 | | 1,028 | | 2 | 144 | 104 | 28 |

| <i>May, 1931</i> | | Mumps: | | Cases | |
|--------------------------------|--------------|--|--|--------------|-----|
| Chicken pox: | Cases | Idaho..... | | | 16 |
| Idaho..... | 39 | Louisiana..... | | | 8 |
| Louisiana..... | 108 | Montana..... | | | 80 |
| Montana..... | 167 | Oregon..... | | | 255 |
| Oregon..... | 222 | South Dakota..... | | | 10 |
| South Dakota..... | 72 | Washington..... | | | 264 |
| Virginia..... | 642 | Paratyphoid fever: | | | |
| Washington..... | 578 | Idaho..... | | | 1 |
| Dengue: | | Louisiana..... | | | 1 |
| Louisiana..... | 1 | Puerperal septicemia: | | | |
| Diarrhea and dysentery: | | Washington..... | | | 4 |
| Virginia..... | 172 | Rabies in animals: | | | |
| Dysentery: | | Louisiana..... | | | 7 |
| Louisiana..... | 1 | Oregon..... | | | 1 |
| German measles: | | Rocky Mountain spotted or tick fever: | | | |
| Montana..... | 31 | Idaho..... | | | 7 |
| Washington..... | 52 | Montana..... | | | 9 |
| Hookworm disease: | | Oregon..... | | | 24 |
| Louisiana..... | 14 | Scabies: | | | |
| Impetigo contagiosa: | | Montana..... | | | 4 |
| Montana..... | 1 | Oregon..... | | | 3 |
| Oregon..... | 18 | Septic sore throat: | | | |
| Washington..... | 5 | Louisiana..... | | | 7 |
| Lethargic encephalitis: | | Montana..... | | | 1 |
| Louisiana..... | 3 | Oregon..... | | | 6 |
| Washington..... | 2 | | | | |

| Tetanus: | Cases | Undulant fever: | Cases |
|-------------------|-------|-------------------|-------|
| Louisiana..... | 6 | Virginia..... | 1 |
| Trachoma: | | Washington..... | 1 |
| Montana..... | 3 | Vincent's angina: | |
| South Dakota..... | 6 | Montana..... | 4 |
| Tularaemia: | | Oregon..... | 11 |
| Idaho..... | 1 | Whooping cough: | |
| Louisiana..... | 3 | Idaho..... | 109 |
| Typhus fever: | | Louisiana..... | 19 |
| Virginia..... | 2 | Montana..... | 97 |
| Undulant fever: | | Oregon..... | 75 |
| Idaho..... | 6 | South Dakota..... | 43 |
| Louisiana..... | 5 | Virginia..... | 461 |
| Oregon..... | 1 | Washington..... | 541 |

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 96 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 33,285,000. The estimated population of the 89 cities reporting deaths is more than 31,740,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended June 20, 1931, and June 21, 1930

| | 1931 | 1930 | Esti- mated ex- pectancy |
|---------------------------|--------|--------|--------------------------------|
| <i>Cases reported</i> | | | |
| Diphtheria: | | | |
| 46 States..... | 768 | 851 | |
| 96 cities..... | 420 | 417 | 660 |
| Measles: | | | |
| 45 States..... | 11,592 | 10,437 | |
| 96 cities..... | 4,631 | 4,002 | |
| Meningococcus meningitis: | | | |
| 46 States..... | 71 | 111 | |
| 96 cities..... | 32 | 55 | |
| Polioomyelitis: | | | |
| 46 States..... | 37 | 105 | |
| Scarlet fever: | | | |
| 46 States..... | 2,953 | 2,011 | |
| 96 cities..... | 1,414 | 891 | 854 |
| Smallpox: | | | |
| 46 States..... | 604 | 995 | |
| 96 cities..... | 48 | 62 | 39 |
| Typhoid fever: | | | |
| 46 States..... | 319 | 412 | |
| 96 cities..... | 58 | 48 | 50 |
| <i>Deaths reported</i> | | | |
| Influenza and pneumonia: | | | |
| 89 cities..... | 463 | 454 | |
| Smallpox: | | | |
| 89 cities..... | 0 | 0 | |

City reports for week ended June 20, 1931

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 nonepidemic 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 1922 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 | Chicken pox, cases reported | Diphtheria | | Influenza | | Measles, cases reported | Mumps, cases reported | Pneu- monia, deaths reported |
|---------------------------|-----------------------------------|--|-------------------|-------------------|--------------------|-------------------------------|-----------------------------|---------------------------------------|
| | | Cases, estimated expect- ancy | Cases reported | Cases reported | Deaths reported | | | |
| NEW ENGLAND | | | | | | | | |
| Maine: | | | | | | | | |
| Portland..... | 5 | 0 | 0 | ----- | 1 | 0 | 3 | 0 |
| New Hampshire: | | | | | | | | |
| Concord..... | 0 | 0 | 0 | ----- | 0 | 3 | 0 | 0 |
| Vermont: | | | | | | | | |
| Barre..... | 0 | 0 | 0 | ----- | 0 | 0 | 0 | 0 |
| Massachusetts: | | | | | | | | |
| Boston..... | 69 | 31 | 9 | ----- | 0 | 57 | 11 | 11 |
| Fall River..... | 1 | 2 | 1 | ----- | 0 | 19 | 7 | 1 |
| Springfield..... | 5 | 2 | 0 | ----- | 0 | 47 | 26 | 1 |
| Worcester..... | 13 | 2 | 2 | ----- | 0 | 3 | 19 | 1 |
| Rhode Island: | | | | | | | | |
| Pawtucket..... | 0 | 0 | 0 | ----- | 0 | 0 | 0 | 0 |
| Providence..... | 0 | 4 | 5 | ----- | 2 | 89 | 0 | 7 |
| Connecticut: | | | | | | | | |
| Bridgeport..... | 2 | 4 | 0 | ----- | 0 | 6 | 4 | 1 |
| Hartford..... | 2 | 3 | 0 | ----- | 0 | 0 | 0 | 2 |
| New Haven..... | 40 | 0 | 0 | ----- | 0 | 40 | 9 | 3 |
| MIDDLE ATLANTIC | | | | | | | | |
| New York: | | | | | | | | |
| Buffalo..... | 29 | 8 | 7 | ----- | 0 | 85 | 17 | 5 |
| New York..... | 277 | 218 | 116 | ----- | 3 | 872 | 84 | 108 |
| Rochester..... | 7 | 5 | 0 | ----- | 0 | 180 | 11 | 3 |
| Syracuse..... | 20 | 1 | 0 | ----- | 0 | 25 | 1 | 1 |
| New Jersey: | | | | | | | | |
| Camden..... | | 6 | | | | | | |
| Newark..... | 57 | 11 | 3 | ----- | 1 | 0 | 4 | 2 |
| Trenton..... | 0 | 2 | 1 | ----- | 1 | 15 | 7 | 0 |
| Pennsylvania: | | | | | | | | |
| Philadelphia..... | 74 | 48 | 9 | ----- | 4 | 4 | 29 | 30 |
| Pittsburgh..... | 42 | 15 | 7 | ----- | 1 | 4 | 67 | 10 |
| Reading..... | 27 | 1 | 0 | ----- | 0 | 9 | 3 | 2 |
| EAST NORTH CENTRAL | | | | | | | | |
| Ohio: | | | | | | | | |
| Cincinnati..... | 8 | 4 | 2 | ----- | 0 | 46 | 8 | 9 |
| Cleveland..... | 115 | 22 | 6 | ----- | 4 | 2 | 353 | 12 |
| Columbus..... | 20 | 2 | 1 | ----- | 2 | 1 | 3 | 1 |
| Toledo..... | 54 | 3 | 3 | ----- | 0 | 10 | 8 | 4 |
| Indiana: | | | | | | | | |
| Fort Wayne..... | 4 | 1 | 5 | ----- | 0 | 3 | 0 | 1 |
| Indianapolis..... | 9 | 2 | 2 | ----- | 0 | 75 | 10 | 11 |
| South Bend..... | 0 | 0 | 0 | ----- | 0 | 10 | 0 | 1 |
| Terre Haute..... | 1 | 0 | 0 | ----- | 0 | 10 | 0 | 0 |
| Illinois: | | | | | | | | |
| Chicago..... | 158 | 81 | 101 | ----- | 3 | 3 | 847 | 49 |
| Springfield..... | 0 | 0 | | ----- | | | | |
| Michigan: | | | | | | | | |
| Detroit..... | 69 | 37 | 21 | ----- | 2 | 1 | 34 | 8 |
| Flint..... | 16 | 1 | 1 | ----- | 0 | 1 | 5 | 1 |
| Grand Rapids..... | 0 | 1 | 0 | ----- | 0 | 69 | 1 | 0 |

City reports for week ended June 20, 1931—Continued

| Division, State, and city | 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..... | 3 | 0 | 0 | ----- | 0 | 2 | 70 | 0 |
| Madison..... | 11 | 0 | 1 | ----- | ----- | 1 | 45 | ----- |
| Milwaukee..... | 108 | 9 | 5 | ----- | 0 | 405 | 188 | 4 |
| Racine..... | 15 | 0 | 1 | ----- | 0 | 4 | 12 | 0 |
| Superior..... | 3 | 1 | 1 | ----- | 0 | 0 | 1 | 0 |
| WEST NORTH CENTRAL | | | | | | | | |
| Minnesota: | | | | | | | | |
| Duluth..... | 13 | 0 | 0 | ----- | 1 | 0 | 0 | 3 |
| Minneapolis..... | 36 | 10 | 8 | ----- | 0 | 66 | 7 | 6 |
| St. Paul..... | 33 | 6 | 5 | ----- | 0 | 32 | 1 | 4 |
| Iowa: | | | | | | | | |
| Davenport..... | 4 | 1 | 0 | ----- | ----- | 0 | 0 | ----- |
| Des Moines..... | 2 | 1 | 0 | ----- | 0 | 0 | 0 | ----- |
| Sioux City..... | 9 | 0 | 0 | ----- | ----- | 5 | 9 | ----- |
| Waterloo..... | 0 | 0 | 0 | ----- | ----- | 0 | 0 | ----- |
| Missouri: | | | | | | | | |
| Kansas City..... | 5 | 2 | 3 | ----- | 0 | 57 | 1 | 8 |
| St. Joseph..... | 2 | 0 | 0 | ----- | 0 | 4 | 0 | 1 |
| St. Louis..... | 16 | 25 | 9 | ----- | ----- | 3 | 17 | 5 |
| North Dakota: | | | | | | | | |
| Fargo..... | 0 | 0 | 0 | ----- | 0 | 1 | 1 | 2 |
| Grand Forks..... | 0 | 0 | 0 | ----- | ----- | 1 | 0 | ----- |
| South Dakota: | | | | | | | | |
| Aberdeen..... | 1 | 0 | 0 | ----- | ----- | 4 | 0 | ----- |
| Nebraska: | | | | | | | | |
| Omaha..... | 5 | 2 | 2 | ----- | 0 | 2 | 10 | 4 |
| Kansas: | | | | | | | | |
| Topeka..... | 4 | 0 | 0 | ----- | 1 | 2 | 47 | 0 |
| Wichita..... | 11 | 1 | 0 | ----- | 0 | 1 | 0 | 3 |
| SOUTH ATLANTIC | | | | | | | | |
| Delaware: | | | | | | | | |
| Wilmington..... | 0 | 0 | 0 | ----- | 0 | 5 | 2 | 1 |
| Maryland: | | | | | | | | |
| Baltimore..... | 40 | 15 | 7 | 2 | 0 | 195 | 41 | 12 |
| Cumberland..... | 0 | 0 | 0 | ----- | 0 | 1 | 0 | 0 |
| Frederick..... | 0 | 0 | 0 | ----- | 0 | 2 | 0 | 0 |
| District of Columbia: | | | | | | | | |
| Washington..... | 20 | 7 | 8 | ----- | 0 | 58 | 0 | 8 |
| Virginia: | | | | | | | | |
| Lynchburg..... | 6 | 1 | 0 | ----- | 0 | 0 | 0 | 1 |
| Norfolk..... | 1 | 0 | 0 | ----- | 0 | 11 | 2 | 1 |
| Richmond..... | 0 | 1 | 0 | ----- | 0 | 21 | 0 | 1 |
| Roanoke..... | 1 | 0 | 0 | ----- | 1 | 4 | 0 | 2 |
| West Virginia: | | | | | | | | |
| Charleston..... | 0 | 0 | 0 | ----- | 0 | 0 | 3 | 1 |
| Wheeling..... | 1 | 0 | 0 | ----- | 0 | 2 | 0 | 0 |
| North Carolina: | | | | | | | | |
| Raleigh..... | 1 | 0 | 0 | ----- | 0 | 16 | 0 | 0 |
| Wilmington..... | 0 | 0 | 0 | ----- | 0 | 2 | 0 | 1 |
| Winston-Salem..... | 0 | 0 | 2 | ----- | 0 | 71 | 4 | 2 |
| South Carolina: | | | | | | | | |
| Charleston..... | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 4 |
| Columbia..... | 0 | 0 | 1 | ----- | 0 | 0 | 1 | 2 |
| Greenville..... | 1 | 0 | 0 | ----- | 0 | 0 | 0 | 0 |
| Georgia: | | | | | | | | |
| Atlanta..... | 0 | 1 | 2 | 1 | 1 | 3 | 0 | 4 |
| Brunswick..... | 0 | 0 | 0 | ----- | 0 | 0 | 0 | 0 |
| Savannah..... | 2 | 0 | 1 | ----- | 0 | 6 | 7 | 4 |
| Florida: | | | | | | | | |
| Miami..... | 0 | 1 | 0 | 1 | 0 | 27 | 6 | 1 |
| Tampa..... | 0 | 1 | 1 | ----- | 0 | 2 | 6 | 2 |

City reports for week ended June 20, 1931—Continued

| Division, State, and city | Chicken pox, cases reported | Diphtheria | | Influenza | | Measles, cases reported | Mumps, cases reported | Pneu- monia, deaths reported |
|---------------------------|-----------------------------------|--|-------------------|-------------------|--------------------|-------------------------------|-----------------------------|---------------------------------------|
| | | Cases, estimated expect- ancy | Cases reported | Cases reported | Deaths reported | | | |
| EAST SOUTH CENTRAL | | | | | | | | |
| Kentucky: | | | | | | | | |
| Covington..... | 0 | 1 | 0 | ----- | 0 | 0 | 0 | 2 |
| Tennessee: | | | | | | | | |
| Memphis..... | 2 | 1 | 0 | ----- | 0 | 102 | 3 | 5 |
| Nashville..... | 2 | 0 | 0 | ----- | 0 | 38 | 0 | 1 |
| Alabama: | | | | | | | | |
| Birmingham..... | 3 | 0 | 0 | 1 | 0 | 4 | 3 | 5 |
| Mobile..... | 2 | 0 | 1 | ----- | 0 | 1 | 0 | 0 |
| Montgomery..... | 0 | 0 | 0 | ----- | ----- | 0 | 0 | ----- |
| WEST SOUTH CENTRAL | | | | | | | | |
| Arkansas: | | | | | | | | |
| Fort Smith..... | 3 | 1 | 0 | ----- | ----- | 0 | 0 | ----- |
| Little Rock..... | 0 | 0 | 0 | ----- | 0 | 1 | 0 | 3 |
| Louisiana: | | | | | | | | |
| New Orleans..... | 1 | 6 | 18 | 1 | 1 | 0 | 0 | 6 |
| Shreveport..... | 0 | 0 | 0 | ----- | 0 | 1 | 1 | 3 |
| Oklahoma: | | | | | | | | |
| Muskogee..... | 1 | 0 | 0 | ----- | 0 | 0 | 0 | ----- |
| Tulsa..... | 4 | 0 | 0 | ----- | 0 | 1 | 0 | ----- |
| Texas: | | | | | | | | |
| Dallas..... | 2 | 3 | 1 | 1 | 2 | 3 | 1 | 2 |
| Fort Worth..... | 0 | 1 | 1 | ----- | 1 | 1 | 0 | 0 |
| Galveston..... | 0 | 0 | 0 | ----- | 0 | 1 | 0 | 2 |
| Houston..... | 0 | 2 | 5 | ----- | 0 | 6 | 1 | 2 |
| San Antonio..... | 0 | 2 | 1 | ----- | 1 | 14 | 0 | 1 |
| MOUNTAIN | | | | | | | | |
| Montana: | | | | | | | | |
| Billings..... | 7 | 0 | 0 | ----- | 0 | 5 | 0 | 0 |
| Great Falls..... | 8 | 0 | 0 | ----- | 0 | 3 | 0 | 1 |
| Helena..... | 0 | 0 | 0 | ----- | 0 | 1 | 0 | 0 |
| Missoula..... | 2 | 0 | 0 | ----- | 0 | 0 | 0 | 0 |
| Idaho: | | | | | | | | |
| Boise..... | 0 | 0 | 0 | ----- | 0 | 1 | 0 | 0 |
| Colorado: | | | | | | | | |
| Denver..... | 15 | 7 | 3 | ----- | 1 | 50 | 18 | 6 |
| Pueblo..... | 2 | 0 | 0 | ----- | 0 | 8 | 0 | 0 |
| New Mexico: | | | | | | | | |
| Albuquerque..... | 8 | 0 | 0 | ----- | 0 | 3 | 0 | 1 |
| Arizona: | | | | | | | | |
| Phoenix..... | 0 | 1 | 0 | ----- | 0 | 2 | 0 | 0 |
| Utah: | | | | | | | | |
| Salt Lake City.... | 11 | 3 | 0 | ----- | 0 | 2 | 2 | 1 |
| Nevada: | | | | | | | | |
| Reno..... | 0 | 0 | 0 | ----- | 0 | 0 | 0 | 1 |
| PACIFIC | | | | | | | | |
| Washington: | | | | | | | | |
| Seattle..... | 23 | 2 | 0 | ----- | ----- | 6 | 5 | ----- |
| Spokane..... | 13 | 2 | 0 | ----- | ----- | 3 | 0 | ----- |
| Tacoma..... | 7 | 1 | 2 | ----- | 0 | 0 | 3 | 0 |
| Oregon: | | | | | | | | |
| Portland..... | 11 | 5 | 0 | ----- | 1 | 14 | 6 | 6 |
| Salem..... | 5 | 0 | 2 | 1 | 0 | 0 | 7 | 0 |
| California: | | | | | | | | |
| Los Angeles..... | 23 | 27 | 23 | 15 | 1 | 49 | 18 | 5 |
| Sacramento..... | 2 | 1 | 1 | ----- | 0 | 26 | 1 | 4 |
| San Francisco..... | 5 | 11 | 10 | 2 | 1 | 70 | 1 | 5 |

City reports for week ended June 20, 1931—Continued

| Division, State, and city | Scarlet fever | | Smallpox | | | Tuber- culosis, deaths re- ported | Typhoid fever | | | Whoop- ing cough, cases re- ported | Deaths, all causes |
|------------------------------|---|------------------------|---|------------------------|-------------------------|---|---|------------------------|-------------------------|---|--------------------------|
| | Cases, esti- mated expect- ancy | Cases re- ported | Cases, esti- mated expect- ancy | Cases re- ported | Deaths re- ported | | Cases, esti- mated expect- ancy | Cases re- ported | Deaths re- ported | | |
| NEW ENGLAND | | | | | | | | | | | |
| Maine: | | | | | | | | | | | |
| Portland..... | 2 | 7 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 13 |
| New Hampshire: | | | | | | | | | | | |
| Concord..... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Vermont: | | | | | | | | | | | |
| Barre..... | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 5 |
| Massachusetts: | | | | | | | | | | | |
| Boston..... | 52 | 50 | 0 | 0 | 0 | 7 | 2 | 1 | 1 | 29 | 163 |
| Fall River..... | 3 | 7 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 19 |
| Springfield..... | 4 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 24 |
| Worcester..... | 7 | 12 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 7 | 34 |
| Rhode Island: | | | | | | | | | | | |
| Pawtucket..... | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 |
| Providence..... | 6 | 14 | 0 | 2 | 0 | 3 | 1 | 1 | 0 | 4 | 50 |
| Connecticut: | | | | | | | | | | | |
| Bridgeport..... | 5 | 4 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 28 |
| Hartford..... | 2 | 2 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 2 | 28 |
| New Haven..... | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 29 |
| MIDDLE ATLANTIC | | | | | | | | | | | |
| New York: | | | | | | | | | | | |
| Buffalo..... | 19 | 25 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 14 | 118 |
| New York..... | 161 | 306 | 0 | 0 | 0 | 73 | 10 | 23 | 2 | 212 | 1,277 |
| Rochester..... | 7 | 42 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 8 | 61 |
| Syracuse..... | 6 | 15 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 32 | 46 |
| New Jersey: | | | | | | | | | | | |
| Camden..... | 4 | — | 0 | — | — | — | 0 | — | — | — | — |
| Newark..... | 17 | 24 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 126 | 90 |
| Trenton..... | 2 | 8 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 25 |
| Pennsylvania: | | | | | | | | | | | |
| Philadelphia..... | 65 | 126 | 0 | 0 | 0 | 42 | 2 | 3 | 1 | 46 | 453 |
| Pittsburgh..... | 23 | 74 | 0 | 0 | 0 | 7 | 0 | 1 | 0 | 50 | 165 |
| Reading..... | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 |
| EAST NORTH CENTRAL | | | | | | | | | | | |
| Ohio: | | | | | | | | | | | |
| Cincinnati..... | 10 | 36 | 2 | 0 | 0 | 6 | 1 | 0 | 0 | 6 | 125 |
| Cleveland..... | 28 | 40 | 0 | 0 | 0 | 8 | 1 | 1 | 1 | 32 | 163 |
| Columbus..... | 5 | 6 | 1 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 75 |
| Toledo..... | 11 | 5 | 0 | 0 | 0 | 10 | 1 | 0 | 0 | 27 | 56 |
| Indiana: | | | | | | | | | | | |
| Fort Wayne..... | 2 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 27 |
| Indianapolis..... | 7 | 17 | 6 | 7 | 0 | 7 | 0 | 0 | 0 | 33 | — |
| South Bend..... | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 15 |
| Terre Haute..... | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 16 |
| Illinois: | | | | | | | | | | | |
| Chicago..... | 89 | 213 | 1 | 0 | 0 | 47 | 2 | 3 | 0 | 82 | 657 |
| Springfield..... | 2 | — | 0 | — | — | — | 0 | — | — | — | — |
| Michigan: | | | | | | | | | | | |
| Detroit..... | 79 | 163 | 1 | 0 | 0 | 23 | 1 | 1 | 0 | 135 | 270 |
| Flint..... | 9 | 10 | 1 | 1 | 0 | 3 | 0 | 0 | 0 | 6 | 18 |
| Grand Rapids..... | 6 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | — |
| Wisconsin: | | | | | | | | | | | |
| Kenosha..... | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| Madison..... | 2 | 0 | 0 | — | — | — | 0 | 0 | — | 2 | — |
| Milwaukee..... | 21 | 17 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 53 | 90 |
| Racine..... | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 20 |
| Superior..... | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| WEST NORTH CENTRAL | | | | | | | | | | | |
| Minnesota: | | | | | | | | | | | |
| Duluth..... | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 |
| Minneapolis..... | 22 | 14 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 87 |
| St. Paul..... | 15 | 2 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 20 | 55 |
| Iowa: | | | | | | | | | | | |
| Davenport..... | 0 | 0 | 1 | 3 | — | — | 0 | 0 | — | 0 | — |
| Des Moines..... | 4 | 8 | 2 | 11 | — | — | 0 | 0 | — | 0 | 86 |
| Sioux City..... | 0 | 0 | 0 | 0 | — | — | 0 | 0 | — | 11 | — |
| Waterloo..... | 1 | 2 | 0 | 0 | — | — | 0 | 0 | — | 0 | — |

City reports for week ended June 20, 1931—Continued

| Division, State, and city | Scarlet fever | | Smallpox | | | Tuber- cul- osis, deaths re- ported | Typhoid fever | | | Whoop- ing cough, cases re- ported | Deaths, all causes |
|------------------------------|---|------------------------|---|------------------------|-------------------------|--|---|------------------------|-------------------------|---|--------------------------|
| | Cases, esti- mated expect- ancy | Cases re- ported | Cases, esti- mated expect- ancy | Cases re- ported | Deaths re- ported | | Cases, esti- mated expect- ancy | Cases re- ported | Deaths re- ported | | |
| WEST NORTH CENTRAL—continued | | | | | | | | | | | |
| Missouri: | | | | | | | | | | | |
| Kansas City..... | 7 | 3 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 15 | 95 |
| St. Joseph..... | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 33 |
| St. Louis..... | 17 | 35 | 1 | 4 | 0 | 11 | 2 | 3 | 2 | 38 | 174 |
| North Dakota: | | | | | | | | | | | |
| Fargo..... | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 6 |
| Grand Forks..... | 1 | 0 | 0 | 0 | — | — | 0 | 0 | — | 0 | — |
| South Dakota: | | | | | | | | | | | |
| Aberdeen..... | 0 | 0 | 0 | 1 | — | — | 0 | 0 | — | 0 | — |
| Nebraska: | | | | | | | | | | | |
| Omaha..... | 2 | 4 | 2 | 5 | 0 | 0 | 0 | 0 | 0 | 1 | 47 |
| Kansas: | | | | | | | | | | | |
| Topeka..... | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 |
| Wichita..... | 3 | 2 | 0 | 6 | 0 | 1 | 0 | 0 | 0 | 5 | 33 |
| SOUTH ATLANTIC | | | | | | | | | | | |
| Delaware: | | | | | | | | | | | |
| Wilmington..... | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 18 |
| Maryland: | | | | | | | | | | | |
| Baltimore..... | 28 | 13 | 0 | 0 | 0 | 13 | 2 | 0 | 0 | 78 | 169 |
| Cumberland..... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 |
| Frederick..... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| District of Colum- bia: | | | | | | | | | | | |
| Washington..... | 14 | 13 | 0 | 0 | 0 | 8 | 1 | 0 | 0 | 14 | 132 |
| Virginia: | | | | | | | | | | | |
| Lynchburg..... | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 17 |
| Norfolk..... | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | — |
| Richmond..... | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 44 |
| Roanoke..... | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 23 |
| West Virginia: | | | | | | | | | | | |
| Charleston..... | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 18 |
| Wheeling..... | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 11 |
| North Carolina: | | | | | | | | | | | |
| Raleigh..... | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 22 | 10 |
| Wilmington..... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 13 |
| Winston-Salem..... | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 30 | 17 |
| South Carolina: | | | | | | | | | | | |
| Charleston..... | 0 | 0 | 1 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 21 |
| Columbia..... | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 1 | 12 |
| Greenville..... | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | — |
| Georgia: | | | | | | | | | | | |
| Atlanta..... | 3 | 11 | 2 | 7 | 0 | 9 | 1 | 3 | 0 | 1 | 74 |
| Brunswick..... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| Savannah..... | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 6 | 30 |
| Florida: | | | | | | | | | | | |
| Miami..... | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5 | 21 |
| Tampa..... | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 28 |
| EAST SOUTH CENTRAL | | | | | | | | | | | |
| Kentucky: | | | | | | | | | | | |
| Covington..... | 0 | 6 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 17 |
| Tennessee: | | | | | | | | | | | |
| Memphis..... | 2 | 4 | 1 | 2 | 0 | 6 | 2 | 0 | 0 | 0 | 72 |
| Nashville..... | 1 | 6 | 1 | 0 | 0 | 2 | 1 | 2 | 0 | 7 | 41 |
| Alabama: | | | | | | | | | | | |
| Birmingham..... | 0 | 0 | 2 | 0 | 0 | 7 | 1 | 0 | 0 | 16 | 63 |
| Mobile..... | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 27 |
| Montgomery..... | 0 | 0 | 0 | 0 | — | — | 0 | 0 | — | 0 | — |
| WEST SOUTH CENTRAL | | | | | | | | | | | |
| Arkansas: | | | | | | | | | | | |
| Fort Smith..... | 0 | 0 | 0 | 0 | — | — | 0 | 0 | — | 0 | — |
| Little Rock..... | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 11 |
| Louisiana: | | | | | | | | | | | |
| New Orleans..... | 4 | 5 | 0 | 4 | 0 | 16 | 3 | 2 | 1 | 0 | 126 |
| Shreveport..... | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 28 |

City reports for week ended June 20, 1931—Continued

| Division, State, and city | Scarlet fever | | Smallpox | | | Tuber- culo- sis, deaths re- ported | Typhoid fever | | | Whoop- ing cough, cases re- ported | Deaths, all causes |
|------------------------------|---|------------------------|---|------------------------|-------------------------|--|---|------------------------|-------------------------|---|--------------------------|
| | Cases, esti- mated expect- ancy | Cases re- ported | Cases, esti- mated expect- ancy | Cases re- ported | Deaths re- ported | | Cases, esti- mated expect- ancy | Cases re- ported | Deaths re- ported | | |
| WEST SOUTH CENTRAL—continued | | | | | | | | | | | |
| Oklahoma: | | | | | | | | | | | |
| Muskogee..... | 0 | 0 | 2 | 0 | ----- | ----- | 0 | 0 | ----- | 0 | ----- |
| Tulsa..... | 1 | 2 | 1 | 15 | ----- | ----- | 1 | 0 | ----- | 3 | ----- |
| Texas: | | | | | | | | | | | |
| Dallas..... | 2 | 2 | 1 | 2 | 0 | 2 | 1 | 0 | 0 | 13 | 49 |
| Fort Worth..... | 1 | 1 | 1 | 1 | 0 | 3 | 1 | 0 | 0 | 0 | 25 |
| Galveston..... | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 13 |
| Houston..... | 1 | 1 | 1 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 60 |
| San Antonio..... | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 2 | 0 | 0 | 74 |
| MOUNTAIN | | | | | | | | | | | |
| Montana: | | | | | | | | | | | |
| Billings..... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 11 |
| Great Falls..... | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 8 | 9 |
| Helena..... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| Missoula..... | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| Idaho: | | | | | | | | | | | |
| Boise..... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 11 |
| Colorado: | | | | | | | | | | | |
| Denver..... | 7 | 6 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 41 | 81 |
| Pueblo..... | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5 | 11 |
| New Mexico: | | | | | | | | | | | |
| Albuquerque..... | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 10 |
| Arizona: | | | | | | | | | | | |
| Phoenix..... | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | ----- |
| Utah: | | | | | | | | | | | |
| Salt Lake City..... | 2 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 27 | 30 |
| Nevada: | | | | | | | | | | | |
| Reno..... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| PACIFIC | | | | | | | | | | | |
| Washington: | | | | | | | | | | | |
| Seattle..... | 6 | 4 | 1 | 0 | ----- | ----- | 1 | 1 | ----- | 44 | ----- |
| Spokane..... | 4 | 0 | 4 | 8 | ----- | ----- | 1 | 0 | ----- | 6 | ----- |
| Tacoma..... | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 16 |
| Oregon: | | | | | | | | | | | |
| Portland..... | 4 | 1 | 8 | 1 | 0 | 3 | 1 | 0 | 0 | 1 | ----- |
| Salem..... | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ----- |
| California: | | | | | | | | | | | |
| Los Angeles..... | 24 | 20 | 4 | 0 | 0 | 21 | 2 | 2 | 0 | 16 | 237 |
| Sacramento..... | 3 | 0 | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 2 | 19 |
| San Francisco..... | 14 | 5 | 0 | 0 | 0 | 7 | 1 | 0 | 0 | 14 | 157 |

| 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..... | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Worcester..... | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| MIDDLE ATLANTIC | | | | | | | | | | |
| New York: | | | | | | | | | | |
| New York ¹ | 6 | 4 | 4 | 1 | 1 | 0 | 1 | 4 | 0 | 0 |
| Pennsylvania: | | | | | | | | | | |
| Philadelphia..... | 5 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pittsburgh..... | 3 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |

¹ Typhus fever, 5 cases; 2 cases at New York, N. Y.; 1 case at Baltimore, Md.; 1 case at Atlanta, Ga., and 1 case at Savannah, Ga.

City reports for week ended June 20, 1931—Continued

| Division, State, and city | Meningo- coccus meningitis | | Lethargic en- cephalitis | | Pellagra | | Poliomyelitis (infan- tile paralysis) | | |
|------------------------------|----------------------------------|--------|-----------------------------|--------|----------|--------|---|-------|-------|
| | Cases | Deaths | Cases | Deaths | Cases | Deaths | Cases, esti- mated expect- ancy | Cases | Death |
| EAST NORTH CENTRAL | | | | | | | | | |
| Ohio: | | | | | | | | | |
| Cincinnati..... | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cleveland..... | 3 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Columbus..... | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Toledo..... | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Indiana: | | | | | | | | | |
| Indianapolis..... | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Illinois: | | | | | | | | | |
| Chicago..... | 6 | 7 | 1 | 1 | 1 | 1 | 1 | 0 | 0 |
| Michigan: | | | | | | | | | |
| Detroit..... | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Flint..... | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| WEST NORTH CENTRAL | | | | | | | | | |
| Minnesota: | | | | | | | | | |
| St. Paul..... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Missouri: | | | | | | | | | |
| St. Louis..... | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |
| SOUTH ATLANTIC | | | | | | | | | |
| Maryland: | | | | | | | | | |
| Baltimore ¹ | 1 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 |
| District of Columbia: | | | | | | | | | |
| Washington..... | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| Virginia: | | | | | | | | | |
| Norfolk..... | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| North Carolina: | | | | | | | | | |
| Wilmington..... | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Winston-Salem..... | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| South Carolina: | | | | | | | | | |
| Charleston..... | 0 | 0 | 0 | 0 | 7 | 1 | 0 | 0 | 0 |
| Georgia: ¹ | | | | | | | | | |
| Savannah ¹ | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 |
| Florida: | | | | | | | | | |
| Miami..... | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| EAST SOUTH CENTRAL | | | | | | | | | |
| Tennessee: | | | | | | | | | |
| Memphis..... | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| Alabama: | | | | | | | | | |
| Birmingham..... | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 0 |
| Mobile..... | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Montgomery..... | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| WEST SOUTH CENTRAL | | | | | | | | | |
| Arkansas: | | | | | | | | | |
| Fort Smith..... | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 |
| Little Rock..... | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| Louisiana: | | | | | | | | | |
| New Orleans..... | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 0 |
| Shreveport..... | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Texas: | | | | | | | | | |
| Dallas..... | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 |
| Galveston..... | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| San Antonio..... | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MOUNTAIN | | | | | | | | | |
| Montana: | | | | | | | | | |
| Great Falls..... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| New Mexico: | | | | | | | | | |
| Albuquerque..... | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| PACIFIC | | | | | | | | | |
| California: | | | | | | | | | |
| Los Angeles..... | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| San Francisco..... | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |

¹ Typhus fever, 5 cases; 2 cases at New York, N. Y.; 1 case at Baltimore, Md.; 1 case at Atlanta, Ga., and 1 case at Savannah, Ga.

The following tables give the rates per 100,000 population for 98 cities for the 5-week period ended June 20, 1931, compared with those for a like period ended June 21, 1930. The population figures used in computing the rates are estimated midyear populations for 1930 and 1931, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 33,000,000. The 91 cities reporting deaths have more than 31,500,000 estimated population.

*Summary of weekly reports from cities, May 17 to June 20, 1931—Annual rates per 100,000 population, compared with rates for the corresponding period of 1930*¹

DIPHTHERIA CASE RATES

| | Week ended— | | | | | | | | | |
|-------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------|---------------------|---------------------|---------------------|
| | May 23, 1931 | May 24, 1931 | May 30, 1931 | May 31, 1930 | June 6, 1931 | June 7, 1930 | June 13, 1931 | June 14, 1930 | June 20, 1931 | June 21, 1930 |
| 98 cities..... | 62 | 79 | 59 | 76 | 67 | 75 | 54 | 78 | ² 66 | 66 |
| New England..... | 48 | 68 | 50 | 56 | 46 | 94 | 41 | 39 | 41 | 39 |
| Middle Atlantic..... | 63 | 76 | 58 | 67 | 74 | 68 | 55 | 78 | ³ 65 | 77 |
| East North Central..... | 67 | 115 | 81 | 110 | 75 | 112 | 64 | 128 | ⁴ 89 | 92 |
| West North Central..... | 75 | 72 | 54 | 77 | 55 | 52 | 61 | 60 | 52 | 35 |
| South Atlantic..... | 38 | 54 | 41 | 60 | 39 | 54 | 49 | 44 | 43 | 36 |
| East South Central..... | 12 | 24 | 17 | 36 | 12 | 12 | 17 | 12 | 6 | 12 |
| West South Central..... | 81 | 52 | 54 | 49 | 68 | 38 | 27 | 80 | 85 | 80 |
| Mountain..... | 61 | 53 | 52 | 44 | 191 | 18 | 35 | 35 | 26 | 9 |
| Pacific..... | 72 | 59 | 37 | 67 | 49 | 65 | 53 | 36 | 71 | 47 |

MEASLES CASE RATES

| | | | | | | | | | | |
|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|--------------------|-------|
| 98 cities..... | 1,372 | 1,159 | 1,114 | 911 | 1,096 | 934 | 876 | 815 | ² 725 | 642 |
| New England..... | 1,190 | 1,877 | 935 | 1,558 | 933 | 1,596 | 601 | 1,546 | 635 | 1,144 |
| Middle Atlantic..... | 1,478 | 1,091 | 1,187 | 940 | 1,101 | 1,021 | 838 | 1,033 | ³ 669 | 776 |
| East North Central..... | 1,458 | 685 | 1,304 | 524 | 1,446 | 512 | 1,304 | 453 | ⁴ 1,182 | 377 |
| West North Central..... | 1,098 | 794 | 641 | 625 | 817 | 420 | 448 | 370 | 331 | 302 |
| South Atlantic..... | 2,840 | 957 | 2,089 | 793 | 1,473 | 523 | 1,102 | 397 | 766 | 411 |
| East South Central..... | 1,234 | 568 | 1,047 | 335 | 1,140 | 371 | 820 | 161 | 844 | 239 |
| West South Central..... | 271 | 547 | 294 | 453 | 254 | 115 | 149 | 94 | 88 | 77 |
| Mountain..... | 618 | 7,119 | 461 | 5,674 | 870 | 5,665 | 705 | 3,410 | 609 | 2,687 |
| Pacific..... | 456 | 2,180 | 492 | 1,397 | 511 | 1,903 | 580 | 1,340 | 302 | 1,069 |

SCARLET FEVER CASE RATES

| | | | | | | | | | | |
|-------------------------|-----|-----|-----|-----|-----|-----|-----|-----|------------------|-----|
| 98 cities..... | 367 | 206 | 306 | 182 | 310 | 208 | 269 | 188 | ² 221 | 141 |
| New England..... | 536 | 314 | 351 | 307 | 414 | 252 | 291 | 218 | 272 | 126 |
| Middle Atlantic..... | 442 | 204 | 304 | 162 | 355 | 186 | 318 | 147 | ³ 280 | 112 |
| East North Central..... | 412 | 227 | 438 | 264 | 422 | 293 | 386 | 301 | ⁴ 312 | 226 |
| West North Central..... | 340 | 306 | 291 | 213 | 258 | 265 | 168 | 238 | 132 | 151 |
| South Atlantic..... | 241 | 164 | 239 | 126 | 197 | 170 | 122 | 158 | 77 | 106 |
| East South Central..... | 390 | 102 | 297 | 72 | 151 | 96 | 169 | 49 | 93 | 60 |
| West South Central..... | 85 | 49 | 51 | 14 | 41 | 73 | 88 | 35 | 30 | 98 |
| Mountain..... | 270 | 300 | 165 | 97 | 104 | 194 | 96 | 132 | 78 | 203 |
| Pacific..... | 88 | 97 | 110 | 71 | 86 | 93 | 80 | 97 | 57 | 73 |

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, 1931 and 1930, respectively.

² Camden, N. J., and Springfield, Ill., not included.

³ Camden, N. J., not included.

⁴ Springfield, Ill., not included.

Summary of weekly reports from cities, May 17 to June 20, 1931—Annual rates per 100,000 population, compared with rates for the corresponding period of 1930—Continued

SMALLPOX CASE RATES

| | Week ended— | | | | | | | | | |
|-------------------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|
| | May 23, 1931 | May 24, 1930 | May 30, 1931 | May 31, 1930 | June 6, 1931 | June 7, 1930 | June 13, 1931 | June 14, 1930 | June 20, 1931 | June 21, 1930 |
| 98 cities | 16 | 20 | 15 | 15 | 14 | 20 | 10 | 14 | 18 | 10 |
| New England..... | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 |
| Middle Atlantic..... | 4 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 10 | 0 |
| East North Central..... | 15 | 10 | 11 | 12 | 16 | 8 | 12 | 11 | 15 | 7 |
| West North Central..... | 67 | 110 | 88 | 56 | 42 | 118 | 36 | 54 | 29 | 31 |
| South Atlantic..... | 6 | 2 | 24 | 10 | 18 | 4 | 0 | 8 | 14 | 2 |
| East South Central..... | 41 | 30 | 6 | 30 | 17 | 30 | 23 | 36 | 12 | 18 |
| West South Central..... | 47 | 10 | 37 | 14 | 41 | 21 | 24 | 21 | 20 | 24 |
| Mountain..... | 9 | 70 | 26 | 62 | 26 | 62 | 17 | 35 | 0 | 35 |
| Pacific..... | 12 | 71 | 12 | 49 | 33 | 59 | 25 | 49 | 16 | 36 |

TYPHOID FEVER CASE RATES

| | 6 | 7 | 7 | 7 | 6 | 8 | 7 | 9 | 19 | 8 |
|-------------------------|----|----|----|----|----|----|----|----|----|----|
| 98 cities | | | | | | | | | | |
| New England..... | 2 | 19 | 2 | 12 | 2 | 5 | 0 | 10 | 10 | 0 |
| Middle Atlantic..... | 5 | 4 | 8 | 3 | 5 | 6 | 7 | 8 | 12 | 4 |
| East North Central..... | 5 | 5 | 2 | 2 | 1 | 4 | 4 | 4 | 4 | 2 |
| West North Central..... | 10 | 8 | 4 | 10 | 10 | 10 | 4 | 6 | 6 | 8 |
| South Atlantic..... | 12 | 12 | 22 | 14 | 20 | 22 | 14 | 16 | 14 | 24 |
| East South Central..... | 17 | 24 | 12 | 36 | 17 | 12 | 17 | 24 | 12 | 48 |
| West South Central..... | 7 | 10 | 7 | 21 | 10 | 35 | 24 | 17 | 14 | 24 |
| Mountain..... | 0 | 0 | 17 | 9 | 17 | 0 | 9 | 9 | 0 | 9 |
| Pacific..... | 8 | 6 | 2 | 8 | 4 | 2 | 12 | 16 | 10 | 6 |

INFLUENZA DEATH RATES

| | 7 | 6 | 7 | 4 | 6 | 5 | 4 | 6 | 16 | 4 |
|-------------------------|----|----|----|----|----|----|----|----|----|----|
| 91 cities | | | | | | | | | | |
| New England..... | 5 | 5 | 10 | 0 | 2 | 0 | 0 | 2 | 7 | 2 |
| Middle Atlantic..... | 5 | 7 | 3 | 4 | 5 | 4 | 4 | 5 | 18 | 5 |
| East North Central..... | 5 | 5 | 5 | 4 | 2 | 4 | 4 | 6 | 4 | 4 |
| West North Central..... | 3 | 0 | 9 | 3 | 6 | 12 | 6 | 15 | 6 | 0 |
| South Atlantic..... | 4 | 6 | 18 | 4 | 14 | 10 | 6 | 2 | 4 | 2 |
| East South Central..... | 19 | 19 | 19 | 32 | 38 | 13 | 13 | 13 | 0 | 13 |
| West South Central..... | 28 | 7 | 14 | 4 | 10 | 11 | 3 | 25 | 14 | 7 |
| Mountain..... | 26 | 9 | 17 | 18 | 0 | 9 | 0 | 0 | 9 | 0 |
| Pacific..... | 0 | 5 | 5 | 2 | 7 | 2 | 5 | 5 | 5 | 0 |

PNEUMONIA DEATH RATES

| | 95 | 101 | 101 | 78 | 86 | 83 | 75 | 83 | 170 | 72 |
|-------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 91 cities | | | | | | | | | | |
| New England..... | 72 | 109 | 111 | 97 | 120 | 80 | 60 | 89 | 65 | 75 |
| Middle Atlantic..... | 121 | 130 | 109 | 89 | 102 | 100 | 88 | 96 | 173 | 78 |
| East North Central..... | 68 | 79 | 75 | 53 | 59 | 58 | 60 | 66 | 59 | 52 |
| West North Central..... | 97 | 84 | 133 | 69 | 138 | 132 | 71 | 78 | 106 | 111 |
| South Atlantic..... | 111 | 110 | 132 | 90 | 77 | 102 | 83 | 80 | 89 | 70 |
| East South Central..... | 120 | 78 | 183 | 97 | 76 | 71 | 145 | 97 | 82 | 117 |
| West South Central..... | 97 | 82 | 128 | 121 | 86 | 78 | 79 | 100 | 76 | 64 |
| Mountain..... | 70 | 123 | 70 | 79 | 87 | 115 | 70 | 88 | 78 | 132 |
| Pacific..... | 55 | 35 | 43 | 52 | 48 | 32 | 43 | 57 | 34 | 60 |

² Camden, N. J., and Springfield, Ill., not included.

³ Camden, N. J., not included.

⁴ Springfield, Ill., not included.

FOREIGN AND INSULAR

BRITISH CAMEROONS

Mamfe—Yellow fever.—Three suspected cases of yellow fever with two deaths were reported at Mamfe, British Cameroons, May 28, 1931.

CANADA

Provinces—Communicable diseases—Week ended June 13, 1931.—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended June 13, 1931, as follows:

| Province | Cerebro-spinal fever | Influenza | Poliomyelitis | Smallpox | Typhoid fever |
|-----------------------------------|----------------------|-----------|---------------|----------|---------------|
| Prince Edward Island ¹ | | | | | |
| Nova Scotia | | 4 | | | |
| New Brunswick ¹ | | | | | |
| Quebec | | | | | 3 |
| Ontario | 3 | 1 | 1 | 4 | 15 |
| Manitoba | | | | | 3 |
| Saskatchewan | | | | 16 | |
| Alberta | | | 1 | | |
| British Columbia | 1 | | 3 | | |
| Total | 4 | 5 | 5 | 20 | 21 |

¹ No case of any disease included in the table was reported during the week.

Quebec Province—Communicable diseases—Week ended June 20, 1931.—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended June 20, 1931, as follows:

| Disease | Cases | Disease | Cases |
|----------------|-------|----------------|-------|
| Chicken pox | 38 | Mumps | 19 |
| Diphtheria | 15 | Scarlet fever | 37 |
| Erysipelas | 1 | Tuberculosis | 19 |
| German measles | 42 | Typhoid fever | 6 |
| Measles | 290 | Whooping cough | 25 |

CUBA

Provinces—Communicable diseases—Four weeks ended June 6, 1931.—During the four weeks ended June 6, 1931, cases of certain communicable diseases were reported in the Provinces of Cuba, as follows:

| Disease | Pinar del Rio | Habana | Matan- zas | Santa Clara | Cama- guey | Oriente | Total |
|------------------------|------------------|--------|---------------|----------------|---------------|---------|-------|
| Cancer..... | | | | 1 | | | 1 |
| Chicken pox..... | | 34 | 1 | 5 | 1 | 7 | 48 |
| Diphtheria..... | 2 | 18 | 1 | 7 | 2 | 1 | 31 |
| Malaria..... | | 4 | | | 2 | 23 | 29 |
| Measles..... | | 98 | | 31 | | | 129 |
| Paratyphoid fever..... | | 1 | 2 | 2 | | | 5 |
| Scarlet fever..... | | 7 | 1 | | | | 8 |
| Typhoid fever..... | 7 | 46 | 2 | 36 | 7 | 9 | 107 |

VIRGIN ISLANDS

Communicable diseases—May, 1931.—During the month of May, 1931, cases of certain diseases were reported in the Virgin Islands as follows:

| St. Thomas and St. John: | Cases | St. Croix: | Cases |
|--------------------------|-------|------------------|-------|
| Gonorrhea..... | 4 | Chancroid..... | 2 |
| Pellagra..... | 1 | Chicken pox..... | 1 |
| Syphilis..... | 5 | Gonorrhea..... | 1 |
| Tuberculosis..... | 2 | | |

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 tables 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 | Dec. 14, 1930- Jan. 10, 1931 | Jan. 11- Feb. 7, 1931 | Feb. 8- Mar. 7, 1931 | Mar. 8- Apr. 4, 1931 | Week ended— | | | | | | | | | | | |
|------------------------------------|---------------------------------------|-----------------------------|----------------------------|----------------------------|-------------|-------|-------|-----------|----|----|----|------------|----|----|----|----|
| | | | | | April, 1931 | | | May, 1931 | | | | June, 1931 | | | | |
| | | | | | 11 | 18 | 25 | 2 | 9 | 16 | 23 | 30 | 6 | 13 | 20 | 27 |
| Ceylon: Colombo..... | | | | 1 | | | | | | | | | 1 | 1 | | |
| China: Canton..... | | | | | | | | | | | | | 1 | 1 | | |
| India..... | 10,687 | 15,324 | 11,544 | 8,968 | 3,161 | 3,067 | 2,698 | 2,506 | | | | 2 | | | | |
| Bombay..... | 3,689 | 8,123 | 6,131 | 4,550 | 1,572 | 1,550 | 1,300 | 1,286 | | | | 1 | | | | |
| Calcutta..... | 28 | 121 | 170 | 435 | 95 | 82 | 62 | 71 | 72 | 89 | 49 | 55 | 94 | 74 | | |
| Karikal..... | 1 | | | 12 | 55 | 51 | 26 | 44 | 39 | 44 | 31 | 32 | 57 | 47 | | |
| Madras..... | | | 9 | 12 | 10 | 8 | 1 | 1 | 10 | 10 | 1 | 1 | 1 | | | |
| Nagapatam..... | 201 | 99 | 72 | 20 | 3 | 1 | 4 | 18 | 18 | 23 | 11 | 1 | 3 | 6 | | |
| Rangoon..... | 67 | 47 | 29 | 10 | 5 | 1 | 3 | 5 | 6 | 8 | 2 | 1 | 1 | 4 | | |
| Tuticorin..... | 1 | 3 | 3 | | | | | | | | | 2 | 2 | | 2 | |
| Vizagapatam..... | 1 | 1 | 1 | | | | | | | | | 1 | 1 | | 1 | |
| India (French): | | | | | | | | | | | | | | | | |
| Chandernagor..... | | | 5 | 7 | 3 | 2 | 1 | | | 3 | 1 | | | 1 | | |
| Pondicherry..... | 2 | 1 | 6 | | 3 | 2 | | | | 3 | 1 | | | 1 | | |
| | 3 | 1 | 5 | | 3 | 2 | | | | 3 | 1 | | | 1 | | |
| | 31 | 19 | 100 | 100 | 5 | 3 | 5 | 11 | 3 | 8 | 2 | 4 | 1 | 1 | | |
| | 21 | 11 | 34 | 18 | 1 | 3 | | | | 3 | | 4 | 1 | 1 | | |
| | 1 | | | | | | | | | | | | | | | |
| India (Portuguese) | | | | | | | | | | | | | | | | |
| Indo-China (see also table below): | | | | | | | | | | | | | | | | |
| Pnompenh..... | | 4 | 9 | | 1 | 1 | | | | | | | | 1 | 1 | |
| | | 2 | 5 | 1 | | | | | | | | | | | | |
| Saigon and Cholon..... | | 2 | 5 | | 1 | | | | 2 | | | | | | | |
| | 9 | 6 | 4 | 5 | 3 | 7 | 15 | 25 | 23 | 34 | 22 | 18 | 16 | | | |
| | 4 | 3 | 4 | 5 | 2 | 3 | 6 | 13 | 20 | 18 | 25 | 13 | 9 | 14 | | |
| Persia: Rabsandjan..... | | | | | | | | | | | | | | | | |
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PLAGUE

Week ended—

[illegible]

PLAGUE—Continued

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

[illegible]

1 Reports incomplete.

SMALLPOX

| Place | Dec. 14, 1930- Jan. 10, 1931 | Jan. 11- Feb. 7, 1931 | Feb. 8- Mar. 7, 1931 | Week ended— | | | | | | | | | | | | | | |
|--|---|-----------------------------------|----------------------------------|-------------|----|----|-------------|----|----|-----------|----|----|------------|----|----|---|----|----|
| | | | | March, 1931 | | | April, 1931 | | | May, 1931 | | | June, 1931 | | | | | |
| | | | | 14 | 21 | 28 | 4 | 11 | 18 | 25 | 2 | 9 | 16 | 23 | 30 | 6 | 13 | 20 |
| Algeria: | | | | | | | | | | | | | | | | | | |
| Algiers..... | C | 1 | 1 | 1 | | | | | | | 2 | | | | | | | |
| Bone..... | C | | | | | | | | | | | | | | | | | |
| Constantine..... | C | | | | | | | | | | | | | | | | | |
| Arabia: Aden..... | C | | 1 | 1 | | | | | | | | | 1 | | | | | |
| Belgian Congo..... | C | 79 | 50 | | | | | | | | | | | | | | | |
| Belgium..... | C | | | 1 | | | | | | | | | | | | | | |
| Brazil: Porto Alegre (alastrim)..... | C | | 3 | 7 | 12 | 16 | 14 | 20 | 19 | 8 | 6 | 2 | | | | | | |
| British East Africa (see also table below): | D | | | | | | | | | | | | | | | | | |
| Tanganyika..... | D | | | | | | | | | | | | | | | | | |
| British South Africa: Southern Rhodesia..... | C | 84 | 70 | 91 | 6 | 2 | | | | | | | | | | | | |
| Canada: | C | 4 | 5 | 13 | 1 | 2 | | | | | | | | | | | | |
| Alberta..... | C | 19 | 7 | 1 | | | | | | | | | | | | | | |
| British Columbia..... | C | 3 | 2 | | | | | | | | | | | | | | | |
| Manitoba..... | C | | 1 | 1 | | | | | | | | | | | | | | |
| Winnipeg..... | C | | | | | | | | | | | | | | | | | |
| Nova Scotia..... | C | 1 | 1 | | | | | | | | | | | | | | | |
| Ontario: | C | 17 | 49 | 29 | 2 | 3 | 3 | 1 | 4 | 6 | 7 | 17 | 5 | | 3 | | 4 | |
| Kingston..... | C | 6 | 1 | 1 | | | | | | | | | | | | | | |
| North Bay..... | C | 2 | 1 | 1 | | | | | | | | | | | | | | |
| Ottawa..... | C | 2 | 3 | 1 | | | | | | | | | | | | | | |
| Sault Ste. Marie..... | C | 1 | 30 | 2 | | | | | 3 | 1 | | | 1 | | | | | |
| Toronto..... | C | | | | 1 | | | | 4 | | | | | | | | | 1 |
| Quebec..... | C | 2 | | | | | | | | | | | | | | | | 1 |
| Saskatchewan..... | C | | | | | | | | | | | | | | | | | |
| Regina..... | C | 38 | | 63 | 40 | 10 | | 5 | 16 | 3 | 22 | 7 | 15 | 18 | 8 | 7 | 16 | |
| Canary Islands: Las Palmas..... | C | | | 1 | | | | | | 2 | | 2 | | | | | | |
| China: | C | | | | | | | | | | | | | | | | | |
| Amoy..... | C | | | | | | | | | | | | | | | | | |
| Canton..... | D | | | | | | | | | | | | | | | | | |
| Chungking..... | C | | | 3 | 1 | 2 | 2 | 1 | 2 | | | 2 | 1 | 1 | 1 | 2 | 1 | 1 |
| Foochow..... | C | | | | | | | | | | | | | | | | | |
| Hong Kong..... | D | 2 | P | P | P | P | P | P | P | | | | | | | | | |
| | | 1 | 1 | 3 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 |

| Place | Dec., 1930 | Jan., 1931 | Feb., 1931 | Mar., 1931 | Apr., 1931 | May, 1931 | December, 1930 | | | January, 1931 | | | February, 1931 | | | March, 1931 | | | | | |
|--|------------|------------|------------|------------|------------|-----------|-------------------------------|-------|-------|---------------|------------|------------|----------------|------------|-----------|-------------|-------|-------|------|-------|-------|
| | | | | | | | 1-10 | 11-20 | 21-31 | 1-10 | 11-20 | 21-31 | 1-10 | 11-20 | 21-31 | 1-10 | 11-20 | 21-31 | 1-10 | 11-20 | 21-31 |
| | | | | | | | | | | | | | | | | | | | | | |
| S. S. Benvenue at Sydney from Shanghai..... C | | 1 | | | | | | | | | | | | | | | | | | | |
| S. S. Clan MacBrayne at Cochín..... C | | | | | 1 | | | | | | | | | | | | | | | | |
| S. S. Chilka at Rangoon..... C | | | | | | | | | | | | | | | | | | | | | |
| S. S. Talf (pilgrim ship) at Suakin from Jeddah..... C | | | | | | | | | | | | | | 1 | | | | | | | |
| S. S. Talodi at Soakim..... C | | | | | | | | | | | | | | | | | | | | | |
| Indo-China (see also table above)..... C | | | | 258 | 86 | | 38 | 9 | 14 | 47 | 48 | 46 | 95 | 46 | 27 | 125 | | 139 | | | |
| Ivory Coast..... C | | | | 4 | 2 | | 9 | | | | | | | | | | | | | | |
| Sudan (French)..... C | | | | 17 | 43 | | 16 | | 96 | | | | | | | 4 | | P | | | |
| Syria: Beirut..... C | | | | 2 | | | | | 4 | | 1 | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| Place | Dec., 1930 | Jan., 1931 | Feb., 1931 | Mar., 1931 | Apr., 1931 | May, 1931 | Place | | | Dec., 1930 | Jan., 1931 | Feb., 1931 | Mar., 1931 | Apr., 1931 | May, 1931 | | | | | | |
| | | | | | | | Mexico (see also table above) | | | | | | | | | | | | | | |
| | | | | | | | Morocco | | | | | | | | | | | | | | |
| Chosen..... C | | 1 | | 11 | | | Turkey | | | 1 | | 3 | | 1 | 1 | | | | | | |
| France..... C | | 1 | | 3 | | | | | | 25 | | 4 | | 7 | 49 | | | | | | |
| Greece..... C | | 4 | 16 | | | | | | | 113 | 63 | 37 | 1 | | 9 | | | | | | |
| | | | 4 | | | | | | | 9 | 7 | 6 | | | | | | | | | |

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

TYPHUS FEVER

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

| Place | Dec. 14 1930- Jan. 10, 1931 | Jan. 11- Feb. 7, 1931 | Feb. 8- Mar. 7, 1931 | Week ended— | | | | | | | | | | | | | | |
|-----------------------------------|---|--------------------------------|-------------------------------|-------------|----|----|-------------|----|----|-----------|---|---|------------|----|----|---|----|----|
| | | | | March, 1931 | | | April, 1931 | | | May, 1931 | | | June, 1931 | | | | | |
| | | | | 14 | 21 | 28 | 4 | 11 | 18 | 25 | 2 | 9 | 16 | 23 | 30 | 6 | 13 | 20 |
| Algeria: | | | | | | | | | | | | | | | | | | |
| Algiers..... | | | 2 | | | 3 | | | | | 2 | 1 | 3 | | | 1 | 3 | 4 |
| Constantine Department..... | | 31 | 4 | | | 1 | 2 | 2 | | | 6 | 1 | 8 | 3 | 5 | 6 | 6 | |
| Oran..... | 6 | 3 | 1 | | | | | | | | 1 | | | | | 2 | 2 | |
| Australia, Western..... | 3 | | | | | | | | | | | | | | | | | |
| Bulgaria..... | 1 | 13 | 5 | | | | 1 | 9 | 26 | 4 | | | 1 | 5 | 8 | 3 | 11 | |
| Chile: Valparaiso..... | | | | | | | 2 | 2 | 3 | | | | | | | 3 | 2 | |
| China: | | | 1 | | | | | | | | | | | | | | | |
| Canton..... | | 2 | | | | | | | | | | | | | | | | |
| Manchuria—Harbin..... | | 3 | 5 | | | | | | | 8 | | | | | | | | |
| Shanghai..... | | 2 | | | | | | | 1 | | | | | | | | | |
| Tientsin..... | | | | | | | | | | | | | | | | | | |
| Chosen (see table below). | | | | | | | | | | | | | | | | | | |
| Czechoslovakia (see table below). | | | | | | | | | | | | | | | | | | |
| Egypt: | | | | | | | | | | | | | | | | | | |
| Alexandria..... | | | | | | | | | | 1 | 1 | | | | | | 1 | |
| Beheira Province..... | | | | | | | | | | | | | | | | | | |
| Cairo..... | 1 | | | | | | | | | 3 | 1 | | | | | | | |
| Port Said..... | 1 | 1 | | | | | | | 2 | | | | | | | | | |
| Eritrea: Asmara..... | | | | | | | | | | | | | | | | | | |
| Great Britain: Scotland..... | | 1 | | | | | | | | | | | | | | | | |
| Fife County..... | | | | | | | | | | | | | | | | 1 | | |
| Glasgow..... | | 2 | | | | | | | | | | | | | | | | |
| Greece (see table below). | | 1 | | | | | | | | | | | | | | | | |
| Guatemala. ¹ | | | | | | | | | | | | | | | | | | |
| Iraq: Baghdad..... | | | 5 | 1 | 1 | | | | | | | | 2 | 2 | | | | |
| Irish Free State: | | | | | | | | | | | | | | | | | | |
| Cork County—Slibbereen..... | | | | | | | | | | | | | | | | | 1 | |
| Kerry County—Dingle..... | | | | | | | | | | | | | | | | | | |
| Mayo County—Belmullet..... | | | | | | | | | | 1 | | | | | | | | |

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

YELLOW FEVER

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

| Place | Dec. 14, 1930- Jan. 10, 1931 | Jan. 11- Feb. 7, 1931 | Feb. 8- Mar. 7, 1931 | Week ended— | | | | | | | | | | | | June 6, 1931 |
|-------------------------------|---------------------------------------|--------------------------------|-------------------------------|-------------|----|----|-------------|----|----|----|-----------|---|----|----|----|--------------------|
| | | | | March, 1931 | | | April, 1931 | | | | May, 1931 | | | | | |
| | | | | 14 | 21 | 28 | 4 | 11 | 18 | 25 | 2 | 9 | 16 | 23 | 30 | |
| Brazil: | | | | | | | | | | | | | | | | |
| Bahia State..... | C | | | 1 | 1 | | | | | | | | | | | 1 |
| Ceara State..... | C | 1 | | 2 | | | | | | | | | 2 | | 1 | |
| Minas Geraes State..... | C | | | | 2 | | | | | | | | 2 | 1 | | |
| Rio de Janeiro State..... | C | | | 1 | 1 | | | 1 | | | | 2 | 2 | 1 | 1 | |
| | C | | | 1 | 1 | | | 1 | | | | 1 | 1 | | 1 | |
| Cambrucy..... | C | | | 1 | 1 | | | | | | | | | | | |
| | C | 3 | | 2 | | | | | | | | | | | | |
| Friburgo (imported)..... | C | 3 | | 1 | | | | | | | | | | | | |
| Padua..... | C | 1 | | | | | | | | | | | | | | |
| | C | 2 | | 1 | | | | | | | | | | | | |
| British Cameroons: Mamfe..... | C | | | | | | | | | | | | | | 3 | |
| | D | | | | | | | | | | | | | | 2 | |