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PREVALENCE OF POLIOMYELITIS IN THE UNITED STATES

Reports from 43 States for the week ended October 22, 1927, showed a decrease of 5 per cent in reported cases of poliomyelitis as compared with the preceding week, and 17 per cent as compared with the week ended October 8, 1927. The highest prevalence this year was reached during the third week of September.

A comparison of reports for the weeks ended October 15 and October 22, 1927, shows an increase of 12 cases in Pennsylvania and 12 in Oregon, but Ohio, where the epidemic was severe a few weeks ago, dropped from 77 cases to 46.

Reports for the corresponding week of the years 1926 and 1925 were received from 39 States. These States reported 428 cases of poliomyelitis in 1927, 70 cases in 1926, and 164 cases in 1925. The figures by States are given in the table on page 2726. Reports for the week ended October 29 will be found on page 2735.

SUMMARY OF REPORTS OF THE PRINCIPAL COMMUNICABLE DISEASES FOR JULY, AUGUST, AND SEPTEMBER, 1927

The following summary is based on preliminary telegraphic reports for the 13 weeks July 3 to October 1, 1927, and the corresponding weeks of the years 1926 and 1925. Preliminary reports are used for all three years, as final reports for 1927 are not yet available. The figures are incomplete, but it is not probable that the final figures will materially differ in the comparison of one year with another.

DIPHTHERIA

The increase over the two preceding years in number of cases of diphtheria which was noted for the first six months of this year continued during the summer months.¹ The figures for 37 States for 13 weeks are: 1927, 13,450 cases; 1926, 11,500; 1925, 12,300 cases.

In 1927 the smallest number of cases was reported for the week ended August 6; in 1926, the smallest number was for the week ended August 21, and in 1925 for the week ended July 23.

¹ Public Health Reports, Oct. 7, 1927, p. 2443.

MEASLES

Last year the figures for measles were unusually high, 21,700 cases being reported for the 13 weeks, as compared with 13,536 cases this year, and only 8,400 cases in 1925. Most of the cases for the three months each year occurred in July, the lowest point for measles being reached in September. The figures for measles fluctuate widely from year to year and during the same year in different places, but the seasonal prevalence is marked, with the peak in April or May, and the lowest point in September.

POLIOMYELITIS

Poliomyelitis (infantile paralysis) was more prevalent during the summer of 1927 than during either of the two preceding years. Thirty-seven States reported 4,000 cases of poliomyelitis for the 13 weeks in 1927, 1,100 in 1926, and 3,200 in 1925. The greatest number of cases in 1927 was reported for the third week of September, while in the other years the greatest prevalence occurred during the first week of September. This year poliomyelitis has been unusually prevalent during October. The rate of decrease in number of cases being slower than the rate in 1926 or 1925.

Some States which reported many cases of poliomyelitis in 1927 did not report for the other two years. If all States could be included, the comparison would be more unfavorable for this year.

SCARLET FEVER

Thirteen thousand five hundred cases of scarlet fever were reported for the 13 weeks July 3 to October 1, 1927. The figure for this period of 1926 was the same. In 1925, 10,600 cases were reported during the corresponding 13 weeks. The least number of cases was reported for the last week of August each year.

SMALLPOX

Smallpox was more prevalent during the summer of 1927 than during the same period of 1926 or 1925. The figures for 37 States for 13 weeks are as follows: 1927, 2,900 cases; 1926, 2,400 cases; 1925, 2,000 cases. Fortunately, the virulent type of smallpox has not appeared in the United States this year, and very few deaths from this disease have been reported. Smallpox is much more prevalent in the winter months than during the summer.

TYPHOID FEVER

The incidence of typhoid fever was lower during the summer of 1927 than it was during either of the two preceding years. The figures for 13 weeks for 37 States are as follows: 1927, 11,200 cases; 1926, 13,900 cases; 1925, 15,200 cases.

In 1927 the greatest incidence of typhoid fever occurred about the 1st of September; in 1926 it came about September 15, and in 1925 it came about the middle of August.

In the year 1925 there was a slight reaction from the steady decline in typhoid fever case and death rates which had been recorded for several decades. The death rate for typhoid fever in the registration area dropped from 35.9 per 100,000 population in 1900 to 6.7 in 1924. In 1925 the rate rose to 8.0 per 100,000. The preliminary reports indicate that 1927 may record a new low death rate for this disease.

MOIST SAND METHOD OF APPLYING PARIS GREEN FOR DESTRUCTION OF SUBSURFACE-FEEDING MOSQUITO LARVAE¹

By T. H. D. GRIFFITHS, *Epidemiologist, United States Public Health Service*

Since the introduction of the use of Paris green as an anopheline larvicide,² there has been general regret that some method could not be used whereby this poison might be applied in the destruction of mosquito larvæ which feed below the surface, or at the bottom.

On September 23, 1926, the writer treated a brackish pool which was teeming with larvæ of *A. taeniorhynchus* and *A. sollicitans*. An indefinite, but heavy, mixture of Paris green with wet sand was applied, with the result that all larvæ were killed within 24 hours. It was noted that the wet sand carried the Paris green to the bottom, the greenish colored sand showing quite distinctly on the sandy bottom of the pool, with a very definite amount of sand and Paris green remaining on the surface of the water. Following this experiment it was determined to carry out further experiments, using Paris green rubbed up, or mixed, with moist sand in the proportions generally used in dusting against anopheline larvæ.

The following experiments were carried out in the vicinity of the Biloxi, Miss., station for the survey of the salt marsh areas of the South Atlantic and Gulf States, with larvicidal results as shown.

Experiment No. 10426 (in field), October 4, 1926.—Pool of 50 square feet, average depth of 6 inches, formed by nonsaline water running over fresh oyster shells at a Cadet ("Caddie") Point oyster shucking plant. Pool teeming with larvæ of *C. quinquefasciatus*. (Twenty-five emergences from larvæ taken from pool were *C. quinquefasciatus*.) A similar pool separated from the experimental pool by a dam of oyster shells was used as a control. Paris green was thoroughly mixed with moist, fine beach sand, 1 part of Paris green to 99 parts of moist sand (both by volume). The mixture was thrown broadcast over the pool at 1.15

¹ Original preliminary notes submitted for publication Oct. 25, 1926.

² The use of arsenic as a larvicide for anopheline larvæ. By Special Expert M. A. Barber, and Technical Assistant T. B. Hayes. Transactions of the Third Conference of Malaria Field Workers. Public Health Bulletin No. 126, September, 1922.

p. m., and at 4.15 p. m.—three hours later—it was estimated that 98 per cent of the larvæ were dead; no diminution of larvæ in the untreated pool. A tablespoonful of Paris green was used in the sand applied.

Experiment No. 10625 (laboratory), October 6, 1926.—Several hundred very small larvæ (24 hours old) of *A. taeniorhynchus* and *A. sollicitans* (determined later by development to imagos) were placed in a 1-gallon sirup can containing nonsaline water to a depth of 4 inches. Treated with just as much of the Paris green sand mixture as could be pinched hard between the thumb and two finger tips. Treated at 9.15 a. m. In 25 minutes, three larvæ were dead; in 50 minutes (at 10.05), all were dead.

Experiment No. 10626 (in field), October 6, 1926.—Natural pool, area 9 square feet, in elevated sandy marsh. Three other small pools nearby used as controls; all heavily infested with very small *A. taeniorhynchus* and *A. sollicitans* larvæ, and exposed to sun. Treated with one tablespoonful of Paris green moist sand mixture (1 to 100) at 10.35 a. m. At 4.40 p. m. (5 hours and 45 minutes after treatment), it was found that the sandy pools had practically dried up. Two of the control pools also were about dry. By pouring sea water in the holes, the larvæ were floated; apparently all were alive in the controls and about 75 per cent were dead in the treated pool. It was concluded that on the drying of the treated pool many of the larvæ were stranded before getting a dose of the Paris green.

Experiment No. 10626 (in field), October 8, 1926.—Slightly brackish pool, area 10 square feet, with greatest depth 9 inches, and a small arm 2 to 3 inches deep. Heavily infested with *A. taeniorhynchus* and *A. sollicitans* larvæ, about 3 days old. Small pool (3 square feet) dug to water level in area just recently dried used as control. Several hundred larvæ from pool to be treated placed in this pool. About 2 tablespoonfuls of Paris green moist sand mixture applied to the pool, 10 square feet, at 10.30 a. m. This pool was examined 22 hours after application, and our notes read as follows:

One dipperful (about 80 larvæ), 3 alive.

Two dipperfuls (about 200 larvæ), all dead.

Three dipperfuls (about 150 larvæ), 3 alive.

Three dipperfuls (about 200 larvæ), all dead.

This would mean a mortality of 99 per cent plus.

Experiment No. 10926 (laboratory), October 9, 1926.—Collection of *Aedes* larvæ (*taeniorhynchus* and *sollicitans*) and *Anopheles (crucians)* collected in brackish water on Deer Island on October 8. Approximately 100 *Aedes* larvæ, all sizes, and 12 third-molt *Anopheles crucians* larvæ were kept in the brackish water for the experiment. One-fourth teaspoonful of the 1 to 100 Paris green-moist sand mixture was added to the quart fruit jar half filled with water, at 11.02 a. m. At 12.05 p. m. (1 hour and 3 minutes later) all *Aedes* larvæ and nine of the *Anopheles* larvæ were dead. At 12.34 only one (small) *Anopheles* larvæ was alive. Ten *Stegomyia (Aedes aegypti)* larvæ were added to the jar at 11.38 a. m. All larvæ were dead when checked again at 9 a. m. the next day.

Experiment No. 101226 (laboratory), October 12, 1926.—Larvæ: *Stegomyia (Aedes aegypti)*, about 25 large larvæ, an equal number of second instar, and innumerable tiny larvæ. Of the Paris green-moist sand mixture, one-fifth teaspoonful (about one-eighth grain of Paris green) was applied at 4.40 p. m. Of the tiny larvæ, 75 per cent were killed within 30 minutes. No further observation was made until the next day—16 hours after the dose was given—when all larvæ were dead.

Experiment No. 101226 (laboratory), October 13, 1926.—Larvæ used; large, *Aedes (taeniorhynchus)* and *sollicitans*. Thirty-two larvæ were put into brackish water filling a quart tomato can to a depth of 1 inch. Paris green-moist sand mixture (one-sixteenth teaspoonful) was carefully placed in water at one side

of the can, sand occupying no more than three-fourths inch of the bottom of the container. The poisoned sand was added at 11 a. m.; all larvæ were dead at 12.05 p. m. (time: 1 hour, 5 minutes).

Experiment No. 101426 (in field), October 14, 1926.—Small sand-lined pool dug in marsh near Point Cadet; teeming with *Aedes sollicitans* and *taeniorhynchus* larvæ (full-grown). Paris green-moist sand (a pinch) placed at one end of pool. Checked next day; only a small percentage dead. Sand had caved away and covered the Paris green, apparently. On the 15th, again treated, and 16 hours later all larvæ were dead.

Experiment No. 101428 (in field), October 16, 1926.—Shallow, brackish pools in salt meadow one block north of east end of Back Bay bridge. Average depth of water, 3 inches; pools heavily infested with *A. sollicitans* and *taeniorhynchus*, and covered with fine salt grass. Paris green-moist sand (1 to 100) broadcast at 10.30 a. m. All larvæ were dead when inspected three and one-half hours later.

Experiment No. 101626A (in field), October 16, 1926.—Pool in excavation in clay under bridge, area of pool 10 square feet, and average depth 6 inches; teeming with all sizes of *C. quinquefasciatus* larvæ. Treated with 1 to 100 Paris green-moist sand mixture at 10.45 a. m.; all larvæ were dead in 3 hours 15 minutes. (Nearby control pool same as before.)

Experiment No. 102826 (in field), October 28, 1926.—Three pools employed: One for Paris green-moist sand mixture, one for undiluted Paris green, and the other as control. Temperature of water in each pool, 73° F; total salinity, 4 per cent. Pool No. 1 (control) teeming with *A. taeniorhynchus* and *A. sollicitans* larvæ three-fourths grown. Size of pool, 10 square feet. Pool No. 2, 3 square feet of surface, and the bottom practically covered with grass placed in it. Stocked with approximately 1,000 larvæ from "control" pool and treated at 9.25 a. m. with five teaspoonfuls of a mixture (1 to 100) of Paris green and moist sand (builder's sand, coarser than previously used beach-sand). Five teaspoonfuls of this mixture contained 1½ grains of Paris green. Pool No. 3, 8 square feet of surface, stocked with approximately 1,000 larvæ from "control" pool and treated at 9.30 a. m. with 3 grains of Paris green (undiluted), the powder being carefully dusted over pool. Pools examined at 12.30 to 12.45. No dead larvæ in control pool; in pool No. 2 all larvæ were dead; in pool No. 3 only a few dead (checked) four and one-half hours after treatment. The field notes are as follows: "No. 2, 100 per cent; No. 3, undiluted Paris green, less than 50 per cent killed." A check 24 hours later showed only one live larvæ in pool No. 3.

Experiment No. 33027 (in field), March 30, 1927.—One acre of breeding ground was treated in this experiment. It is a part of a 600-acre salt marsh, with surface elevation well above usual high tide. The soil is a stiff muck, and literally covered by hoof-prints of cattle, so that instead of a more or less continuous sheet of water there were thousands of individual puddles. On this acre there were applied 99 pounds of moist sand thoroughly mixed with three-fourths pound of Paris green (a mixture of 1 to 132). The Paris green-sand mixture was broadcast by hand between the hours of 10 and 11 in the forenoon. Temperature of the water, 75° F.; wind, SE., with a velocity of about 6 miles per hour; weather fair in forenoon, cloudy in afternoon. Larvæ present: *Anopheles crucians*, *Aedes sollicitans* and *Culex salinarius*, practically all full-grown. Before the application, 52 dips gave 23 *Anopheles* larvæ and 131 non-*Anopheles* larvæ. The final check on mortality gave, in 52 dips, 10 *Anopheles* larvæ and 90 non-*Anopheles* larvæ—a mortality of 57 per cent for *Anopheles* and 31 per cent for the non-*Anopheles*. The poor results here may have been due to one or more conditions. In a hoof-print area the distribution may not have been general enough to reach

all pockets, which may not be necessary where the larvæ may travel extensively and get the poison; many of the full-grown larvæ may have quit feeding prior to pupation.

Experiment No. 4227 (in field), April 22, 1927.—Pool of 50 square feet, average depth of water $2\frac{1}{2}$ inches; densely covered with salt marsh vegetation; soil, sand clay; water, foul. Temperature of air 88° F., water 70° F (brackish). Larvæ: *Culex salinarius* and *Aedes sollicitans* (only a few of latter), all sizes. Time of applying Paris green-sand mixture 1.30 p. m. Before treating, average number of larvæ per dip, 38. Paris green-sand mixture, 1 to 100. Amount used, in proportion of one pound of Paris green per acre of water surface. Check on mortality made 20 hours after treatment; average number of live larvæ per dip was 0.6 in a total of 105 dips—a destruction of about 98 per cent.

Experiment No. 92727 (in field), Horn Island, September 27, 1927.—Two areas were selected for this experiment: One a long, narrow pool with grassy edges; the other a depression in salt meadow overgrown with marsh grass (*Paspalum vaginatum*). In the former the water showed a salinity of 1 per cent; temperature of water 87° F.; atmospheric temperature, 85° F.; weather clear, with a 15 to 20 miles SE. wind. Larvæ (numerous) in first pool—*A. sollicitans*, third instar; in the second pool (fresh water), there were great numbers (average 50 per dip) of *Aedes sollicitans*, second instar, and full-grown larvæ of *P. ciliata*. The surface of the two areas was 905 square feet. Time treated, 10.30 to 11 a. m. Mixture used, 1 part by volume of Paris green to 99 parts of rather coarse, moist beach sand. The ratio of Paris green-sand mixture used was 1 pound of Paris green per acre. The application was by hand-broadcasting. Check on mortality was made two hours after treatment. In the first pool, not one live larva could be found in 20 minutes' search; masses of dead larvæ were found in different parts of the pool. In the second pool, not an *Aedes* larva remained alive. There were about 50 of the large *P. ciliata*, all seemingly affected by the poison. Five of these were placed in a container with the pool water and four died within three hours, the remaining one dying about four hours later. It is not known whether the *P. ciliata* larvæ secured their lethal dose from the Paris green-sand on the bottom or from devouring the already poisoned *Aedes* larvæ.

Experiment No. 93027 (in field, Round Island, Miss.), September 30, 1927.—A salt pool (salinity 11 per cent), occupying 390 square feet. As a salt-water pond and an *Aedes* breeder, unusual conditions existed. A recession in the shore line of the island had occurred through strong wave action until this pool had formed, apparently having existed for several years and receiving additional water at unusually high wind tide, and from a small marsh area adjacent when rains occur. No rain water had entered it from the marsh for several weeks. Driftwood, palmetto roots, small chunks, boards, pine bark, pine tags, fine "granular" and stick flottage, together with over-fallen salt grass (*Distichlis spicata* and *Fimbristylis spadicosa*) almost completely covered the water surface. The pool was found teeming with *Aedes sollicitans* larvæ in all stages. Temperature of water was 84° F.; depth of water, from very shallow to 2 feet; average depth, 1 foot. A portion of the Paris green-sand mixture remaining from that prepared the preceding day (1 to 99 mixture) was broadcast by hand in proportion of 1 pound of Paris green per acre. Two hours later, three members of the field party estimated the mortality at 95 per cent. All of the larvæ remaining alive at the time of check were of the third instar and notably sluggish. Ten of these were collected in a clean container and kept in water from the pool; all died within three hours. This pool represented the most difficult type of breeding place to be found for testing the method; much of the sand fell on drift and flottage, but the larvæ obtained lethal doses promptly.

DISCUSSION

Microscopic examination of grains of sand after being mixed with Paris green (in the ratio of 1 part of Paris green to 99 parts of moist sand) shows that a large percentage of the grains have particles of Paris green adhering to them. Sand mixed with Paris green and recovered from the bottoms of containers and pools shows Paris green still adhering to the grains of sand.

An interesting feature is that, in these experiments, some Paris green is left on the surface of the water, either free or adhering to particles of sand that float. In all of the experiments, when there were present *Anopheles crucians*, as well as *Aedes*, sufficient Paris green remained on the water surface to kill the *Anopheles* larvæ also.

Generally, the production of salt-marsh mosquitoes takes place in relatively shallow water, and for these species this method is particularly effective. As to the destruction of *Aedes aegypti* and other species in shallow containers, there is no doubt. It may be that the dosing will have to be adjusted to meet conditions in deep containers, as 50-gallon barrels and large tanks.

Paris green is lethal to subsurface-feeding mosquito larvæ. Moist sand is an efficient "sinker" for Paris green; it takes up and retains Paris green. Sand is generally available, and usually it will cost nothing to secure it for this purpose.

From our observations thus far it would appear that the toxicity of the Paris green applied by this method continues for a longer period, especially when used in artificial containers, than has been reported for Paris green when applied with dust to the surface in anti-*Anopheles* work.

In the course of the survey of the salt marsh areas of the South Atlantic and Gulf States being conducted by the United States Public Health Service, it has been found that there are large and important breeding areas where the physical conditions would preclude the possibility of economically destroying breeding by drainage, dyking, hydraulic fill, or other major works. Therefore, these experiments have been carried out as a part of the effort to determine an economical and practicable method of destroying salt marsh mosquito breeding. Now that it has been determined that these subsurface-feeding larvæ are highly susceptible to the toxic action of Paris green, it remains to determine the best methods of applying the mixture to the areas requiring treatment. Investigations along this line are now being made.

PELLAGRA IN THE MISSISSIPPI FLOOD AREA

REPORT OF AN INQUIRY RELATING TO THE PREVALENCE OF PELLAGRA IN THE AREA AFFECTED BY THE OVERFLOW OF THE MISSISSIPPI AND ITS TRIBUTARIES IN TENNESSEE, ARKANSAS, MISSISSIPPI, AND LOUISIANA IN THE SPRING OF 1927¹

By JOSEPH GOLDBERGER, *Surgeon*, and EDGAR SYDENSTRICKER, *Statistician*,
United States Public Health Service

The following report deals with an inquiry relating to pellagra prevalence and conditions related thereto in the area recently overflowed by the Mississippi River and its tributaries in the States of Tennessee, Arkansas, Mississippi, and Louisiana.

In the course of this survey the writers visited Dyersburg and vicinity in Tennessee; Little Rock, Pine Bluff and vicinity, England and vicinity, and Marked Tree and vicinity in Arkansas; Jackson, Greenwood, and Indianola in Mississippi; and New Orleans, Baton Rouge, Alexandria, and Monroe in Louisiana. These localities were visited because of their accessibility and in the belief that at these places information concerning representative samples of the affected area could most satisfactorily be secured. As will appear, the information available frequently related to the respective States as a whole, so that whatever may be stated as to the conditions in the overflow area must not be taken as without applicability to some of the other parts of the States affected.

PELLAGRA PREVALENCE

With respect to pellagra prevalence, an endeavor was made to secure all available pertinent information from the State health departments concerned, from county health officers or directors of health units where there were such, and from practicing physicians in the localities visited. In only one of the four States visited, namely, Mississippi, are there normally anything like complete official morbidity reports of pellagra. In the present instance, however, by reason of the disorganization caused by the overflow, even in that State the morbidity reports for the counties affected by the overflow were very incomplete or altogether lacking, so that such information as could be secured relative to the prevalence of pellagra this year in the overflowed area of Mississippi can not properly be compared with official records for preceding years.

At Dyersburg, Tenn., at a conference called in anticipation of our visit by Dr. E. L. Bishop, commissioner of public health of Tennessee, the director of the health unit of that town and of Dyer County, the county health officers of the neighboring counties Lauderdale and Lake, and several practicing physicians from these

¹ Submitted Aug. 12, 1927.

counties, were interviewed and statements of their experience with pellagra this year as compared with preceding years were secured.

At Little Rock, Ark., conference was had with Dr. C. W. Garrison, State health officer. At Pine Bluff, Ark., the director of the county health unit had canvassed the physicians practicing in his county in anticipation of our visit, and from them had secured statements relative to pellagra incidence in 1927 as compared with preceding years. This information was furnished us and, in addition, in company with one of the physicians having an extensive plantation practice in the vicinity of Pine Bluff, we visited some of his patients at their homes. Through the kind offices of Doctor Garrison, we were enabled to meet the physicians of England, Ark., who took us to see some of their patients on near-by plantations and gave us their opinions regarding the prevalence of the disease in this and preceding years. Similarly, at Marked Tree, Ark., we conferred with several of the physicians practicing there and in the surrounding country, and were shown some of their patients. Here, too, we secured valuable incidence data from a field representative of the National Red Cross, who had canvassed the practicing physicians in this region.

In anticipation of our visit to Mississippi, Dr. F. J. Underwood, executive officer of the Mississippi State Board of Health, had arranged for a conference with the director of the health unit and the local practicing physicians at Greenwood, Miss., and for one with the county health officers of the delta counties at Indianola, Miss. At each of these conferences statements of pellagra incidence were secured from the health officials and practicing physicians.

At New Orleans, Dr. Oscar Dowling, president of the Louisiana State Board of Health, furnished us with what information he had of pellagra morbidity in his State. As pellagra morbidity is but very imperfectly reported in Louisiana, as in nearly all States except Mississippi, the most definite evidence at hand was a statement from the superintendent of the State asylum at Pineville, La., indicating a very definite increase in pellagra admissions for 1927. This institution serves the northern part of the State and thus reflects the conditions obtaining in that portion of the State. In addition, we visited Baton Rouge, where we met the superintendent of the other of the two State asylums for insane, that at Jackson, La., who stated that there had been no appreciable increase in admissions to his institution. This asylum is for patients from the southern parishes of the State, and the incidence found there may thus be considered as an index of conditions in the area served by it. At Alexandria, La., the director of the health unit was consulted with regard to pellagra in that locality. Similarly, at Monroe, La., the director of the health unit and the city and county health officers were visited, and statements were obtained regarding pellagra in that locality.

The information secured from all these sources was, for the most part, of a very general character. As already noted, no satisfactory official morbidity records were available in any of the States. Such information as the local health officers could give was based, with few exceptions, on canvasses of the physicians practicing in their jurisdiction. Very few of the physicians, however, keep their records in such a form as to enable them to make a numerical statement of cases treated. About all they could say was that they were or were not seeing more cases of pellagra, as the case might be, this year than last year, or, in some instances, more cases than they had seen altogether in the preceding period of, say, five or six years. The physicians in one of the localities visited were of the opinion that 25 per cent of the plantation population of that locality was affected with pellagra this year.

In evaluating the available information indicating an increased incidence, some allowance must be made for the effect of the abnormal conditions prevailing which probably tended to bring to the attention of physicians and health workers a larger proportion of existing pellagrins than would normally have been the case.

With all foregoing considerations in mind we submit the following summarized statement as our judgment with respect to pellagra incidence in the areas specified:

Tennessee.—All information obtainable indicates that there has been a notable increase in pellagra incidence in the overflow area of western Tennessee this year. Some evidence was also secured suggesting that there may be an increase of pellagra incidence also in some, at least, of the upland areas of the western counties of Tennessee.

Arkansas.—There is a considerable general increase in pellagra incidence in Arkansas this year as compared with 1926. This increase is particularly marked in the counties affected by the overflow, but these counties constitute the area in which pellagra is normally highly prevalent.

Mississippi.—There is probably an increased general incidence of pellagra in Mississippi this year. There are indications of a very high incidence in the Delta counties. This is normally the case in this State. Some of the information obtained points to a much more marked increase in the overflow than in the upland areas of the Delta counties.

Louisiana.—There is probably some increase of pellagra in Louisiana this year as compared with the corresponding period of 1926, this increase coming apparently principally from the northern portion of the State. No information was secured suggesting the existence of any abnormal incidence in the overflow area.

Notwithstanding the very general character of most of the information obtainable, we are satisfied that in the localities visited in

Tennessee, Arkansas, and Mississippi the incidence of pellagra is abnormally high. The only available objective index of this that seems worthy of presentation was obtained from Doctor Leach, director of the health unit of Sunflower County, at Indianola, Miss. Under Doctor Leach's direction a house-to-house canvass in the vicinity of Indianola was made between June 20 and July 22, 1927, covering an unselected population of 4,179, among whom 102 cases of pellagra were recorded, an incidence rate of approximately 24.4 per 1,000. It is, of course, impossible to state definitely whether the incidence disclosed by this special canvass in Sunflower County is representative of all the delta counties or of the localities in the overflow areas in Tennessee and Arkansas. We are inclined to believe, however, that the incidence of the disease in the delta counties as a whole and in some, at least, of the localities visited in Tennessee and Arkansas, was not notably unlike that disclosed by the sample canvass in Sunflower County. Indeed, we think it possible that in some localities it may have markedly exceeded this rate.

While it is manifestly impossible, on the basis of the available data, to determine the actual pellagra incidence rate in the overflow area of Tennessee, Arkansas, and Mississippi, it may be permissible, on the basis of the results of the sample canvass in Sunflower County, Miss., and in the light of our experience, to suggest that this rate is probably of the order of 10 to 20 per 1,000 of the rural (tenant farm) population of that area. It should be kept clearly in mind, however, that this suggestion is essentially little better than a guess and is offered only in order to convey some concrete idea, however crude, of the magnitude of the problem we are considering.

Another way of visualizing the magnitude of the pellagra problem is to estimate the probable morbidity in the four States Tennessee, Arkansas, Mississippi, and Louisiana on the basis of recorded deaths. The pellagra mortality records are approximately complete and may safely be used for such purposes. They are presented in the accompanying table (Table 1) for each State for the years 1924, 1925, and 1926. As may be seen, there has been a definite and more or less marked tendency to an increase in pellagra in these States during 1925 and 1926 as compared to 1924, the aggregate number of deaths in 1926 being fully 80 per cent larger than in 1924. We believe it conservative to expect that the number of deaths from pellagra during 1927 in these four States will be at least one-fourth to one-third larger than that for 1926. In other words, we think the number of deaths from pellagra that may conservatively be expected to occur during the present year, unless exceptionally potent measures intervene, will be little, if any, under 2,300 to 2,500. The studies of the Public Health Service workers indicate that the case fatality rate of pellagra, when all types of definitely recognizable cases are con-

sidered, does not exceed 5 per cent. On this basis, therefore, it may be expected that fully 45,000 to 50,000 individuals will have suffered a definitely recognizable attack of pellagra within the limits of these four States during 1927. It seems to us probable that about one-half of this number will be in the overflow area.

TABLE 1.—Number of deaths and estimated number of cases of pellagra in specified States for 1924, 1925, and 1926, and estimated number of deaths and of cases of pellagra for 1927

State	1924		1925		1926		1927	
	Deaths	Cases ¹	Deaths	Cases ¹	Deaths	Cases ¹	Deaths	Cases ¹
Tennessee.....	263		375		528			
Arkansas.....	161		313		491			
Mississippi.....	413		561		564			
Louisiana.....	183		343		267			
Totals.....	1,020	20,000	1,592	32,000	1,850	37,000	2,300-2,500	{ 45,000- 50,000

¹ Estimates. See text.

² From Mortality Statistics, Bureau of the Census.

³ Direct from State health departments.

The overflow area of Tennessee, Arkansas, and Mississippi is normally an area in which pellagra has been quite prevalent ever since the disease was recognized in 1908 or 1909. Therefore, it seems to us highly probable, particularly in view of the depressed economic conditions in this area, associated with the low price of cotton in 1926, that this area would have suffered an increased incidence even had no overflow taken place. Witness, for example, the well-known exceptionally high incidence of pellagra in 1915 following the depression in cotton values in 1914. However, the overflow (by causing a more than ordinary restriction (1) in the available supply of milk, through a decrease in the number of milch cows—from drowning or sale—and through the lowered milk yield of such cows as remained because of a period of low feeding; (2) in the supply of fresh meat and eggs, through loss of many of the home-owned poultry and swine; and (3) in the supply of fresh vegetables, through destruction of such gardens as were planted before the overflow and delayed planting because of the overflow) very probably accentuated the unfavorable dietary conditions that would have obtained in any event and thus may reasonably be presumed to have contributed to the existing increased prevalence. What portion of the existing increase is properly attributable to the factors resulting from the overflow it is impossible to say.

The lack of evidence of any increase in pellagra prevalence in the overflow area in Louisiana is of considerable interest, but with the meager information at present available it is difficult or impossible to explain. We shall not attempt to do so at this time.

SOME ECONOMIC FACTORS RELATED TO PELLAGRA PREVALENCE

With respect to the economic factors related to the prevalence of pellagra in the area under consideration, we made inquiries of physicians, health officers, tenants, planters, business and professional men, and of farm demonstration agents, county officials, and others in the localities visited. Without attempting to report in detail the statements made and the opinions expressed by the various individuals, the information so obtained is summarized in the following paragraphs:

1. The prevalence of pellagra at any given time in the lower Mississippi River area is involved in three sets of conditions, namely:

(a) The dietary habits of the inhabitants.

(b) The tenant farm system of cotton production, cotton being the chief crop throughout the lowlands along the lower Mississippi and tributary rivers.

(c) The availability of supplies of various foods which, in turn, is influenced by the one-crop type of agriculture, with the consequent lack of diversification, and by the dietary habits of the people.

2. Given certain dietary habits and conditions, the variants in the conditions affecting pellagra prevalence are essentially economic in their character. In the past 12 years, when records of morbidity and mortality from the disease have become available, it has been plainly evident that an unprofitable year in cotton production in this area is followed by an increase in incidence and mortality, and, conversely, that an improvement in the economic situation is followed by a diminished prevalence.

3. In the present situation the outstanding fact, aside from the deprivation directly due to the recent overflow, is that the economic condition of the entire cotton-producing area is unfavorable. This is due principally, if not altogether, to the unprofitable cotton crops of 1925 and 1926. The financial resources of the cotton planters thus were already severely strained before 1927, and the economic status of the tenant population was already considerably below that of 1922 and 1923. The destruction of, or impossibility of planting, crops in certain sections and the serious delays in planting in other areas, resulting in only 25 per cent to 40 per cent of normal production, due to the overflow, undoubtedly has intensified a condition that already was distinctly unfavorable.

4. It was obviously impossible, in a rapid survey, to obtain anything more than the broad outlines of the situation. These, however, seem to be perfectly clear and not only were plain to anyone with an elementary understanding of the conditions ordinarily prevailing and those developing by reason of the flood, but were universally corroborated by all the evidence obtainable from those who were conversant

with the situation. An estimate of the magnitude pellagra incidence will have attained by the end of 1927 has already been submitted. A forecast of what proportions pellagra will attain in prevalence during 1928 is extremely difficult or impossible to make, for the reason that it is so bound up with the economic factors already referred to. If the price of cotton continues to be relatively high, as present indications seem to promise, the financial condition of the planters obviously will be more favorable both for the remaining portion of the present year and for the ensuing year; but it must be remembered that since cotton is a highly speculative commodity, its price is subject to many indeterminable factors. Assuming, however, that the price of cotton will be favorable to the planters in 1927, those planters and the tenant population in the areas affected by the overflow obviously can not benefit to any great extent from this favorable price, because of the fact that, in general, they will have little or no cotton to sell except such as was carried over from the high production year of 1926. All that it seems permissible to say is that since it has been observed that in the past an unfavorable cotton year is followed by an increased incidence of pellagra, we may expect a high and possibly an increased prevalence in 1928 as compared with 1927, unless some important mitigating factor or factors intervene.

In order to clarify the foregoing summary, a brief statement may be made on the relation of economic conditions and of dietary habits and availability of food supplies to prevalence of pellagra in this cotton-growing area. The statement is based on information from the sources already mentioned in the light of the results of previous studies of the Public Health Service, and is expressed in general terms without attempting to include statistics, illustrations, or details. The particular economic factors involved which may be emphasized are the dietary habits of the rural population, the availability of food supplies, the prevailing practices of financing cotton production in this area, and the system of tenant farming.

The dietary habits of the tenants, in fact, of the population as a whole in this area, play an extremely important part, we believe, in the endemic prevalence of pellagra. The expression is common that the tenant families, both white and colored, subsist on the three "m's"—meat, meal, and molasses. The meat is salt pork, which includes very little lean; the meal is corn meal; the molasses is the sorghum, or cane. To these should be added wheat flour, used to some extent to supplement the corn meal, some rice, and dried beans. The customary ration supplied to tenants from stores and commissaries, whenever rations are prescribed, consists of these articles of food, and the tenant farmer, whether white or negro, universally regards them as his staple diet. In this connection it may be

remarked, as will be pointed out somewhat more fully later, that this makes a typical pellagra-producing diet.

It is important to bear in mind that the poorer the economic condition of the tenant, the more nearly exclusively will he tend to rely upon these articles of food for his diet. Thus, the factors that influence his ability to purchase or otherwise provide certain other necessary supplementary foods become factors that influence the prevalence of pellagra, and thus the incidence of the disease rises or falls in inverse association with them.

Supplementary to this staple or basic diet, a rather limited variety of foodstuffs is ordinarily available. These may be classified, for convenience of discussion, as home-produced, purchased, and wild.

The home-produced supplementary foods are milk (used almost altogether in the form of buttermilk), butter, poultry, and eggs, and a limited variety of vegetables, chiefly cabbage, collards, beans, peas, corn, okra, and tomatoes. To these may be added fresh pork. At first glance these constitute a rather impressive supply and diversity of foods, but as a matter of fact the diversity and quantity are not large. As to milk and butter supplies, our observation and the information obtained from farm demonstration agents and others lead us to estimate that, in ordinary times, only 30 to 40 per cent of the tenants own cows. The reasons for this lie partly in the fact that the tenants are too poor to purchase cows, partly in the fact that facilities for pasturage and feed are frequently not afforded by the plantation owners, and partly by the improvidence of the tenants themselves. The policy of some of the planters is responsible in some measure for the absence of cows for two reasons: (1) Because of the desire to use all the land for cotton, pasturage is not furnished and cows are then usually staked along the roadside during the cotton-growing season; and (2) because, as it is claimed by some planters, the tenants are prone to divert feed destined for mules and horses to feeding their cows. It may be observed also that seasonal variation in the ownership of cows as well as in milk production apparently takes place. Since the tenant farmer is usually at his lowest economic ebb during the late winter and early spring, he is sometimes forced to sell his cow for cash, especially when the purchase of feed becomes necessary. This tends to lessen somewhat the number of families owning cows at this season of the year. The supply of milk from the cows which are retained varies somewhat according to season, the supply being lowest in the winter and early spring, because of the scantiness of forage and feed.

While poultry is owned by 60 to 70 per cent of the tenants, the number of such poultry owned by a tenant is usually very small; the egg production is almost negligible and at best will not furnish more than a very occasional meal. Vegetable (garden) produce

ordinarily is extremely limited in quantity. A well-informed farm demonstration agent in one of the counties gave us his observation that less than 2 per cent of the tenant population have gardens in the ordinary sense of the word and our own observation confirms the statement. Probably about 25 per cent have some form of garden, but most of these gardens contain usually only a few cabbages or collards, occasionally a few peas and beans, and still more rarely some tomatoes. The planting of gardens is not generally encouraged by the plantation owners for two reasons: (1) The fact that the gardens use space which otherwise might be planted in cotton; and (2) the making and maintenance of gardens entail labor on the part of the tenant and his family during the season when all the labor possible is required in the cotton fields. The result is that, although in the late winter or early spring, gardens may be planted, the opportunity for working them is lost later on at the time when cultivation is most necessary, so that the garden rarely contributes anything of importance to the food supply of the family. There seems to be a more or less general feeling among local observers that the scarcity of gardens is also due partly to the lack of energy and thrift on the part of tenants, partly to the fact that they are not in the habit of raising gardens, and partly to their ignorance of how to cultivate them. Probably other reasons may be suggested in the facts that the soil is not always well adapted for small garden cultivation and that the tenant farmer after he has finished his day's work in the field is without the needed energy to attempt to cultivate a garden entirely by hand. The ownership of swine is even more restricted than that of cows, and the fresh-meat supply from this source in the autumn and winter lasts but a comparatively short time.

A second source of supplementary food supply is wild vegetation and game. In the early spring a certain amount of greens of different varieties is to be had for the picking, and it is our information that they are used to a considerable extent at that season of the year. Fish are available at all seasons of the year to those who live near the streams or lakes, but here again it should be borne in mind that fishing is done only in those seasons and at times when work is not required in the fields. To a very limited extent wild game is available, especially during the autumn and winter.

A third source of supplementary foods, such as canned meats and, to a very limited extent, vegetables, such as potatoes, cabbage, and tomatoes, is available in the commissaries and stores. The favorite canned goods are salmon, corn, and tomatoes. Obviously, the availability of these foods to the tenant depends upon his ability to buy. In years when his income or credit from his crop is "good," he does not hesitate to purchase considerable quantities and a fair variety of all the articles of diet that the store supplies. In fact, he may be encour-

aged to do so by the plantation commissaries and other stores. In times of economic depression he is not only forced on his own account to limit his purchases of these kinds of food, but he is discouraged from purchasing by the merchant or storekeeper in order to keep him from getting too deeply into debt.

The method of financing cotton production bears an indirect but a definite and important relation to the economic status of the tenant class. In the first place, it must be kept in mind that while all agricultural production is more or less speculative, the speculative character of cotton production is even more pronounced than that of most other forms of agriculture, for three reasons: (1) Cotton in the section under consideration is almost the sole crop, and the chances of severe loss or considerable success to the entrepreneur fluctuates to a greater extent than in a section where the crops are diversified; (2) the product is a highly speculative one in that it is sold in a market which is very sensitive to many factors; (3) a considerable proportion of cotton planters apparently regard cotton production as a speculative activity rather than a regular or settled business.

From the point of view of the economic status of the tenant population, cotton plantations may be roughly divided into at least three types:

(1) There is the small, or relatively small, farm or plantation, chiefly in the "uplands," on which cotton is only one of the crops. This farm is usually owned by the resident planter or farmer. He may have a few acres in cotton, the other acreage being in hay, corn, possibly other grains, truck, and fruits. This type is not characteristic of the "delta" section, and it may be remarked that our information is to the effect that relatively little pellagra is incident in the section characterized by this diversification of crops. This is borne out by the peculiar distribution of the disease in Mississippi. The average yearly number of deaths for the three-year period 1924-1926 in that State was 513. Of this number, 280 deaths (a death rate of 38 per 100,000) occurred in the 17 counties¹ ordinarily considered as constituting the delta section, and 233 (or a death rate of 18 per 100,000) in the remainder of the State. In other words, the pellagra incidence (as indicated by the death rate) in Mississippi outside of the Delta section was only about one-half that in the delta.

(2) The large plantation, owned either by an individual or by a corporation, ranging from two or three thousand acres to 30,000 acres or more. These plantations may be again classified into two subgroups: (a) Those owned and operated by resident planters, and (b) those operated by nonresident planters or corporations. Our

¹ These are as follows: Bolivar, Coahoma, De Soto, Holmes, Humphreys, Issaquena, Leflore, Panola, Quitman, Sharkey, Sunflower, Tallahatchie, Tate, Tunica, Warren, Washington, and Yazoo.

information is to the effect that the tenants, on the whole, are usually better off economically here than on the small plantations of a type to be referred to later. The management of a plantation owned by a large corporation is usually more efficient. The resident owner is likely to devote his time and personal attention to the welfare of his plantation, and our information is that his tenants are likely to be composed of the more stable and efficient class. It is on these plantations, for example, that apparently the tenants are better equipped as to houses, gardens, and livestock, including cows.

(3) The plantations or tracts of land which are bought as a speculation by persons engaged in other business. A plantation is usually bought upon the payment of only a portion of the purchase price, a mortgage being carried for the remaining amount by a local bank, insurance company, or credit organization. The owner then obtains a supply of tenants and their families on the best terms possible and often secures a mortgage on his crop, although this is not in all cases necessary if he has sufficient working capital. If one or two unfavorable years are experienced, a speculative venture of this sort not infrequently comes to grief. For example, in 1926, when the cost of cotton production was some $2\frac{1}{2}$ cents a pound higher than the average market price of cotton, the credit of such operators was severely strained, especially in view of the fact that they had not had a very successful year in 1925. The great deflation in land values is a further complicating factor in the present situation, bearing especially upon speculative ventures of this kind. Many of those individuals and companies that embarked upon cotton production in a speculative way without sufficient capital to weather unfavorable conditions were caught, and in a number of instances have been unable to meet the interest on their mortgages. In 1926 and 1927 the mortgage holders, in some instances, have attempted to operate these plantations themselves; in other instances the land has lain idle; in still others the mortgages have been reduced and the owner has been allowed to continue.

Now, the precise effects of these conditions upon tenant farmers are difficult to set forth in detail because of so many complicating factors that render the situation an extremely intricate one. But the major effect seems to be fairly clear, namely, that all planters, but particularly those who did not have and who do not now have adequate financial resources in the face of two or three years of unfavorable conditions, and in the face of such a catastrophe as the flood, are compelled to operate at the very least possible cost. This may be translated, according to our information, into a limitation of cash and credit advances to the tenant to the very least possible amount that can be arranged for. We have learned of some instances in which the amount of credit was cut from the usual \$1 and \$1.25 per acre per

month to \$0.75 and even \$0.50. This condition bears most heavily upon the least fortunate class of tenants, for various reasons. In the first place, the tenants who contract with planters of this kind tend to be of the less efficient and more shiftless type; they are largely the "moving" population of the cotton-growing area who have very few possessions, tend to be improvident, and perhaps invite less consideration from the planters themselves. Moreover, this type of plantation is not always operated by the most efficient managers, and these, in their turn, are likely to be rated more according to the cotton production per acre in the present rather than upon their ability to develop the future productivity of the land and the labor supply. It is perhaps not going too far to say that in so far as any lack of personal attention to the welfare of the tenants exists on the part of the manager or the planter, it is to be found on these plantations where the owner is nonresident.

This does not mean, however, that the pressure of unfavorable conditions in "poor" years is felt by plantations of this type only. We were informed of a number of instances of failures, in 1926 and 1927, of plantations owned and operated by large companies, and many of the smaller resident-owner plantations were severely hit by the succession of unprofitable years and the flood. The effect upon the tenant in all cases is much the same, except for the fact that the planter without considerable financial resources is obviously less able to "carry" his tenants without passing on to them some of the pressure to which he himself is subjected.

The economic status of the tenant may be understood more clearly if the system of share farming prevalent in the cotton-growing area of the Mississippi Valley be described briefly. Generally speaking, the system is similar throughout this area. The plantation owner enters into a contract about the first of the year with the tenant to plant, cultivate, and harvest cotton on a certain number of acres of land, varying from 15 to 40, the number of acres depending upon the richness and condition of the soil, its freedom from stumps, etc., and the number of individuals in the tenant's family who are capable of furnishing labor. Perhaps a fair average would be between 25 and 35 acres. The size of the tenant's share of the crop depends largely on whether or not mules or horses, implements, and seed are furnished by the plantation owner. The value of his crop obviously depends upon the production of the particular acreage and upon the price of cotton and cottonseed at the end of the season. The method by which the tenant is financed, since he is almost always without any ready funds and frequently already in debt, may be illustrated by the method obtaining in the Delta section of the State of Mississippi, outlined below.

At Christmas the tenant receives what is generally known as "Christmas money," the amount ranging from \$25 to \$100, depending in large measure upon his efficiency, his indebtedness at the time, the prospects for a cotton crop, etc. This is paid to him in cash, and our information is that it is usually largely spent during the Christmas season. From about the first of the year until March 1 the only cash income which the tenant has is from odd jobs which he may be able to secure in lumbering, mending houses and barns, work on the roads and levees, etc. On the money thus earned, together with what he may have saved from the previous year's crop and the "Christmas money," the family must subsist until the crop season begins.

On March 1 the usual arrangement entered into is for the planter to make monthly advances in cash to the tenant of \$1 to \$1.25 per acre farmed. This ranges from \$15 to \$40 per month, averaging \$25 or \$30. During the period from March 1 to August 1 his family prepare the ground and plant and cultivate the cotton. The only other source of cash income during this period is from hoeing cotton for wages on other tracts of land, this being done chiefly by the women and the older children. The cash advances by the planter are made over a five-month period, beginning March 1, the last payment being made on July 1. After July 1 no further cash income is available until the crop is picked and ginned, except from very occasional odd jobs and from picking cotton on other tracts of land by members of the family capable of work. When the cotton is ginned in the fall, the tenant receives income from two sources: One is from the sale of cotton lint after the deduction of the cash advances made by the planter; the other is from the sale of the seed, all the money from the latter going to the tenant.

The money from the crop is the chief income of the family. Obviously, if the crop is of fair quantity and quality, the amount of income will depend upon the price of cotton at the time the cotton is sold. If conditions are unfavorable, as, for example, in a year when cotton prices are low (as in 1926), or when unfavorable growing conditions exist, as they did in certain areas in 1925 when heavy rains interfered with the quality and quantity of cotton, the tenant does not realize any great advantage from his crop. For the lint he may be, and in many instances actually is, in debt to the planter; the price of cottonseed, of course, varies closely with the price of cotton. In a "good" year the tenant tends to extravagance, to purchase beyond the limits of absolute need such things as clothing and cheap automobiles, and it is a very general observation that the negroes and most of the white tenants in this section are rarely in possession of any surplus by the end of the year.

The method of cash advances to the tenant on his crop prevails generally throughout the Delta section of Mississippi. It may be

noted that this system marks a quite distinct change from that prevailing 10 years ago, when, instead of advances on the crop being made in cash, the advances were in the form of credit on the planter's commissary or store, or other stores when the planter himself did not operate one. The reason for this change, as stated by various planters and others, was that the scarcity of labor resulting from an exodus of negroes since 1920 forced this change to conciliate and conserve the labor supply, the system of credit advances being objected to by the tenant and the cash advances preferred. The effect of this change has been a greater freedom on the part of the tenant to buy where and what he pleases, and a greater consumption of supplementary foods, automobiles, clothing, etc., in "good" years. Another possible effect is a tendency toward a restriction in the variety of diet on the part of some (improvident) tenants for the reason that too large a portion of the available money was spent for other (luxury) purposes than food.

While the system outlined above prevails generally throughout the Mississippi lowlands, certain variations are to be found. Thus, in Tennessee the older form of store credits instead of cash advances is prevalent. In Arkansas it was found that both of these systems existed, the tendency being toward a greater following of the practice of cash advances. Among the white tenants in Tennessee and Arkansas still another variation in method of financing the crop is to be found, whereby the tenant receives no cash advance or credit from the planter but mortgages his own crop to the commissary or store for supplies during the crop season.

Whatever particular form of this system prevails, the effect upon the economic status of the tenant farmer is practically the same. For the most part, except in unusually favorable years, the tenant is constantly in debt, or on the verge of debt, to the planter or the store. If he chooses to move, to change the plantation owner with whom he has a contract, care is taken by the next owner to ascertain how much the tenant is in debt to his former planter so that the new planter may take up this indebtedness for his new tenant.

The average tenant may thus be said to be chronically on the verge of deprivation, it being understood, of course, that some tenants never reach that border line, and that others are almost continuously under it. Even within the relatively narrow range of income in which all of these tenants must be classified by any ordinary standard, there are quite distinct gradations. The less energetic, less capable, and less efficient, "shiftless" class find themselves on or below the border line. Obviously, only a relatively small decrease in income is sufficient to force a considerable number of tenants who are on the border line into the class which actually suffers deprivation. This was true in 1915, again in 1921, and again in 1924 and 1926.

Now, the precise manner in which an unfavorable condition operates upon the tenant differs to some extent according to the individuals concerned, but in general it is somewhat as follows: If for any reason the tenant clears little, if anything, from his crop, the amount of his "seed money" is also limited, and he is thus at a distinct disadvantage during the winter and the following spring until, at least, a new crop is financed. If he is unable, for various reasons, to secure or to do other work, as has been described, he has no additional source of income. It may, therefore, happen that the tenant is so pressed during this period that if he owns a cow he is compelled to dispose of it, and to the extent that he thus deprives his family of milk he impoverishes the household diet. Furthermore, it is during this period that the annual movement of tenants occurs. Some, hoping to be more fortunate the following year, seek other plantations; some, disheartened by a bad year, may leave the section and either go to other cotton-growing areas in the lowlands or go to the uplands and the "hill country," leaving their debts behind them. On the other hand, after a favorable crop the proportion of such unfortunate tenants is reduced, although from every indication there is always a considerable proportion of tenants in this class.

In the present instance three unfavorable years have occurred, during the last of which (1926) the price of cotton fell on the average below the cost of production. The 1927 flood, obviously, has tended to intensify the severity of the resulting conditions, and it is reasonable to conclude that a larger proportion of tenants are this summer in a definitely unfavorable situation than has been the case for a number of years. This conclusion logically follows from the factual premises, but it may be remarked that throughout the flood area the information obtained was without exception corroborative of the accuracy of this inference.

The evidence of an unusually high incidence of pellagra this summer in the area under consideration is thus associated with factors of an economic character, the gravity of which has been accentuated by the overflow.

RECOMMENDATIONS

We may now turn to a consideration of practicable measures that may be applied in order (1) to mitigate or relieve the existing acute health situation, and (2) to influence the fundamental conditions responsible for that situation, with a view of minimizing their probable future effects.

In order to make clear the scientific basis for the recommendations which we shall presently outline for assisting those attacked with pellagra to regain their health, it seems desirable first of all to outline briefly the essentials of our knowledge of the cause and treatment of pellagra.

Broadly speaking, pellagra results from a deficiency in the diet of a specific pellagra-preventive dietary essential or vitamin which has been designated as factor, or vitamin, "P-P." In other words, it may be said that pellagra develops in those whose diet does not include enough of the foods which carry the vitamin "P-P" to supply the body's needs for this factor. This does not mean that the diet that leads to pellagra is entirely devoid of this essential factor; on the contrary, it is probable that a pellagra-producing diet practically always contains some of this vitamin, but the quantity is not enough for the nutritional needs of some or all of those subsisting on it.

The diet made up of the ingredients specified below in conventional quantities has been found associated with pellagra and, it is believed, will lead to the development of the disease in fully 40 or 50 per cent of those partaking of it within some three to six or eight months, *depending on the nutritional status of the individual when starting such diet.*

The components of a typical pellagra-producing diet may be the following: Corn meal (corn bread, boiled hominy, or mush), white wheat flour (biscuit), white rice, dried beans, "white meat" (salt pork), sorghum, or cane molasses, collards, or "greens." Such diet contains some vitamin "P-P" derived from the beans, collards, and corn meal, but too little to prevent pellagra. An increase in the ration of beans and collards or, better, the addition of some food or foods rich in this factor, would tend to diminish the incidence or altogether prevent the occurrence of the disease in those subsisting on this diet. In this connection it may be remarked that the diet made up as above specified is accurately representative of the main or basic portion (calorifically) of the diet of the rural population of the South, and, because of the three principal components, meal, meat, and molasses, to which in hard times it tends to be reduced, is designated in the vernacular as the "three m's" ration.

As has been remarked, when this diet is adequately supplemented with "P-P"-containing foods (such as milk, lean meat, and vegetables) pellagra does not occur. When the disease does appear, it is certain that, for some reason, the diet has not been adequately supplemented. This reason may be any one or some combination of the following: (1) Individual eccentricity of taste, especially where the variety of supplemental foods, and thus of choice, is restricted (exemplified by those who have a dislike for milk, for eggs, for fresh beef, etc.). (2) A shortage in supply of the supplemental "P-P"-containing foods, resulting, perhaps, from inaccessibility to markets, difficulties of transportation, particularly of the perishable foods, epizootic among the domestic animals (milk cows, poultry, swine); from fencing laws, which make it impracticable for many to keep milk cows or swine; from overflows, which may cause the drowning

of milch cows, goats, poultry, or swine, or force the sale of such animals or, by leading to a shortage of stock feed, cause a reduced milk supply. (3) Insufficient cash or credit available for the purchase of an adequate diet.

Recent investigations having shown that the so-called vitamin B actually includes at least two distinct dietary essentials, namely, the antineuritic vitamin and the "P-P" factor, it has been inferred that all foods that are known to contain this so-called vitamin B contain the "P-P" factor. This inference has been borne out by the results of such tests of individual foods as have so far been made. It appears, however, that the different classes of foods, and, probably also, the foods of the different classes, vary considerably with respect to their richness in this "P-P" factor. This is of great practical importance, since it emphasizes the importance of quantity. Unfortunately, our knowledge of the quantity of factor "P-P" contained in the individual foods is extremely limited and, at best, of a very crude relative character, so that only a few very general statements can at present be made. Thus, when forming the principal supplemental source of factor "P-P" in connection with such basic diet as has been considered in the foregoing, there would be needed daily for fully preventive purposes in the adult, of lean beef (Hamburg steak) about (not over) one-half pound, of dried cowpeas fully one-half pound, of buttermilk about 1 quart, of canned tomatoes about 1 quart, of dried pure yeast about 1 ounce. If a combination of these or related foods is used, the quantities of each may or should, of course, be correspondingly reduced.

The foods that have preventive action have, of course, also curative value. In selecting the food or foods to be used in treating the sick, the physician must of necessity choose such as will most satisfactorily fit the tastes and digestive capacity of the patient. Such considerations and actual experience indicate that milk, fresh meat, eggs, and dried yeast are the foods of first choice. Unfortunately, it is frequently very difficult for the pellagrin to secure these foods, by reason of lack of means with which to purchase or because of a scant available local supply. As a consequence the patient all too frequently receives too little of the foods of which he is in greatest need, so that the course and progress of the attack are either altogether unfavorable, especially in the severe cases, or disappointingly tedious. This and other considerations which can not here be discussed quite commonly tend to make the physician cling to the older ideas of drug treatment. There is no drug known that actually serves any useful purpose, unless it be to mitigate or relieve painful or disturbing symptoms or as a placebo. Almost always the money expended on drugs would be much more advantageously expended on the essential foods and the proper feeding of the patient.

With the foregoing elementary considerations relative to the cause and treatment of pellagra in mind, and in view of the difficult economic situation of nearly all pellagrins, we would recommend that the appropriate local relief agency or agencies furnish the local health officer with a supply of such nonperishable supplemental "P-P" rich foods, as dried pure yeast (preferably the killed culture), canned (chum) salmon, canned beef, and canned tomatoes, or adequate funds or credit with which to purchase such a supply, which he may then distribute on physicians' requisition or otherwise to those in need who are actually sick or present evidence of an impending attack of the disease. Since the vast majority of patients are able to be up, the question of hospitalization will arise only in a relatively small minority. In general, patients properly fed will regain their health and normal vigor in from 6 to 12 weeks. In the foregoing it is assumed that the patient has a sufficient supply of the basic staple foods.

It is believed that if the foregoing recommendation is promptly inaugurated and efficiently carried out, the acute pellagra situation will be mitigated if not altogether relieved. It must be noted, however, that this is not to be understood as solving the fundamental problem of pellagra. The solution of this, and thus the prevention of a recurrence of the disease next year and in the future, involves economic questions—income and food supply—the nature and complexity of which have already been outlined and which must be dealt with in other ways.

In any project or effort for the amelioration of conditions that are directly or indirectly responsible for the prevalence of pellagra among the agricultural tenant population of the cotton-growing area along the Mississippi and its tributaries, it is necessary to keep in mind two considerations of essential importance. The first is that the economic status of this population is bound up in the tenant system, which, in turn, is involved in single-crop agricultural production and the speculative character of agricultural finance as it is practiced in this area, the seasonal fluctuation in income of the tenant, the periodic or cyclical variation in profits, and other factors of an economic nature. The second consideration is that the dietary habits of the population in this section of the country are aggravated, if the term may be so used, by the peculiar limitations upon the supplies of foods, particularly foods of certain kinds, to which reference already has been made.

Thus it may appear at first glance that any attempt to remove the conditions which are fundamentally responsible for the prevalence of pellagra would involve a revolution of dietary habits and of the entire economic and financial system as it now exists. We are led, however, by our observations to believe that, regardless of changes

that may be brought about or that may take place in these conditions, there seem to us to be some more direct and more immediately practicable approaches to the fundamental problem of pellagra which would be more specific in their effects.

We are fully aware that the extensive and valuable activities of the Federal Department of Agriculture and of the State agricultural colleges and other agencies have been directed along at least some of the general lines which are suggested below; and our suggestions should not be taken as in any way implying that these activities are not fully commensurate with the demands of the situation. Since the aspect of the situation which concerns us here is primarily the public-health aspect, of which pellagra is only one index, we wish to invite consideration in a general way of certain measures which are either already under way or may, it seems to us, be undertaken for the improvement of specific conditions which are concerned more directly with the situation as a public-health problem.

In the first place, obviously any measure which will improve the economic condition of the tenant farm population, particularly of that portion of it which is liable to deprivation, will tend to lessen the prevalence of pellagra as well as of ill-health from most other causes. The stabilization of income of the tenant in such a way as to lessen the effect of seasonal and periodic limitations arising in part from the inability of the tenant at certain times to purchase such of those foods which are available would probably tend to operate in that way. It is generally recognized, we believe, that the diversification of agriculture in this area would be a measure for the stabilization of income, since the tenant's income would not then be so greatly subject to fluctuations as it is in the production and value of a single crop.

In the second place, there may be mentioned more specifically those efforts which do or may make food supplies available generally throughout the tenant population area and with less seasonal variation. Obviously, efforts looking toward crop diversification will have a direct bearing upon this objective, especially if the diversification includes truck, dairy, and cattle production. All efforts that will result in a greater increase in the milk supply may be regarded as definitely pellagra-preventive measures as well as measures for the improvement of health in general. From such information as has been furnished us in the areas concerned it is believed that a more general ownership of cows by the tenants themselves can be effected. Another suggestion which may be and has been made is for the establishment of plantation dairies operated by plantation owners or managers, the milk to be sold at a minimum price and to be included in the ordinary rations bought from the store or commissary. Another suggestion along this line is that of community dairies. In a similar way the

efforts being made, by the Department of Agriculture and persons interested, toward more and better gardens among the tenants is a measure of great importance. It is believed that some practicable way can be found of providing for more convenient methods of the cultivation of gardens, such as the planting of garden produce in rows in the cotton fields themselves or the inauguration of plantation truck patches. In the latter case the produce may be sold, as in the case of the suggestion relating to milk, as are other goods in the plantation store or commissary. Again, an increase in cattle, swine, and poultry production, at least to the extent that will meet the local demand for fresh meat and eggs, is a matter which would have to be worked out in various ways to conform to local conditions. In short, the practicability and the economic and health advantage of promoting an increase in the production of food on the farm or plantation should be given the most earnest consideration.

The situation is manifestly one which calls for study with a view to working out practicable solutions of the economic and agricultural problems involved. In such study, however, the needs of health must be held in mind as of controlling importance.

COURT DECISION RELATING TO PUBLIC HEALTH

Recovery for damage to residence property caused by sewage-disposal plant.—(Washington Supreme Court; Southworth et ux. v. City of Seattle, 259 P. 26; decided September 1, 1927.) An action was brought, under section 16 of article 1 of the State constitution, against the city of Seattle to recover for damages to plaintiffs' residence property by reason of the construction and operation immediately near their property of a sewage-disposal plant. Section 16 of article 1 of the State constitution provided in part:

* * * No private property shall be taken or damaged for public or private use without just compensation having been first made, or paid into court for the owner, * * *.

A jury returned a verdict for the plaintiffs for more than one-third of the value of the property without the nuisance, and the judgment on the verdict was affirmed by the supreme court.

One contention on behalf of the city was that there was no allegation or proof of filing a claim for damages with the city as a prerequisite to maintaining the action, but the court held that, the action being brought under the section of the constitution above mentioned, the filing of a claim before suit or at all was not necessary.

Another contention on the part of the city was that, as the city was engaged in a lawful and necessary governmental work on its own premises, the claim of the plaintiffs was *damnum absque injuria*, but the court stated that its decisions and others were to the contrary.

The court also upheld an instruction to the jury that "in determining the question of whether or not respondents' property had been damaged within the purview of the constitutional provision they could take into consideration those things clearly defined by the statute [relating to nuisances] which under all authorities constitute damage."

CASES OF POLIOMYELITIS REPORTED BY STATES FOR FIRST THREE WEEKS OF OCTOBER, 1925, 1926, AND 1927

The following table is a continuation of the table appearing in the Public Health Reports, October 7, 1927, page 2452, and also gives a comparison of the telegraphic reports for the first three weeks of October of the years 1925, 1926, and 1927:

Cases of poliomyelitis reported by State health officers October 2-22, 1927, compared with reports for the corresponding weeks of 1925 and 1926

State	Week ended—								
	Oct. 8, 1927	Oct. 9, 1926	Oct. 10, 1925	Oct. 15, 1927	Oct. 16, 1926	Oct. 17, 1925	Oct. 22, 1927	Oct. 23, 1926	Oct. 24, 1925
Alabama	0	0	2	0	3	1	2	1	2
Arizona	5	0	0	0	0	1	4	0	0
Arkansas	1	1	0	13	2	1	2	2	0
California	36	3	17	26	3	10	32	6	9
Colorado	4	0	1	11	1	2	7	0	0
Connecticut	13	1	1	8	2	0	9	1	1
Delaware	0	2	0	0	0	0	0	0	0
District of Columbia	1	0	3	2	0	1	3	0	0
Florida	1	6	3	6	0	4	0	0	1
Georgia	10	0	0	0	0	1	1	0	2
Idaho	1	0	0	0	0	0	0	0	0
Illinois	40	7	12	26	6	16	37	5	15
Indiana	9	3	1	13	3	7	11	2	2
Iowa	12	0	19	5	0	13	0	0	9
Kansas	15	4	5	26	5	5	8	0	5
Louisiana	0	0	1	1	0	0	2	0	0
Maine	13	1	1	18	0	0	13	1	0
Maryland	1	2	4	2	1	2	2	2	19
Massachusetts	115	6	12	78	3	5	99	9	10
Michigan	30	0	0	21	0	0	18	0	0
Minnesota	12	3	45	5	2	23	8	0	17
Mississippi	2	0	0	0	0	0	2	2	0
Missouri	18	2	6	20	1	5	9	1	2
Montana	2	3	0	2	0	2	2	0	3
Nebraska	10	0	6	13	0	11	5	0	16
New Jersey	14	1	3	9	1	3	11	3	3
New Mexico	13	0	1	15	0	0	7	0	0
New York	59	37	40	38	20	32	32	23	28
North Carolina	1	6	4	0	5	1	1	2	1
North Dakota	2	2	12	1	0	3	0	0	3
Ohio	76	0	0	77	0	0	46	0	1
Oklahoma	10	1	4	13	2	1	10	1	1
Oregon	18	3	1	19	1	0	31	1	0
Pennsylvania	29	3	0	33	12	0	45	9	0
Rhode Island	8	0	0	2	0	0	3	2	0
South Carolina	2	4	0	3	7	0	3	3	3
South Dakota	3	1	0	2	0	7	5	0	2
Tennessee	3	1	0	3	0	0	7	0	0
Texas	15	0	0	10	0	0	9	0	1
Utah	4	0	0	2	0	0	0	0	1
Vermont	4	1	3	1	0	5	7	0	5
Virginia	1	1	0	2	0	1	0	0	1
Washington	15	0	5	23	1	3	22	6	7
West Virginia	17	0	0	14	0	0	17	0	0
Wisconsin	12	0	23	12	3	14	8	5	7
Wyoming	1	0	0	3	1	1	1	0	0

PUBLIC HEALTH ENGINEERING ABSTRACTS

Report on the activities of the Central Committee on Water Supply of Holland for 1925. Anon. *Verslagen En Mededeelingen Betreffende De Volksgezondheid*, No. 7, July, 1926, pp. 643-648. (Abstract by Frank Hannan.)

The principal activities were: (a) To report upon a proposal of the director of the government water supply bureau concerning legal regulations affecting water supplies; (b) to report upon the draft, received from the Minister of Labor, Trade, and Industry, of a bill to regulate the withdrawal of ground water and protect sources of supplies; (c) inspection of progress on the Ijmuiden sluice project; consideration of the director's report on the effects of the heavy pumpage necessary to avoid under-water construction upon water table, vegetation, and equilibrium between fresh and salt water. Results proved to be in accordance with anticipation, and there appears to be no objection to completing the construction under the same conditions; (d) two subcommittees have under consideration the goiter-drinking-water question.

Abbreviated Report of the Government (Holland) Water Supply Bureau for 1925. Anon. *Verslagen En Mededeelingen Betreffende De Volksgezondheid*, No. 7, July, 1926, pp. 649-723. (Abstract by Frank Hannan.)

A short account of the rural supply projects inaugurated and in course of inauguration under the bureau's auspices, outlining the many and various difficulties with which such undertakings have to contend. The manifold functions of the bureau include, for example, technical advice on such matters as deferrization and demanganisation. The Government is keenly alive to the desirability of providing reliable water for the rural population as well as for the urban. In more prosperous times it even participated financially in certain approved projects and even now is prepared to assume in some cases a certain contingent liability. Upon the bureau rests the responsibility of seeing that these rural supply projects are established upon the soundest possible basis, both technically and financially. Activities to this end are summarized under 93 headings. Perhaps the greatest difficulty to be surmounted is that of popularizing the idea of paying for water among the thrifty and independent Dutch. Some of the propaganda work is described. In an appendix, Engineer Markus of the bureau lists for 94 Dutch waters the hardness as deduced by the application of certain formulæ from the electrical conductivity and the hardness as found by analysis. Agreement is moderately satisfactory.

The Water Supply of Maastricht. A. H. van de Velde. *Verslagen En Mededeelingen Betreffende De Volksgezondheid*, No. 7, July, 1926, pp. 828-834. (Abstract by Frank Hannan.)

The circumstances leading up to the adoption of the new supply in use since November, 1925, and officially taken over in April, 1926, are reviewed. In February, 1923, the former supply was found to be contaminated. An investigation by the central laboratory confirmed the unfavorable results, water in the wells and also from the tap being *B. coli* positive in 10-c. c. samples. The wells were in gravel beds 12-14 meters deep; yet apparently subject at high water stages to pollution from the Maas River. Their situation, too, in a partly agricultural village, with the usual undrained manure heaps, etc., exposed them to very serious risk of surface contamination. This was actually proved by percolation experiments with salt and with lithium compounds, as a result of which the supply, though ample, had to be condemned on hygienic grounds. The wells at Amby were then bored and tested for 2½ months and found to give good water in ample supply. From August, 1923, until the new supply became available, the old supply was made safe by chlorination. Dosage ranging from 0.05 to 0.1 p. p. m. was found effective. Although no publicity was given to the

chlorine installation, complaints of taste were at first frequent, perhaps because of the initial higher dosage (0.2 p. p. m.), and were a factor in the readiness to embark on the new supply for which chlorination is unnecessary. A source of supply intrinsically safe is considered to be in many respects preferable to a doubtful source rendered safe by chlorination. The new supply has been shown to be in no danger of pollution from high water stages in the Maas.

Investigation of the Spring Water Supply of Batavia. C. P. Mom. *Mededeelingen Van Den Dienst Der Volksgezondheid in Nederlandsch-Indie*, vol. 4, 1926, pp. 309-337. (Abstract by Frank Hannan.)

From 1843 until 1922 Batavia was supplied with artesian water; in 1922 the present supply from the Tjiomas springs came into use. The springs are about 53 kilometers from Batavia in hilly country 270 meters above sea level in a barbed wire inclosure of about 15,000 square meters. They are quite numerous and have a combined flow of about 500 liters per second, of which about 350 liters per second are now being collected. Preliminary examination indicated a water of great purity and of probable deep origin. The bacteriological quality of the supply when taken into use fell short of expectation; hence a long and careful investigation which well exemplifies the inherent difficulties of collecting safely a spring supply, especially in tropical countries. A long and very valuable discussion of the interpretation of bacteriological findings and of its limitations is given, with reference more especially to tropical conditions. Great weight is attached to the important discoveries of Stiles and Crohurst with regard to underground migration. It was proved that in the plan originally adopted for collecting the spring water the exclusion of surface drainage was not complete. Neither was it feasible, under the very difficult local conditions, to exclude absolutely the very abundant subsurface water flowing down the Tjiomas valley, except at prohibitive cost. Judicious alterations have, however, reduced the invasion of extraneous water to negligible proportions and chlorination has been added, the final result being an absolutely reliable and satisfactory water.

Improvements in the Water Supply of Nyack, N. Y. Nicholas S. Hill, jr. *American City*, vol. 36, No. 6, June, 1927, pp. 776-782. (Abstract by S. H. Smith.)

Nyack, N. Y., is a village with a population of almost 4,500 according to the 1920 census, but water is supplied to a population of 7,000. In constructing the water purification improvements it was found that to repair and enlarge the existing slow sand filtration plant would cost 44 per cent more than to construct a new mechanical filter plant. As this greater initial cost would not be offset by a saving in operation, the slow sand plant was abandoned and construction was initiated on a new rapid sand plant.

The source of supply is the Hackensack River, which has a drainage area of 30 square miles above the intake. In the old system the water flowed by gravity over the slow sand filters, thence to a clear well, from which, after chlorine treatment, it was pumped into the mains. Operation of this plant showed preliminary sedimentation and automatic control of the rate of flow through the filters to be desirable.

The new plant makes use of the old slow sand filter bed for preliminary sedimentation, and of the old clear well as the source of supply for the new low lift pumps. New construction includes a 250,000 gallon coagulation basin giving a 4-hour detention period, 4 mechanical filter units, 10 by 14 feet, with a combined capacity of 1,500,000 gallons per 24 hours, and a filtered water well of 63,000 gallons capacity.

Proteolysis by Bacteria from Creamery Wastes. Max Levine and Lulu Soppeland. *Iowa State College of Agriculture and Mechanic Arts Official Publication*, vol. 25, No. 20, October 13, 1926, Bulletin 82. (32 pages.)

"This report deals with observations on the effect of air supply, initial reaction (H ion), concentrations of milk sugar, and concentration of various salts (NaCl, MgCl₂, CaCl₂, FeCl₃) on the digestion of gelatin and milk proteins by bacteria isolated from creamery wastes.

"With the organisms studied, digestion of gelatin was much more rapid in the presence of air. This was equally true for the cultures isolated anaerobically from milk wastes stored in tightly stoppered bottles and for those obtained from skim milk subjected to activated sludge treatment. The proteolytic bacteria most frequently encountered in milk wastes therefore find unfavorable conditions in the various anaerobic sewage treatment processes such as septic and Imhoff tanks.

"There was no correlation between change in reaction as determined by titration and that observed by H ion measurements. In gelatin with an initial reaction of pH 5.9 all cultures studied became distinctly alkaline (pH 6.5 to pH 7.7), whereas on the basis of titratable acidity some showed no change and others marked increases in acidity (over 300 p. p. m. as CaCO₃). Total acidity and alkalinity as ordinarily determined in sewage analysis may therefore be misleading as regards the actual acidity or change in reaction of the waste.

"The colon group of bacteria is extremely important in sewage purification, as it tends to prevent development of inhibitory acidities under aerobic conditions by rapid oxidation of organic acids.

"The optimum reaction for proteolysis was neutral or slightly alkaline (pH 7 to 7.5). Acidities up to pH 6.4 produced no appreciable inhibition under aerobic conditions, but it is felt that under the less favorable anaerobic conditions this acidity would be detrimental. Proteolysis was retarded by higher acidities and frequently stopped if the reaction reached pH 5 to 5.5.

"With pure cultures of nonlactose-fermenting, proteolytic bacteria, the presence of lactose up to 1 per cent did not affect digestion of gelatin or sodium caseinate, and the reaction remained alkaline. In mixed cultures of the foregoing with the lactose fermenting bacteria *communior*, acidity rapidly rose, and proteolysis was practically completely stopped if sufficient lactose was present to permit development of an acidity of pH 5.5. In these experiments, under aerobic conditions 0.1 per cent lactose was more than sufficient to bring about this limiting reaction; under anaerobic conditions smaller quantities of acid-producing materials would seriously affect digestion of sewage solids.

"There was a very distinct correlation between the valency of the cation and its inhibitory effect on digestion of gelatin and sodium caseinate. The production of amino and ammonia nitrogen from gelatin (initial reaction pH 7) by *Flavobacterium suaveolens*, which was the most proteolytic of the organisms studied, was markedly reduced by 153 millimols NaCl (9,070 p. p. m.), 85 millimols MgCl₂ (8,060 p. p. m.), 25.6 millimols CaCl₂ (1,820 p. p. m.), and 1.64 millimols FeCl₃ (264 p. p. m.). Similar results were observed with respect to decomposition of sodium caseinate.

"In the presence of *Bact. cloacae* or *Flavo. suaveolens* and their end products sodium caseinate was precipitated by very much lower concentrations of NaCl and CaCl₂ than was the case when these salts were present in sterile solutions. These precipitates could not be explained by changes in H ion concentration and are presumably due to other end products of bacterial metabolism. It is therefore felt that milk wastes entering a very hard water sewage would probably cause more voluminous precipitates than in a soft water sewage."

An Outline of Sewage Purification Studies at the Lawrence Experiment Station. H. W. Clark. *Industrial and Engineering Chemistry*, vol. 19, No. 4, April, 1927, pp. 448-461. (Abstract by A. S. Bedell.)

Since its establishment in 1886, the Lawrence Experiment Station has served, in addition to its other functions, as a training school for sanitary and hydraulic engineers. Except for the first few years, the activities have been directed by chemists and bacteriologists; nevertheless the work is more familiar to engineers than to chemists. The history of the tremendous advance in the economics of sewage purification from intermittent sand filtration, treating 50,000 gallons per acre per day, to aeration with living sludge, treating 15,000,000 gallons per acre per day, can be traced in the annual reports of the station.

The work on intermittent sand filtration not only resulted in the determination of fundamental biochemical laws, but also standardized methods of the chemical and physical analysis of sands and gravels. The development of gravel-stone filters enabled higher rates of operation, which were still further increased by forced aeration in gravel filters. Trickling filters were evolved from this, and certain laws were determined. Contact beds, chemical precipitation, septic tanks, and activated sludge process were all the subject of continued study. Special studies also were made of the purification of manufacturing wastes, the fertilizing value of sewage sludge, and the destructive distillation of sludge.

(Abstractor's note: No abstract can do justice to this pithy outline of long years of experimental work.)

Sewage Disposal Plant at St. Thomas, Ontario. Warren C. Miller. *Canadian Engineer*, vol. 52, No. 11, March, 15, 1927, pp. 345-348. (Abstract by R. E. Thompson.)

The activated sludge plant at St. Thomas is described and illustrated. The first treatment works, consisting of three plain sedimentation tanks, were constructed in 1908. Diminishing flow of Kettle Creek, into which the effluent is discharged, accentuated by the construction of a large storage reservoir upstream, rendered further treatment absolutely necessary, and it was decided to reconstruct the plant for treatment by the activated sludge system. The plant consists of detritus tanks providing detention of 1 minute at velocity of 0.75 foot per second, coarse screens, a disintegrating tank and fine screen, two aeration tanks operated in parallel, providing $4\frac{1}{2}$ hours' detention, with 25 per cent return of sludge and sewage flow of 2 m. (I.) g. d., sedimentation tanks equipped with Dorr clarifiers, providing $2\frac{1}{4}$ hours' detention of 2 m. g. d. flow, and a sludge digestion tank. The air compressors have capacity of 1 cubic foot of free air per gallon at the present rate of flow of 1,440,000 gallons per day. The sludge is returned by air lift, and the water displaced by the sludge entering the digestion chamber is also returned to the aeration tanks. The diffusers in the latter are arranged to induce a spiral circulation in the channels. At ordinary dry weather flows the effluent usually contains less than 50 p. p. m. of suspended matter, and the stability averages about 10 days. When the flow is in excess of 2 m. g. d., part of the storm water is by-passed after brief sedimentation and coarse screening. The cost of the plant was \$65,000, or \$32,500 per m. g. d. capacity.

The Public Health Service of Bulgaria. Ivan Golosmanoff. League of Nations Booklet, June, 1926, pp. 1-74. (Abstract by Fred Almquist.)

Organization.—The organization of the public health service consists of a central administration, namely, the Directorate of Public Health, and local administrations.

The directorate, which comes under the Ministry of the Interior, and has wide powers, is divided in five departments: (1) Public health; (2) infectious diseases; (3) hospitals; (4) pharmaceuticals; (5) financial service. Each department has its own director who carries on the work pertaining to his department.

There is an advisory organization consisting of the director of public health,

chief of the army medical service, president of the Bulgarian Medical Association, six doctors, and one judge, who examine, approve, advise, settle disputes, and make decisions pertaining to health.

There are also the local health officers, the country being divided into provinces, then medical districts, and finally medical sections. These have their own public health councils. The frontier health service takes care of the borders and is divided into quarantine sectors. They have stations at all ports and where the railroads enter Bulgaria.

Aiding in general are several charitable organizations, among which are the Bulgarian Red Cross, the Bulgarian Anti-Tuberculosis Society, and others.

Preventive medicine.—The resources of the country are such that rapid strides can not be taken in the improvement of the hygienic conditions in the more populous areas. The towns carry out their own water supply systems, sometimes receiving State grants. In 1911 there were modern supply systems in 7 towns and 3 villages, while in 1923 there were 13 towns and 99 villages so equipped. Most supplies are entirely inadequate. The sewerage systems are very poor, many large towns having none whatsoever. Only 5 towns have modern sewerage systems, 7 towns have collection of refuse, and few towns possess a regular street-sweeping service.

Many other subjects are set forth and explained other than those above mentioned.

Some Problems of Seaside Health Resorts. Leslie Roseveare. *The Surveyor*, vol. 71, No. 1848, June 24, 1927, pp. 625-626. (Abstract by H. N. Old.)

The author discusses in a somewhat pessimistic but none the less candid manner the numerous problems confronting the governing authorities of a seaside resort.

Sewage and refuse disposal, particularly, present difficulties not encountered at inland or all-year-round communities. In order to be successful in so far as attraction and popularity are concerned, the psychological effect on the summer visitor must be considered. In the matter of the sewer line extension and outfall, and the avoidance of any hint of even storm water desposits near the beaches, as well as too frequent refuse collection, in order to cater to the aesthetic rather than the practical, considerable unnecessary expense is involved.

The widely varying conditions of the summer season and the so-called "off-season" cause problems of housing and unemployment seldom encountered elsewhere.

Other features discussed, but not directly concerning the public health, are local attractions, development of sea front, the economics of bathing pool operation and bathing privileges, tennis courts and golf courses, storm shelters and comfort stations, and, finally, the highway and motor-car problem.

DEATHS DURING WEEK ENDED OCTOBER 22, 1927

Summary of information received by telegraph from industrial insurance companies for week ended October 22, 1927, and corresponding week of 1926. (From the Weekly Health Index October 26, 1927, issued by the Bureau of the Census, Department of Commerce)

	Week ended Oct. 22, 1927	Corresponding week 1926.
Policies in force.....	69, 081, 864	65, 641, 744
Number of death claims.....	12, 382	11, 169
Death claims per 1,000 policies in force, annual rate.....	9. 3	8. 9

Deaths from all causes in certain large cities of the United States during the week ended October 22, 1927, infant mortality, annual death rate, and comparison with corresponding week of 1926. (From the Weekly Health Index, October 26, 1927, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Oct. 22, 1927		Annual death rate per 1,000 corresponding week 1926	Deaths under 1 year		Infant mortality rate, week ended Oct. 22, 1927 ¹
	Total deaths	Death rate ¹		Week ended Oct. 22, 1927	Corresponding week 1926	
Total (67 cities)	6,442	11.4	11.3	723	754	459
Akron	40			5	6	54
Albany	43	18.7	14.9	4	4	83
Atlanta	64			11	6	
White	33			6	2	
Colored	31	(⁹)		5	3	
Baltimore	308	12.9	12.7	26	27	108
White	144		10.6	23	10	89
Colored	50	(⁹)	24.5	12	11	187
Birmingham	76	18.4	19.3	12	8	
White	45		15.1	5	4	
Colored	33	(⁹)	25.9	7	4	
Boston	181	11.9	13.6	26	33	73
Bridgeport	24			1	3	19
Buffalo	123	11.7	13.2	12	18	60
Cambridge	27	11.4	11.5	3	6	53
Camden	33	12.9	10.3	7	5	120
Canton	11	5.1	9.5	4	6	95
Chicago	717	12.1	10.3	75	58	65
Cincinnati	130	14.5	15.5	12	11	75
Cleveland	162	8.6	9.5	15	19	40
Columbus	62	11.1	13.4	9	14	84
Dallas	55	13.7	12.6	8	11	
White	44		12.7	6	10	
Colored	11	(⁹)	11.6	2	1	
Dayton	47	13.8	10.9	9	4	148
Denver	72	12.9	14.1	6	10	
Des Moines	34	11.9	11.1	0	2	0
Detroit	246	9.6	11.0	39	52	62
Duluth	25	11.3	13.4	0	2	0
El Paso	30	13.7	8.6	2	3	
Erie	26			2	4	30
Fall River	23	9.0	7.6	7	4	124
Ft. St.	37	13.5	6.9	10	6	163
Fort Worth	41	13.0	8.9	11	5	
White	38		7.8	10	4	
Colored	3	(⁹)	16.5	1	1	
Grand Rapids	35	11.5	10.7	4	2	59
Houston	65			10	5	
White	40			5	3	
Colored	25	(⁹)		5	2	
Indianapolis	100	13.9	12.5	9	8	71
White	80		12.6	7	7	63
Colored	14	(⁹)	11.9	2	1	122
Jersey City	76	12.3	9.0	6	5	60
Kansas City, Kans.	23	10.3	15.6	2	8	39
White	18		15.7	0	7	0
Colored	5	(⁹)	15.3	2	1	304
Kansas City, Mo.	94	12.8	9.3	9	3	
Knoxville	26	13.3		3	3	
White	18			1	1	
Colored	8	(⁹)		2	2	
Los Angeles	255			24	18	69
Louisville	67	10.9	16.4	9	8	77
White	52		14.4	7	7	68
Colored	15	(⁹)	37.5	2	1	140
Lowell	22	10.4	15.6	3	2	58
Lynn	15	7.4	7.5	2	2	83
Memphis	66	19.2	12.0	6	6	
White	28		10.1	2	3	
Colored	38	(⁹)	18.2	4	3	
Milwaukee	87	8.5	8.1	8	14	37
Minneapolis	97	11.4	9.0	2	3	11
Nashville	51	19.3	17.1	4	4	
White	32		11.7	2	2	
Colored	19	(⁹)	30.7	2	2	
New Bedford	15	6.5	13.1	0	0	0
New Haven	42	11.3	9.5	4	6	36

(Footnotes at end of table)

Deaths from all causes in certain large cities of the United States during the week ended October 22, 1927, infant mortality, annual death rate, and comparison with corresponding week of 1926. (From the Weekly Health Index, October 26, 1927, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended Oct. 22, 1927		Annual death rate per 1,000 corresponding week 1926	Deaths under 1 year		Infant mortality rate, week ended Oct. 22, 1927 ¹
	Total deaths	Death rate ¹		Week ended Oct. 22, 1927	Corresponding week 1926	
New Orleans.....	135	16.6	15.7	12	11	-----
White.....	73		14.3	7	5	-----
Colored.....	62	(²)	19.6	5	6	-----
New York.....	1,127	9.8	11.0	137	137	57
Bronx Borough.....	138	7.8	9.7	9	11	29
Brooklyn Borough.....	395	9.1	9.1	73	43	76
Manhattan Borough.....	447	12.8	15.1	44	67	52
Queens Borough.....	117	7.5	7.2	8	14	34
Richmond Borough.....	30	10.6	15.7	3	2	56
Newark, N. J.....	85	9.5	8.9	15	10	74
Oakland.....	48	9.4	11.8	7	6	82
Oklahoma City.....	30			1	4	-----
Omaha.....	51	12.1	10.4	4	6	44
Paterson.....	31	11.2	11.7	4	2	71
Philadelphia.....	443	11.3	12.3	53	62	71
Pittsburgh.....	178	14.4	12.0	21	25	73
Portland, Oreg.....	61			1	5	11
Providence.....	49	9.1	9.7	5	6	42
Richmond.....	44	11.9	11.9	7	6	92
White.....	25		10.1	5	1	101
Colored.....	19	(²)	16.1	2	5	76
Rochester.....	64	10.3	7.8	2	6	17
St. Louis.....	208	12.9	12.4	17	19	-----
St. Paul.....	40	8.3	13.5	1	5	9
Salt Lake City ³	31	11.9	9.8	2	3	30
San Antonio.....	50	12.4	10.9	5	6	-----
San Diego.....	31	14.1	12.3	1	1	21
San Francisco.....	141	12.8	9.5	4	3	25
Schenectady.....	21	11.8	10.1	0	0	0
Seattle.....	54			2	1	21
Somerville.....	12	6.1	5.7	1	0	36
Spokane.....	31	14.8	16.7	0	3	0
Springfield, Mass.....	34	12.1	10.8	4	2	62
Syracuse.....	55	14.6	11.8	7	9	90
Tacoma.....	25	12.2	10.3	2	2	47
Toledo.....	63	10.8	9.5	5	11	48
Trenton.....	32	12.2	10.5	6	2	104
Washington, D. C.....	113	10.9	11.7	7	15	40
White.....	70		10.3	3	12	25
Colored.....	43	(²)	15.6	4	3	73
Waterbury.....	21			1	0	24
Wilmington, Del.....	23	9.5	9.3	4	1	99
Worcester.....	36	9.6	12.4	3	8	36
Yonkers.....	21	9.2	6.7	3	0	68
Youngstown.....	26	8.0	12.5	3	8	42

¹ Annual rate per 1,000 population.

² Deaths under 1 year per 1,000 births. Cities left blank are not in the registration area for births.

³ Data for 66 cities.

⁴ Data for 62 cities.

⁵ Deaths for week ended Friday, Oct. 21, 1927.

⁶ In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentages of the total population: Atlanta, 31; Baltimore, 15; Birmingham, 39; Dallas, 15; Fort Worth, 14; Houston, 25; Indianapolis, 11; Kansas City, Kans., 14; Knoxville, 15; Louisville, 17; Memphis, 38; Nashville, 30; New Orleans, 28; Richmond, 32; and Washington, D. C., 25.

PREVALENCE OF DISEASE

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

UNITED STATES

CURRENT WEEKLY STATE REPORTS

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

Reports for Week Ended October 29, 1927

DIPHTHERIA		INFLUENZA	
	Cases		Cases
Alabama	132	Alabama	35
Arizona	1	Arkansas	54
Arkansas	29	California	16
California	105	Connecticut	3
Connecticut	32	Florida	13
Delaware	2	Illinois	9
Florida	33	Indiana	7
Idaho	2	Kansas	8
Illinois	163	Louisiana	4
Indiana	61	Maryland ¹	19
Iowa ¹	13	Massachusetts	9
Kansas	46	Michigan	3
Louisiana	54	Minnesota	4
Maine	7	Missouri	1
Maryland ¹	28	New Jersey	5
Massachusetts	120	New York	15
Michigan	115	Oklahoma ²	22
Minnesota	61	Oregon	25
Mississippi	97	Rhode Island	1
Missouri	78	South Carolina	429
Montana	2	South Dakota	2
Nebraska	12	Tennessee	30
New Jersey	147	Texas	54
New Mexico	15	West Virginia	9
New York	289	Wisconsin	24
North Carolina	176		
Oklahoma ²	138	MEASLES	
Oregon	14	Alabama	36
Pennsylvania	206	Arkansas	26
Rhode Island	17	California	46
South Carolina	93	Connecticut	11
South Dakota	4	Delaware	17
Tennessee	47	Florida	1
Texas	65	Illinois	27
Utah ¹	7	Indiana	8
Vermont	9	Iowa ¹	6
Washington	27	Kansas	37
West Virginia	20	Louisiana	4
Wisconsin	49	Maine	35
Wyoming	4	Maryland ¹	22

¹ Week ended Friday.

² Exclusive of Oklahoma City and Tulsa.

Reports for Week Ended October 29, 1927—Continued

MEASLES—continued		POLIOMYELITIS—continued	
	Cases		Cases
Massachusetts.....	180	Michigan.....	18
Michigan.....	75	Minnesota.....	6
Minnesota.....	8	Missouri.....	12
Missouri.....	8	Nebraska.....	14
Montana.....	3	New Jersey.....	8
Nebraska.....	1	New Mexico.....	3
New Jersey.....	12	New York.....	31
New Mexico.....	12	North Carolina.....	1
New York.....	96	Ohio.....	51
North Carolina.....	275	Oklahoma ¹	7
Oklahoma ¹	19	Oregon.....	26
Oregon.....	11	Pennsylvania.....	18
Pennsylvania.....	247	Rhode Island.....	4
Rhode Island.....	1	South Carolina.....	2
South Carolina.....	150	South Dakota.....	6
South Dakota.....	3	Tennessee.....	2
Tennessee.....	36	Texas.....	3
Texas.....	9	Utah ¹	2
Utah ¹	1	Vermont.....	6
Vermont.....	2	Virginia.....	2
Washington.....	21	Washington.....	21
West Virginia.....	5	West Virginia.....	9
Wisconsin.....	44	Wisconsin.....	9
Wyoming.....	1	Wyoming.....	1
MENINGOCOCCUS MENINGITIS		SCARLET FEVER	
California.....	4	Alabama.....	35
Connecticut.....	1	Arizona.....	2
Idaho.....	1	Arkansas.....	34
Illinois.....	4	California.....	129
Iowa ¹	1	Connecticut.....	38
Kansas.....	1	Delaware.....	4
Maryland ¹	1	Florida.....	11
Massachusetts.....	1	Idaho.....	12
Michigan.....	3	Illinois.....	194
Minnesota.....	3	Indiana.....	109
Missouri.....	2	Iowa ¹	30
New Jersey.....	2	Kansas.....	114
New York.....	1	Louisiana.....	14
Oklahoma ¹	1	Maine.....	55
Pennsylvania.....	4	Maryland ¹	34
South Dakota.....	1	Massachusetts.....	201
Washington.....	1	Michigan.....	129
Wisconsin.....	5	Minnesota.....	155
POLIOMYELITIS		Mississippi.....	33
Alabama.....	1	Missouri.....	111
Arizona.....	1	Montana.....	21
Arkansas.....	2	Nebraska.....	41
California.....	30	New Jersey.....	90
Connecticut.....	9	New Mexico.....	19
Florida.....	3	New York.....	197
Idaho.....	2	North Carolina.....	145
Illinois.....	25	Oklahoma ¹	51
Indiana.....	19	Oregon.....	16
Iowa.....	8	Pennsylvania.....	243
Kansas.....	14	Rhode Island.....	13
Louisiana.....	2	South Carolina.....	30
Maine.....	6	South Dakota.....	25
Maryland ¹	3	Tennessee.....	46
Massachusetts.....	66	Texas.....	24
		Utah ¹	8

¹ Week ended Friday.¹ Exclusive of Oklahoma City and Tulsa.

Reports for Week Ended October 29, 1927—Continued

SCARLET FEVER—continued		Cases	TYPHOID FEVER—continued		Cases
Vermont.....	11	Arkansas.....	30	California.....	6
Washington.....	36	Connecticut.....	6	Delaware.....	2
West Virginia.....	68	Florida.....	13	Illinois.....	33
Wisconsin.....	102	Indiana.....	14	Iowa ¹	8
Wyoming.....	16	Kansas.....	13	Louisiana.....	29
SMALLPOX		Maine.....	9	Maryland ¹	22
Alabama.....	2	Massachusetts.....	9	Michigan.....	13
Arkansas.....	1	Minnesota.....	3	Mississippi.....	9
California.....	2	Missouri.....	29	Montana.....	2
Idaho.....	4	Nebraska.....	5	New Jersey.....	13
Illinois.....	4	New Mexico.....	21	New York.....	54
Indiana.....	7	North Carolina.....	19	North Carolina.....	19
Iowa ¹	33	Oklahoma ²	60	Oklahoma ²	20
Kansas.....	25	Oregon.....	27	Pennsylvania.....	27
Michigan.....	5	Rhode Island.....	1	Rhode Island.....	1
Minnesota.....	3	South Carolina.....	32	South Carolina.....	4
Mississippi.....	14	South Dakota.....	4	Tennessee.....	66
Missouri.....	25	Texas.....	7	Texas.....	7
Montana.....	15	Utah ¹	2	Utah ¹	2
Nebraska.....	4	Washington.....	6	Washington.....	6
New York.....	3	West Virginia.....	32	West Virginia.....	32
North Carolina.....	12	Wisconsin.....	7	Wisconsin.....	7
Oklahoma ¹	9	Wyoming.....	1	Wyoming.....	1
Oregon.....	17				
Rhode Island.....	3				
South Carolina.....	1				
South Dakota.....	24				
Tennessee.....	1				
Texas.....	7				
Utah ¹	42				
Washington.....	11				
West Virginia.....	3				
Wisconsin.....	9				
Wyoming.....	1				
TYPHOID FEVER					
Alabama.....	27				
Arizona.....	3				

Reports for Week Ended October 22, 1927

DIPHTHERIA		Cases	SCARLET FEVER		Cases
District of Columbia.....	22	District of Columbia.....	17		
North Dakota.....	4	North Dakota.....	31		
MEASLES					
North Dakota.....	7	SMALLPOX			
		North Dakota.....	2		
MENINGOCOCCUS MENINGITIS					
North Dakota.....	1	TYPHOID FEVER			
POLIOMYELITIS					
District of Columbia.....	3	District of Columbia.....	3		
Ohio.....	46	North Dakota.....	3		

¹ Week ended Friday.² Exclusive of Oklahoma City and Tulsa.

SUMMARY OF MONTHLY REPORTS FROM STATES

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

State	Men- ingo- coccus menin- gitis	Diph- theria	Influ- enza	Malaria	Measles	Pellagra	Polio- mye- litis	Scarlet fever	Small- pox	Ty- phoid fever
<i>September, 1927</i>										
Arkansas.....	1	52	104	1,550	33	193	9	38	1	230
Illinois.....	25	314	30	10	75	1	168	400	52	251
Iowa.....	2	80			16		28	48	32	15
Louisiana.....	2	140	26	212	33	64	6	21	16	108
Maine.....	0	14	0		27		36	67	0	20
Maryland.....	2	117	19	4	35	3	5	64	0	115
Mississippi.....	2	192	1,084	17,366	362	1,172	8	98	11	136
Missouri.....	1	144	15	29	23		86	130	29	138
Montana.....	4	11		1	10		3	35	27	21
North Carolina.....	6	455			467		5	257	37	187
Ohio.....	4	420	32		56		428	437	34	206
Oregon.....	7	22	36	3	48		72	39	40	26
Rhode Island.....	1	31	2	3	16		16	56	0	11
South Carolina.....	0	403	813	3,150	169	288	11	68	12	356
South Dakota.....	0	12		1	5		16	62	15	18
West Virginia.....	1	75	11		22		70	167	28	175
Wisconsin.....	17	145	117		373		71	232	50	54
Wyoming.....	1	5			13		2	19	2	6

*September, 1927**September, 1927—Continued*

Actinomycosis:	Cases	Hookworm disease:	Cases
Montana.....	1	Arkansas.....	1
Chicken pox:		Louisiana.....	17
Arkansas.....	48	Mississippi.....	329
Illinois.....	204	South Carolina.....	112
Iowa.....	11	Impetigo contagiosa:	
Louisiana.....	1	Iowa.....	2
Maine.....	5	Maryland.....	7
Maryland.....	45	Oregon.....	5
Mississippi.....	167	Wyoming.....	2
Missouri.....	17	Lead poisoning:	
Montana.....	22	Illinois.....	6
North Carolina.....	28	Ohio.....	20
Ohio.....	162	Leprosy:	
Oregon.....	19	Oregon.....	1
Rhode Island.....	3	Lethargic encephalitis:	
South Carolina.....	33	Illinois.....	7
South Dakota.....	4	Iowa.....	1
West Virginia.....	26	Louisiana.....	3
Wisconsin.....	146	Maryland.....	3
Wyoming.....	8	Montana.....	2
Dengue:		Ohio.....	10
Mississippi.....	18	Oregon.....	2
South Carolina.....	7	Wisconsin.....	4
Dysentery:		Malta fever:	
Illinois.....	76	Iowa.....	1
Louisiana.....	15	Milk sickness:	
Maryland.....	62	Illinois.....	1
Mississippi (amoebic).....	44	Mumps:	
Mississippi (bacillary).....	666	Arkansas.....	150
Ohio.....	2	Illinois.....	154
Oregon.....	1	Iowa.....	9
German measles:		Louisiana.....	8
Illinois.....	8	Maine.....	6
Maine.....	4	Maryland.....	17
Maryland.....	4	Mississippi.....	146
North Carolina.....	8	Missouri.....	27
Ohio.....	9	Ohio.....	161
Rhode Island.....	1	Oregon.....	22

September, 1927—Continued

	Cases
Mumps—Continued.	
Rhode Island.....	5
South Dakota.....	7
Wisconsin.....	106
Wyoming.....	6
Ophthalmia neonatorum:	
Arkansas.....	1
Illinois.....	56
Maryland.....	1
Mississippi.....	15
Missouri.....	2
Ohio.....	128
South Carolina.....	26
Paratyphoid fever:	
Arkansas.....	3
Illinois.....	2
Louisiana.....	2
Maine.....	2
South Carolina.....	36
Wyoming.....	1
Puerperal septicemia:	
Illinois.....	8
Mississippi.....	53
Rabies in animals:	
Maryland.....	6
Mississippi.....	11
Missouri.....	6
Oregon.....	2
South Carolina.....	6
Rocky Mountain spotted or tick fever:	
Wyoming.....	1
Scabies:	
Maryland.....	2
Oregon.....	7
Septic sore throat:	
Illinois.....	5
Maryland.....	2
Missouri.....	2
North Carolina.....	51
Ohio.....	56
Oregon.....	2
Rhode Island.....	4

September, 1927—Continued

	Cases
Tetanus:	
Illinois.....	10
Louisiana.....	5
Maine.....	2
Maryland.....	2
Missouri.....	1
Montana.....	1
Trachoma:	
Arkansas.....	3
Illinois.....	7
Louisiana.....	1
Mississippi.....	12
Missouri.....	10
Montana.....	2
Ohio.....	11
South Dakota.....	4
Trichinosis:	
Illinois.....	2
Tularaemia:	
Wyoming.....	1
Vincent's angina:	
Maine.....	9
Maryland.....	6
Wyoming.....	1
Whooping cough:	
Arkansas.....	34
Illinois.....	904
Iowa.....	29
Louisiana.....	16
Maine.....	68
Maryland.....	174
Mississippi.....	780
Missouri.....	129
Montana.....	17
North Carolina.....	508
Ohio.....	359
Oregon.....	23
Rhode Island.....	14
South Carolina.....	235
South Dakota.....	49
West Virginia.....	91
Wisconsin.....	510
Wyoming.....	7

RECIPROCAL NOTIFICATIONS

Notifications regarding communicable diseases sent during the month of September, 1927, to other State health departments by departments of health of certain States

Referred by—	Menin- gococ- cus menin- gitis	Diph- theria	Para- typhoid fever	Poli- mye- litis	Small- pox	Tra- choma	Tuber- culo- sis	Ty- phoid fever	Whoop- ing cough
California.....							1		
Connecticut.....			1	2			1	1	1
Illinois.....	1			2	3		1	13	
Massachusetts.....								11	
Minnesota.....				1		2	17	5	
New York.....		2		3				3	
Rhode Island.....							1	1	

POLIOMYELITIS IN CHARITON COUNTY, MO.

A report dated October 25, 1927, states that since July 11, 1927, 55 cases of poliomyelitis with 9 deaths had occurred in Chariton County, Mo. During the week ended October 22 there were two cases reported.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 99 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 30,800,000. The estimated population of the 93 cities reporting deaths is more than 30,160,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended October 15, 1927, and October 16, 1926

	1927	1926	Estimated expectancy
<i>Cases reported</i>			
Diphtheria:			
42 States.....	2,128	2,279	-----
99 cities.....	854	955	1,034
Measles:			
41 States.....	1,183	1,746	-----
99 cities.....	297	251	-----
Poliomyelitis:			
42 States.....	501	85	-----
Scarlet fever:			
42 States.....	1,947	2,398	-----
99 cities.....	553	744	652
Smallpox:			
42 States.....	190	130	-----
99 cities.....	36	23	21
Typhoid fever:			
42 States.....	811	1,335	-----
99 cities.....	114	183	153
<i>Deaths reported</i>			
Influenza and pneumonia:			
93 cities.....	445	476	-----
Smallpox:			
93 cities.....	0	0	-----

City reports for week ended October 15, 1927

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 week 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 reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1918 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1925, estimated	Chick- en pox, cases re- ported	Diphtheria		Influenza		Mea- sles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths re- ported
			Cases, es- ti- mated ex- pect- ancy	Cases re- ported	Cases re- ported	Deaths re- ported			
NEW ENGLAND									
Maine:									
Portland.....	75,333	2	1	1	0	0	0	0	1
New Hampshire:									
Concord.....	22,546	0	0	1	0	0	1	0	0
Manchester.....	83,097	0	4	0	0	0	0	0	2
Vermont:									
Barre.....	10,008	0	0	0	0	0	0	0	0
Burlington.....	24,069	0	0	0	0	0	1	0	0
Massachusetts:									
Boston.....	779,620	33	40	18	2	1	43	10	14
Fall River.....	128,993	0	4	4	2	0	0	0	1
Springfield.....	142,065	0	2	6	0	0	0	0	0
Worcester.....	190,757	24	5	1	0	0	0	14	3
Rhode Island:									
Pawtucket.....	69,760	0	1	2	0	0	0	0	2
Providence.....	267,918	0	5	10	0	0	7	0	8
Connecticut:									
Bridgeport.....	(1)	0	9	4	0	0	0	0	1
Hartford.....	160,197	4	5	7	0	0	1	0	7
New Haven.....	178,927	10	3	1	0	0	5	1	4
MIDDLE ATLANTIC									
New York:									
Buffalo.....	538,016	6	16	7	0	0	3	5	8
New York.....	5,873,356	42	119	140	2	8	22	14	85
Rochester.....	316,786	3	10	0	0	0	0	1	1
Syracuse.....	182,003	9	8	0	0	0	8	7	1
New Jersey:									
Camden.....	128,642	13	7	1	1	1	0	4	2
Newark.....	452,513	10	9	15	2	0	1	13	5
Trenton.....	132,020	0	4	0	0	0	0	2	3
Pennsylvania:									
Philadelphia.....	1,979,364	24	58	48	5	0	0	20	21
Pittsburgh.....	631,563	12	27	37	3	73	10	18	18
Reading.....	112,707	9	3	2	0	0	0	0	2
EAST NORTH CENTRAL									
Ohio:									
Cincinnati.....	409,333	10	12	10	0	0	0	0	4
Cleveland.....	936,485	20	47	52	4	1	2	30	8
Columbus.....	279,836	1	7	8	0	1	0	1	2
Toledo.....	287,380	1	13	2	0	0	9	3	2
Indiana:									
Fort Wayne.....	97,846	1	3	0	0	0	0	0	0
Indianapolis.....	358,819	1	14	10	0	0	6	13	8
South Bend.....	80,091	0	2	0	0	0	0	0	0
Terre Haute.....	71,071	0	1	2	0	0	0	0	1
Illinois:									
Chicago.....	2,965,239	23	86	67	7	1	1	13	28
Springfield.....	63,923	1	2	0	0	0	1	4	1
Michigan:									
Detroit.....	1,215,824	9	68	38	0	1	6	10	19
Flint.....	130,316	3	12	3	0	0	0	13	1
Grand Rapids.....	153,698	2	6	0	0	0	6	0	0

¹ No estimate made.

City reports for week ended October 15, 1927—Continued

Division, State, and city	Population July 1, 1926, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL—continued									
Wisconsin:									
Kenosha.....	50,891	7	1	0	0	0	0	3	0
Madison.....	48,385	2	1	0	0	0	0	0	0
Milwaukee.....	509,192	22	20	12	0	0	3	5	0
Racine.....	67,707	0	2	2	0	0	1	0	0
Superior.....	39,671	0	0	0	0	0	0	0	2
WEST NORTH CENTRAL									
Minnesota:									
Duluth.....	110,502	0	3	2	0	0	0	0	2
Minneapolis.....	425,435	17	31	20	0	0	1	1	6
St. Paul.....	246,001	9	19	4	0	1	1	6	7
Iowa:									
Davenport.....	52,469	1	2	0	0	0	0	0	0
Sioux City.....	76,411	6	3	0	0	0	0	6	0
Waterloo.....	36,771	0	1	0	0	0	0	4	0
Missouri:									
Kansas City.....	367,481	5	11	5	0	0	0	8	8
St. Joseph.....	78,342	1	3	2	1	0	0	0	1
St. Louis.....	821,543	5	45	20	0	0	4	3	0
North Dakota:									
Fargo.....	26,403	0	0	0	0	0	0	0	0
Grand Forks.....	14,811	6	0	0	0	0	0	0	0
South Dakota:									
Aberdeen.....	15,036	0	0	0	0	0	0	0	0
Sioux Falls.....	30,127	0	1	0	0	0	0	0	0
Nebraska:									
Lincoln.....	60,941	1	2	0	0	0	0	4	0
Omaha.....	211,768	3	13	1	0	0	1	0	5
Kansas:									
Topeka.....	55,411	1	2	4	0	0	0	0	0
Wichita.....	88,367	0	4	2	0	0	0	0	0
SOUTH ATLANTIC									
Delaware:									
Wilmington.....	122,049	2	3	0	0	0	0	0	1
Maryland:									
Baltimore.....	796,296	24	26	34	2	0	10	2	28
Cumberland.....	33,741	0	1	0	0	0	0	0	0
Frederick.....	12,035	0	1	0	0	0	0	0	0
District of Columbia:									
Washington.....	497,906	10	14	15	0	0	2	0	13
Virginia:									
Lynchburg.....	30,395	1	2	9	0	0	0	0	0
Norfolk.....	(1)	6	3	4	0	0	0	0	4
Richmond.....	186,403	0	23	15	0	1	3	2	0
Roanoke.....	58,208	0	7	3	0	0	8	0	1
West Virginia:									
Charleston.....	49,019	0	2	1	0	0	0	0	2
Wheeling.....	56,208	2	2	0	0	0	0	0	2
North Carolina:									
Raleigh.....	30,371	2	4	0	0	0	0	0	0
Wilmington.....	37,061	0	1	0	0	0	1	0	1
Winston-Salem.....	69,031	1	5	4	0	0	0	1	0
South Carolina:									
Charleston.....	73,125	0	1	2	13	0	0	0	1
Columbia.....	41,225	0	3	5	0	0	10	1	0
Greenville.....	27,311	0	2	2	0	0	1	1	0
Georgia:									
Atlanta.....	(1)	0	10	13	6	3	2	6	4
Brunswick.....	16,809	0	0	2	0	0	0	7	0
Savannah.....	93,134	0	3	1	1	0	1	2	1
Florida:									
Miami.....	69,754	0	0	0	0	0	0	7	3
St. Petersburg.....	26,847	0	0	0	0	0	0	0	0
Tampa.....	94,743	0	1	2	0	0	0	1	1

† No estimate made.

City reports for week ended October 15, 1927—Continued

Division, State, and city	Population July 1, 1925, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL									
Kentucky:									
Covington.....	58,309	0	3	0	0	0	0	0	0
Lexington.....	46,895	0	0	0	0	0	0	0	0
Louisville.....	305,935	1	10	1	0	0	0	3	1
Tennessee:									
Memphis.....	174,533	0	10	8	0	0	24	0	3
Nashville.....	136,220	2	5	4	0	1	0	3	1
Alabama:									
Birmingham.....	205,670	1	7	9	1	0	0	1	4
Mobile.....	65,955	0	2	2	0	1	0	0	0
Montgomery.....	46,481	0	3	7	0	0	1	1	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith.....	31,643	0	2	3	0	0	0	0	0
Little Rock.....	74,216	0	2	0	0	0	7	0	1
Louisiana:									
New Orleans.....	414,493	0	9	8	4	2	2	0	9
Shreveport.....	57,857	3	0	2	0	0	0	0	1
Oklahoma:									
Oklahoma City.....	(1)	1	4	7	4	0	0	0	1
Tulsa.....	124,478	2	4	4	0	0	0	0	0
Texas:									
Dallas.....	194,450	0	11	21	0	1	0	0	1
Galveston.....	45,375	0	0	0	0	0	0	0	0
Houston.....	164,954	0	3	10	0	0	0	0	4
San Antonio.....	196,069	0	2	17	0	0	4	0	0
MOUNTAIN									
Montana:									
Billings.....	17,971	0	0	0	0	0	0	0	0
Great Falls.....	29,893	0	1	0	0	0	0	1	0
Helena.....	12,037	2	0	0	0	0	0	0	0
Missoula.....	12,668	0	0	0	0	0	0	0	1
Idaho:									
Boise.....	23,042	0	0	0	0	0	0	9	0
Colorado:									
Denver.....	280,911	5	17	8	0	1	2	4	7
Pueblo.....	43,787	0	4	2	0	0	0	0	1
New Mexico:									
Albuquerque.....	21,000	0	1	1	0	0	0	2	1
Utah:									
Salt Lake City.....	130,948	18	4	12	0	0	0	0	4
Nevada:									
Reno.....	12,665	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle.....	(1)	11	8	7	0	0	5	2	0
Spokane.....	106,897	6	4	9	0	0	4	0	0
Tacoma.....	104,455	0	4	5	0	0	1	1	0
Oregon:									
Portland.....	282,383	4	10	5	0	0	3	0	1
California:									
Los Angeles.....	(1)	7	38	30	9	0	4	12	22
Sacramento.....	72,260	2	2	2	0	0	0	0	0
San Francisco.....	557,530	21	16	6	1	1	8	5	2

1 No estimate made.

City reports for week ended October 15, 1927—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND											
Maine:											
Portland.....	0	0	0	0	0	1	0	3	0	1	9
New Hampshire:											
Concord.....	0	0	0	0	0	1	0	0	0	0	6
Manchester.....	1	1	0	0	0	0	0	0	0	0	12
Vermont:											
Barre.....	0	0	0	0	0	1	0	0	0	0	5
Burlington.....	0	0	0	0	0	1	0	0	0	0	10
Massachusetts:											
Boston.....	27	39	0	0	0	20	3	1	1	17	195
Fall River.....	2	0	0	0	0	2	1	0	0	0	24
Springfield.....	4	1	0	0	0	2	0	1	0	1	32
Worcester.....	7	4	0	0	0	3	1	0	0	1	35
Rhode Island:											
Pawtucket.....	1	1	0	0	0	0	0	0	0	0	24
Providence.....	3	9	0	0	0	3	1	1	0	0	66
Connecticut:											
Bridgeport.....	3	1	0	0	0	0	0	0	0	0	16
Hartford.....	3	1	0	0	0	0	1	1	0	1	39
New Haven.....	4	0	0	0	0	3	1	0	0	3	31
MIDDLE ATLANTIC											
New York:											
Buffalo.....	13	4	0	0	0	7	2	0	1	21	118
New York.....	56	48	0	0	0	177	30	21	3	104	1,181
Rochester.....	5	4	0	0	0	2	1	2	0	0	65
Syracuse.....	5	0	0	0	0	1	1	0	1	10	33
New Jersey:											
Camden.....	4	0	0	0	0	1	2	0	0	4	23
Newark.....	7	9	0	0	0	10	2	2	0	33	91
Trenton.....	0	0	0	0	0	3	0	2	0	2	36
Pennsylvania:											
Philadelphia.....	42	38	0	0	0	37	10	5	0	23	430
Pittsburgh.....	28	24	0	0	0	4	3	0	0	13	143
Reading.....	1	1	0	0	0	1	1	0	0	2	34
EAST NORTH CENTRAL											
Ohio:											
Cincinnati.....	10	6	0	2	0	9	1	5	1	6	116
Cleveland.....	20	26	0	0	0	17	3	0	0	24	141
Columbus.....	7	14	0	0	0	4	1	0	0	0	66
Toledo.....	9	5	0	0	0	5	2	0	0	4	62
Indiana:											
Fort Wayne.....	1		1				0				
Indianapolis.....	6	11	1	2	0	6	2	8	0	3	80
South Bend.....	2	1	1	0	0	0	0	0	0	0	18
Terre Haute.....	2	2	0	1	0	0	0	0	0	0	21
Illinois:											
Chicago.....	63	29	0	1	0	54	7	7	0	74	579
Springfield.....	2	1	0	0	0	0	1	2	0	0	22
Michigan:											
Detroit.....	50	31	2	1	0	18	5	2	0	47	275
Flint.....	8	14	0	0	0	0	0	0	0	2	22
Grand Rapids.....	6	4	0	0	0	1	0	0	0	2	33
Wisconsin:											
Kenosha.....	1	7	0	0	0	0	1	0	0	3	5
Madison.....	1	0	0	0	0	0	0	0	0	0	9
Milwaukee.....	17	6	2	0	0	0	1	1	0	11	97
Racine.....	4	1	0	0	0	0	0	0	0	1	
Superior.....	2	1	0	0	0	0	0	1	0	0	8
WEST NORTH CENTRAL											
Minnesota:											
Duluth.....	6	3	0	0	0	0	1	0	0	8	16
Minneapolis.....	34	11	1	0	0	4	1	1	0	0	89
St. Paul.....	14	13	2	0	0	1	1	2	0	5	67

1 Pulmonary tuberculosis only.

City reports for week ended October 15, 1927—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths reported	Typhoid fever			Whoop- ing cough, cases reported	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											
Iowa:											
Davenport	1	1	0	0		0	0		0		
Sioux City	2	2	0	0		0	0		0		
Waterloo	2	1	0	0		1	0		4		
Missouri:											
Kansas City	8	12	0	0	0	7	2	1	0	2	89
St. Joseph	3	0	0	11	0	2	0	0	0	0	24
St. Louis	24	28	0	1	0	11	5	6	0	13	187
North Dakota:											
Fargo	1		0				0				
Grand Forks	1	0	0	0		0	0		0		
South Dakota:											
Aberdeen	2	0	0	0		0	0		0		
Sioux Falls	1	8	0	0		0	0		0		6
Nebraska:											
Lincoln	0	1	0	0	0	0	0	0	0	3	10
Omaha	4	2	0	1	0	2	1	0	0	0	56
Kansas:											
Topeka	3	3	0	0	0	0	0	1	0	3	10
Wichita	3	4	0	0	0	1	1	0	0	1	35
SOUTH ATLANTIC											
Delaware:											
Wilmington	3	0	0	0	0	0	0	0	0	0	39
Maryland:											
Baltimore	10	4	0	0	0	16	9	3	0	21	225
Cumberland	0	0	0	0	0	0	0	0	0	0	7
Frederick	0	0	0	0	0	0	0	0	0	0	
District Columbia:											
Washington	11	13	1	0	0	8	3	2	0	18	104
Virginia:											
Lynchburg	1	5	0	0	0	2	0	0	0	1	11
Norfolk	1	3	0	0	0	2	0	0	0	2	
Richmond	8	3	0	0	0	2	1	1	0	0	31
Roanoke	3	3	0	0	0	0	1	1	1	0	13
West Virginia:											
Charleston	1	3	0	0	0	2	1	2	0	1	23
Wheeling	4	1	0	0	0	1	1	0	0	0	14
North Carolina:											
Raleigh	2	1	0	0	0	1	0	0	0	0	13
Wilmington	1	0	0	0	0	0	0	0	0	4	13
Winston-Salem	2	1	0	0	0	1	2	0	0	3	21
South Carolina:											
Charleston	0	1	0	1	0	0	1	3	1	0	24
Columbia	0	1	0	0	0		1	2		0	
Greenville	1	1	0	0		0	0	1	0	0	
Georgia:											
Atlanta	6	9	1	0	0	5	2	0	0	2	56
Brunswick	0	0	0	0	0	0	0	0	0	0	4
Savannah	1	1	0	0	0	1	0	0	0	0	32
Florida:											
Miami		1		0	0	0	0	0	0	3	14
St. Petersburg	0	0	0	0	0	0	1	0	0	0	6
Tampa	1	0	0	0	0	3	1	0	0	0	26
EAST SOUTH CENTRAL											
Kentucky:											
Covington	1	1	0	0	0	1	0	0	0	0	26
Lexington		1		0	0	0	2	0	0	0	11
Louisville	4	6	0	0	0	4	3	3	0	2	77
Tennessee:											
Memphis	4	5	0	0	0	4	4	1	0	5	62
Nashville	4	1	0	0	0	0	3	0	0	0	28
Alabama:											
Birmingham	5	2	0	0	0	3	3	1	0	2	48
Mobile	1	0	0	0	0	0	0	0	0	0	16
Montgomery	0	1	0	0	0	0	0	1	0	0	

City reports for week ended October 15, 1927—Continued

Division, State, and city	Meningo coccus meningitis		Lethargic encephalitis		Pellagra		Polio-myelitis (infan- tile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, esti- mated expect- ancy	Cases	Deaths
MIDDLE ATLANTIC									
New York:									
New York.....	2	1	6	5	0	0	12	20	4
Rochester.....	0	0	0	0	0	0	0	1	0
New Jersey:									
Newark.....	0	0	1	0	0	0	1	0	0
Pennsylvania:									
Philadelphia.....	1	1	3	2	0	0	0	5	0
Pittsburgh.....	0	1	0	0	0	0	0	0	0
EAST NORTH CENTRAL									
Ohio:									
Cincinnati.....	0	0	0	0	0	0	1	7	1
Cleveland.....	0	0	1	0	0	0	1	3	0
Columbus.....	0	0	0	0	0	0	0	2	0
Toledo.....	0	0	0	0	0	0	0	1	1
Indiana:									
Indianapolis.....	0	0	0	0	0	0	1	1	0
Illinois:									
Chicago ¹	2	1	0	0	0	0	3	4	0
Springfield.....	1	1	0	0	0	0	0	0	0
Michigan:									
Detroit ¹	1	0	0	0	0	0	1	6	1
Wisconsin:									
Madison.....	0	0	0	0	0	0	0	1	0
Milwaukee.....	1	2	0	0	0	0	1	1	0
Racine.....	1	0	0	0	0	0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Duluth.....	0	0	0	0	0	0	0	1	0
Minneapolis.....	1	0	0	0	0	0	0	1	0
Iowa:									
Sioux City.....	0	0	0	0	0	0	0	2	0
Missouri:									
Kansas City.....	1	1	0	0	0	0	1	2	0
South Dakota:									
Sioux Falls.....	0	0	0	0	0	0	0	1	0
Nebraska:									
Omaha.....	0	0	0	0	0	0	0	3	1
SOUTH ATLANTIC ²									
District of Columbia:									
Washington.....	0	0	0	0	0	0	1	2	2
West Virginia:									
Wheeling.....	0	0	0	0	0	0	0	5	0
North Carolina:									
Winston-Salem.....	0	0	0	0	1	0	0	0	0
South Carolina:									
Charleston ³	0	0	1	0	3	0	0	0	0
Georgia:									
Atlanta.....	0	0	0	0	0	1	0	0	0
Savannah ²	0	0	0	0	1	0	0	0	0
EAST SOUTH CENTRAL									
Kentucky:									
Louisville.....	0	0	0	0	0	0	1	2	0
Tennessee:									
Nashville.....	0	0	0	0	1	0	0	1	0
Alabama: ²									
Montgomery ²	0	0	0	0	1	0	0	0	0

¹ Rabies (human): 1 case and 1 death at Chicago, Ill., and 1 case and 1 death at Detroit, Mich.² Typhus fever: 2 cases at Savannah, Ga., 3 cases at Tampa, Fla., 1 case at Mobile, Ala., and 1 case at Montgomery, Ala.³ Dengue: 13 cases at Charleston, S. C.

City reports for week ended October 15, 1927—Continued

Division, State, and city	Meningo- coccus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infan- tile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, esti- mated expect- ancy	Cases	Deaths
WEST SOUTH CENTRAL									
Arkansas:									
Little Rock.....	0	0	0	0	0	1	0	1	1
Louisiana:									
New Orleans.....	0	0	0	0	2	2	0	1	0
Shreveport.....	0	0	0	0	0	1	0	0	0
Texas:									
Dallas.....	0	0	0	1	1	1	0	3	0
Houston.....	0	0	0	0	0	0	0	3	1
MOUNTAIN									
Montana:									
Great Falls.....	0	0	0	0	0	0	0	2	0
Missoula.....	1	1	0	0	0	0	0	0	0
Colorado:									
Denver.....	1	0	0	0	0	0	0	4	0
Utah:									
Salt Lake City.....	0	0	0	0	0	0	0	1	0
PACIFIC									
Washington:									
Seattle.....	0		0		0		0	2	
Spokane.....	1		0		0		1	1	
Tacoma.....	0	0	0	0	0	0	1	9	2
Oregon:									
Portland.....	0	0	0	0	0	0	1	2	0
California:									
Los Angeles.....	0	0	0	0	1	0	0	4	3
Sacramento.....	1	0	0	0	0	0	0	1	2
San Francisco.....	1	0	0	0	1	1	0	2	0

The following table gives the rates per 100,000 population for 101 cities for the five-week period ended October 15, 1927, compared with those for a like period ended October 16, 1926. The population figures used in computing the rates are approximate estimates as of July 1, 1926 and 1927, respectively, authoritative figures for many of the cities not being available. The 101 cities reporting cases had estimated aggregate populations of approximately 30,445,000 in 1926 and 30,966,000 in 1927. The 95 cities reporting deaths had nearly 29,785,000 estimated population in 1926 and nearly 30,296,000 in 1927. The number of cities included in each group and the estimated aggregate populations are shown in a separate table below:

Summary of weekly reports from cities, September 11 to October 15, 1927—Annual rates per 100,000 population, compared with rates for the corresponding period of 1926¹

DIPHTHERIA CASE RATES

	Week ended—									
	Sept. 18, 1926	Sept. 17, 1927	Sept. 25, 1926	Sept. 24, 1927	Oct. 2, 1926	Oct. 1, 1927	Oct. 9, 1926	Oct. 8, 1927	Oct. 16, 1926	Oct. 15, 1927
101 cities.....	84	101	107	103	127	² 129	159	143	165	³ 144
New England.....	35	53	73	91	66	109	66	132	85	128
Middle Atlantic.....	63	106	70	96	81	123	119	129	100	123
East North Central.....	95	82	128	105	133	130	188	158	218	⁴ 138
West North Central.....	95	125	127	87	143	123	177	145	210	⁵ 120
South Atlantic.....	110	112	127	105	162	165	214	170	216	203
East South Central.....	109	117	134	82	269	66	253	153	269	158
West South Central.....	77	138	69	206	210	197	176	197	319	256
Mountain.....	237	225	137	234	292	² 143	173	126	164	198
Pacific.....	99	92	212	76	174	120	198	99	174	154

MEASLES CASE RATES

	28	20	38	27	37	² 26	31	40	43	⁵ 50
101 cities.....	28	20	38	27	37	² 26	31	40	43	⁵ 50
New England.....	19	30	38	39	21	53	33	118	26	132
Middle Atlantic.....	10	14	9	30	10	33	11	56	9	53
East North Central.....	23	18	24	18	25	13	29	11	36	⁴ 18
West North Central.....	12	28	28	20	10	6	26	12	44	⁴ 14
South Atlantic.....	9	14	11	36	13	29	15	31	20	69
East South Central.....	16	10	10	15	5	20	5	56	0	127
West South Central.....	4	17	0	0	0	4	0	8	13	55
Mountain.....	73	45	118	45	109	³ 0	109	27	237	18
Pacific.....	212	45	308	52	327	47	179	45	289	58

SCARLET FEVER CASE RATES

	65	69	79	67	100	² 84	111	103	129	³ 94
101 cities.....	65	69	79	67	100	² 84	111	103	129	³ 94
New England.....	75	102	71	123	104	102	144	139	144	130
Middle Atlantic.....	44	46	56	42	51	59	57	101	62	63
East North Central.....	60	89	80	69	98	101	120	102	132	⁴ 104
West North Central.....	129	87	153	60	198	79	216	107	319	⁵ 159
South Atlantic.....	48	78	78	107	110	107	99	123	125	91
East South Central.....	119	46	83	46	98	117	145	66	145	82
West South Central.....	30	42	52	50	69	105	69	67	96	88
Mountain.....	82	99	118	153	319	² 72	301	126	264	108
Pacific.....	118	55	118	71	174	76	158	76	204	97

SMALLPOX CASE RATES

	2	5	3	6	1	² 4	3	5	4	³ 6
101 cities.....	2	5	3	6	1	² 4	3	5	4	³ 6
New England.....	0	0	0	0	0	0	0	0	0	0
Middle Atlantic.....	0	0	0	0	0	0	0	0	0	0
East North Central.....	0	0	1	1	0	1	1	1	3	⁴ 5
West North Central.....	0	22	2	8	2	12	2	14	6	² 26
South Atlantic.....	9	4	6	0	4	4	0	4	4	2
East South Central.....	0	0	0	10	0	0	10	0	0	0
West South Central.....	4	4	13	0	0	8	4	4	4	4
Mountain.....	0	27	0	162	9	² 108	9	54	9	72
Pacific.....	19	37	19	21	5	24	19	31	32	16

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, 1926 and 1927, respectively.

² Denver, Colo., not included.

³ Fort Wayne, Ind., and Fargo, N. Dak., not included.

⁴ Fort Wayne, Ind., not included.

⁵ Fargo, N. Dak., not included.

Summary of weekly reports from cities, September 11 to October 15, 1927—Annual rates per 100,000 population, compared with rates for the corresponding period of 1926—Continued

TYPHOID FEVER CASE RATES

	Week ended—									
	Sept. 18, 1926	Sept. 17, 1927	Sept. 25, 1926	Sept. 24, 1927	Oct. 2, 1926	Oct. 1, 1927	Oct. 9, 1926	Oct. 8, 1927	Oct. 16, 1926	Oct. 15, 1927
101 cities.....	53	33	44	28	42	19	33	25	32	19
New England.....	33	46	9	63	17	12	17	23	57	16
Middle Atlantic.....	55	37	45	24	28	18	27	21	26	16
East North Central.....	29	16	26	10	33	8	23	17	16	18
West North Central.....	26	24	26	14	40	20	22	28	14	22
South Atlantic.....	80	31	91	45	114	20	76	47	65	27
East South Central.....	248	153	165	87	129	117	145	20	140	31
West South Central.....	69	38	77	71	47	17	21	71	26	29
Mountain.....	82	36	36	36	82	54	64	54	46	63
Pacific.....	35	16	21	13	19	18	21	8	16	8

INFLUENZA DEATH RATES

95 cities.....	4	5	6	3	6	6	4	5	6	6
New England.....	0	0	5	0	2	0	0	5	5	2
Middle Atlantic.....	3	4	3	2	2	4	3	6	4	8
East North Central.....	3	2	3	1	5	5	2	1	2	3
West North Central.....	4	4	8	2	0	8	6	4	11	2
South Atlantic.....	6	9	9	11	9	4	6	4	8	7
East South Central.....	5	0	10	10	10	25	5	10	16	10
West South Central.....	22	17	22	9	35	22	13	9	13	13
Mountain.....	0	9	9	0	18	0	18	45	27	9
Pacific.....	7	10	7	0	7	7	0	3	11	3

PNEUMONIA DEATH RATES

95 cities.....	53	60	65	59	69	56	64	65	77	71
New England.....	54	39	75	70	87	58	33	81	75	95
Middle Atlantic.....	51	60	70	70	71	62	76	71	88	72
East North Central.....	40	53	45	44	59	41	54	58	62	50
West North Central.....	51	46	55	25	70	33	63	42	53	61
South Atlantic.....	55	77	79	66	66	66	61	57	89	108
East South Central.....	52	102	88	82	109	87	83	82	52	46
West South Central.....	115	60	93	69	66	95	88	69	106	69
Mountain.....	118	99	55	54	155	72	55	72	118	117
Pacific.....	53	86	78	65	28	45	53	69	81	83

¹ Denver, Colo., not included.

² Fort Wayne, Ind., and Fargo, N. Dak., not included.

⁴ Fort Wayne, Ind., not included.

⁶ Fargo, N. Dak., not included.

Number of cities included in summary of weekly reports, and aggregate population of cities in each group, approximated as of July 1, 1926 and 1927, respectively

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases		Aggregate population of cities reporting deaths	
			1926	1927	1926	1927
Total.....	101	95	30,443,800	30,966,700	29,783,790	30,295,900
New England.....	12	12	2,211,000	2,245,900	2,211,000	2,245,900
Middle Atlantic.....	10	10	10,457,000	10,567,000	10,457,000	10,567,000
East North Central.....	16	16	7,650,200	7,810,600	7,650,200	7,810,600
West North Central.....	12	10	2,585,500	2,626,600	2,470,600	2,510,000
South Atlantic.....	21	20	2,799,500	2,878,100	2,757,700	2,835,700
East South Central.....	7	7	1,008,300	1,023,500	1,008,300	1,023,500
West South Central.....	8	7	1,213,800	1,243,300	1,181,500	1,210,400
Mountain.....	9	9	572,100	580,000	572,100	580,000
Pacific.....	6	4	1,946,400	1,991,700	1,475,300	1,512,800

FOREIGN AND INSULAR

CHOLERA ON VESSELS

Steamship "Montreal Maru"—At Muke, Japan, from Chittagong, India—September 20, 1927.—The mail steamship *Montreal Maru*, from Chittagong, Bengal, India, arrived at Muke, Japan, September 20, 1927, infected with cholera.

Steamship "Tabaristan"—At Basra—October 6, 1927.—The cargo steamship *Tabaristan*, from Basra, Iraq, arrived at Suez, Egypt, October 6, 1927, with history of a cholera case in a coolie employed on the vessel. The patient was landed at Basra, where anticholera vaccination was carried out.

THE FAR EAST

Report for week ended October 8, 1927.—The following report for the week ended October 8, 1927, was transmitted by the eastern bureau of the health section of the secretariat of the League of Nations, located at Singapore, to the headquarters at Geneva:

Maritime towns	Plague		Cholera		Small-pox		Maritime towns	Plague		Cholera		Small-pox	
	Cases	Deaths	Cases	Deaths	Cases	Deaths		Cases	Deaths	Cases	Deaths	Cases	Deaths
Iraq: Basra.....	0	0	1	1	0	0	French Indo-China: Saigon and Cholon.	0	0	5	0	0	0
Persia: Mohammerah ¹	0	0	0	0	0	0		China:					
British India:							Amoy.....	0	0	4	0	0	0
Bombay.....	2	0	2	0	0	0	Shanghai (Int. S.).....	0	0	2	0	0	0
Negapatam.....	0	0	3	1	0	0	Chinwangtao.....	0	0	6	3	0	0
Madras.....	0	0	3	1	0	0	Macao.....	0	0	1	0	0	0
Bassein.....	1	0	0	0	0	0	Japan: Moji.....	0	0	0	0	1	0
Rangoon.....	4	1	8	1	0	0							
Siam: Bangkok.....	1	1	2	0	0	0							
Dutch East Indies:													
Banjermasin.....	0	0	0	0	9	1							

¹ An outbreak of cholera is reported at Lingah.

Telegraphic reports from the following maritime towns indicated that no case of plague, cholera, or smallpox was reported during the week:

ASIA

Aden Protectorate.—Perim, Kamaran, Aden.
Arabia.—Bahrein.
Persia.—Bender-Abbas, Mohammerah, Bushire.
India.—Karachi, Chittagong, Cochin, Tuticorin, Vizagapatam, Moulmein.
Portuguese India.—Nova Goa.
Federated Malay States.—Port Swettenham.
Straits Settlements.—Singapore, Penang.

ASIA—continued

Dutch East Indies.—Batavia, Semarang, Cheribon, Padang, Belawan-Deli, Tarakan, Palembang, Menado, Sabang, Surabaya, Makassar, Balikpapan, Samarinda.
Sarawak.—Kuching.
British North Borneo.—Sandakan, Jesselton, Kudat, Tawao.
Portuguese Timor.—Dilly.

ASIA—continued

Philippine Islands.—Iloilo, Jolo, Cebu, Zamboanga, Manila.
French Indo-China.—Tourane.
China.—Tsingtao, Tien-Tsin.
Hong Kong.
Wei-hai-wei.
Formosa.—Keelung, Takao.
Chosen.—Chemulpo, Fusan.
Manchuria.—Yingkow, Antung, Harbin, Mukden, Changchun, Newchwang.
Kwantung.—Port Arthur, Dalren.
Japan.—Nagasaki, Yokohama, Niigata, Shimonoseki, Tsuruga, Kobe, Osaka, Hakodate.

AUSTRALASIA AND OCEANIA

Australia.—Adelaide, Melbourne, Sydney, Brisbane, Rockhampton, Townsville, Port Darwin, Broome, Fremantle, Carnarvon, Thursday Island, Cairns, Port Moresby.
New Guinea.—Port Moresby.
New Britain Mandated Territory.—Rabaul and Kokopo.
New Zealand.—Auckland, Wellington, Christchurch, Invercargill, Dunedin.
Western Samoa.—Apia.
New Caledonia.—Noumea.

AUSTRALASIA AND OCEANIA—continued

Fiji.—Suva.
Hawaii.—Honolulu.
Society Islands.—Papeete.

AFRICA

Egypt.—Alexandria, Port Said, Suez.
Anglo-Egyptian Sudan.—Port Sudan, Suakin.
Eritrea.—Massaua.
French Somaliland.—Djibouti.
British Somaliland.—Berbera.
Italian Somaliland.—Mogadiscio.
Kenya.—Mombasa.
Zanzibar.—Zanzibar.
Tanganyika.—Dar-es-Salaam.
Seychelles.—Victoria.
Portuguese East Africa.—Mozambique, Beira, Lourenço-Marques.
Union of South Africa.—East London, Port Elizabeth, Cape Town, Durban.
Mauritius.—Port Louis.
Reunion.—St. Denis.
Madagascar.—Majunga, Diego-Suarez, Tamatave.

AMERICA

Panama.—Colon, Panama.

Reports had not been received in time for publication from:

Ceylon.—Colombo.
India.—Calcutta.
French Indo-China.—Haiphong.
Dutch East Indies.—Pontianak.
China.—Canton.
Union of Socialist Soviet Republics.—Vladivostok.

Related information:

Week ended September 24: *Pondicherry* and *Karikal*—Nil.

CANADA

Communicable diseases—Week ended October 15, 1927.—The Canadian Ministry of Health reports cases of certain communicable diseases from seven Provinces of Canada for the week ended October 15, 1927, as follows:

Disease	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	Total
Cerebrospinal fever				1	1			2
Influenza				3	3			6
Poliomyelitis		2		3		1	22	28
Smallpox	1			26		8	5	40
Typhoid fever		14	16	30	4	3	1	68

Communicable diseases—Quebec—Week ended October 15, 1927.—The bureau of health of the Province of Quebec reports cases of certain communicable diseases for the week ended October 15, 1927, as follows:

Disease	Cases	Disease	Cases
Chicken pox.....	14	Scarlet fever.....	79
Diphtheria.....	83	Tuberculosis.....	50
German measles.....	3	Typhoid fever.....	16
Influenza.....	1	Whooping cough.....	8
Measles.....	23		

Typhoid fever—Montreal—January 2–October 22, 1927.—The following table gives the cases of typhoid fever and deaths from this disease reported at Montreal, Quebec, Canada, since January 1, 1927:

Week ended—	Cases	Deaths	Week ended—	Cases	Deaths
Jan. 8, 1927.....	3	1	June 4, 1927.....	239	37
Jan. 15, 1927.....	4	3	June 11, 1927.....	128	36
Jan. 22, 1927.....	1	2	June 18, 1927.....	86	18
Jan. 29, 1927.....	3	1	June 25, 1927.....	75	23
Feb. 5, 1927.....	1	0	July 2, 1927.....	66	21
Feb. 12, 1927.....	0	0	July 9, 1927.....	52	10
Feb. 19, 1927.....	1	2	July 16, 1927.....	39	4
Feb. 26, 1927.....	1	1	July 23, 1927.....	22	9
Mar. 5, 1927.....	9	1	July 30, 1927.....	23	10
Mar. 12, 1927.....	203	4	Aug. 6, 1927.....	16	5
Mar. 19, 1927.....	383	14	Aug. 13, 1927.....	20	5
Mar. 26, 1927.....	568	22	Aug. 20, 1927.....	14	4
Apr. 2, 1927.....	649	48	Aug. 27, 1927.....	8	3
Apr. 9, 1927.....	386	40	Sept. 3, 1927.....	27	0
Apr. 16, 1927.....	175	38	Sept. 10, 1927.....	17	0
Apr. 23, 1927.....	125	43	Sept. 17, 1927.....	13	2
Apr. 30, 1927.....	105	23	Sept. 24, 1927.....	6	3
May 7, 1927.....	106	19	Oct. 1, 1927.....	18	1
May 14, 1927.....	367	16	Oct. 8, 1927.....	14	1
May 21, 1927.....	770	26	Oct. 15, 1927.....	5	1
May 28, 1927.....	353	38	Oct. 22, 1927.....	3	1

EGYPT

Communicable diseases—Two weeks ended September 2, 1927.—During the two weeks ended September 2, 1927, communicable diseases were reported in Egypt as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Cerebrospinal meningitis.....	1	—	Typhoid fever.....	199	—
Influenza.....	139	—	Typhus fever.....	7	1
Smallpox.....	3	1			

GIBRALTAR

Leprosy—1926.—During the year 1926 three cases of leprosy were reported at Gibraltar, of which one case occurred in a resident of the Spanish town of Linares, who, while receiving treatment as an out-patient of a hospital at Gibraltar, was found to be suffering from

leprosy; one in a native of the Island of Malta, resident for 50 years at Gibraltar, and one who had been an inmate of a charitable institution at Gibraltar for three years previously. The two first-noted cases were removed for treatment, one to a leper institution at Malaga, the patient last referred to remaining at Gibraltar. The only previous record of leprosy at Gibraltar was for the year 1909, when the medical officer of health reported three cases, two being in Spaniards, and stated them to have been the only cases at Gibraltar observed for a period of 27 years.

Tuberculosis.—Pulmonary tuberculosis was reported during the year with 40 cases, an increase of 12 over the number reported for the preceding year. The civil population of Gibraltar was estimated at 16,150.

GREAT BRITAIN

Cancer—Tuberculosis—Housing conditions—Hull, England—Year, 1926.—Reports on health conditions at Hull, England, for the year 1926, show increase of mortality from cancer, with 408 deaths from the disease in 1926, compared with 345 in 1925, 364 in 1924, and 297 in 1923. Tuberculosis showed the lowest death rate on record, being less than one-half that recorded in 1918, that year being noted as one of heavy mortality as a result of the war conditions. The death rate from all diseases was stated to be 12.8 per 1,000 of the population for the year under report.

Housing.—Progress was reported in the erection of new houses by the corporation with a total of 1,006 completed houses. Population, 294,600.

GREECE

Pneumonic influenza—Saloniki—August 30—October 3, 1927.—During the period August 28 to October 3, 1927, pneumonic influenza was reported at Saloniki, Greece, with 80 deaths.

ITALY

Pellagra—Florence—September 25—October 1, 1927.—During the week ended October 1, 1927, three cases of pellagra were reported at Florence, Italy.

Smallpox—Florence—September 18—24, 1927—Correction.—The case of smallpox quoted as occurring at Florence during the week ended September 24, 1927,¹ was corrected under date of October 1, 1927, to read "Chicken pox."

¹ Public Health Reports, Oct. 21, 1927, p. 2630, and Oct. 28, 1927, p. 2696.

VIRGIN ISLANDS

Communicable diseases—September, 1927.—During the month of September, 1927, communicable diseases were reported in the Virgin Islands of the United States as follows:

Island and disease	Cases	Remarks
St. Thomas and St. John:		
Gonorrhoea.....	2	
Pellagra.....	1	
Syphilis.....	8	Secondary, 3 cases.
Tuberculosis.....	1	Chronic pulmonary.
St. Croix:		
Syphilis.....	3	Secondary.
Uncinariasis.....	4	Necator Americanus.

YUGOSLAVIA

Communicable diseases—September, 1927.—During the month of September, 1927, communicable diseases were reported in Yugoslavia as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Anthrax.....	102	16	Measles.....	364	2
Cerebrospinal meningitis.....	4	2	Pollomyelitis.....	3	
Diphtheria.....	230	29	Scarlet fever.....	845	138
Dysentery.....	214	22	Tetanus.....	37	15
Lethargic encephalitis.....	2	2	Typhoid fever.....	677	80

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

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given.

Reports Received During Week Ended November 4, 1927¹

CHOLERA

Place	Date	Cases	Deaths	Remarks
China:				
Tientsin.....	Sept. 11-17.....	5		Reported by mission hospitals. Stated to be present in Chinese population.
India:				Aug. 28-Sept. 3, 1927: Cases, 11,180; deaths, 5,559.
Bombay.....	Sept. 11-17.....	1		
Calcutta.....	do.....	20	5	
Madras.....	Sept. 18-24.....	7	7	
Rangoon.....	Sept. 17-24.....	2	2	
Indo-China (French):				
Saigon.....	Aug. 27-Sept. 2.....	1		
Siam:				Sept. 4-10, 1927: Cases, 5; deaths, 3. Apr. 1-Sept. 10, 1927: Cases, 712; deaths, 499.
Bangkok.....	Sept. 4-10.....	1		
On vessels:				
S. S. Montreal Maru.....	Sept. 20.....			At Muke, Japan, from Chittagong, India; cholera infected.
S. S. Tabaristan.....	Oct. 6.....	1		Case in coolie removed at Basra.

PLAGUE

Ceylon:				
Colombo.....	Sept. 11-17.....	1	1	
India:				Aug. 23-Sept. 3, 1927: Cases, 403; deaths, 216.
Bombay.....	Sept. 11-17.....	1	1	
Madras Presidency.....	Aug. 23-Sept. 3.....	144	76	
Rangoon.....	Sept. 11-17.....	4	4	

¹ From medical officers of the Public Health Service, American consuls, and other sources.

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

Reports Received During Week Ended November 4, 1927—Continued

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Algeria:				
Oran.....	Oct. 1-10.....	6		
Canada.....	Oct. 9-15.....			Cases, 40.
Alberta.....	do.....	5		
Manitoba.....				
Winnipeg.....	Oct. 16-22.....	1		
Nova Scotia.....	Oct. 9-15.....	1		
Halifax.....	Oct. 8-15.....	1		
Ontario.....	do.....	23		
Ottawa.....	Oct. 16-22.....	26		
Toronto.....	Oct. 9-15.....	1		
Saskatchewan.....	do.....	8		
Moose Jaw.....	Oct. 18.....	2		
China:				
Manchuria—				
Fushun.....	Sept. 11-17.....	1		
Egypt.....	Aug. 27-Sept. 2.....	3	1	
Great Britain:				
England and Wales.....	Oct. 2-8.....			Cases, 149.
Leeds.....	do.....	1		
Manchester.....	do.....	1		
Sheffield.....	do.....	3		
India.....				Aug. 28-Sept. 3, 1927: Cases, 1,456; deaths, 397.
Bombay.....	Sept. 11-17.....	1	1	
Calcutta.....	do.....	10	5	
Madras.....	Sept. 18-24.....	2	1	
Rangoon.....	Sept. 11-17.....	1		
Mexico:				
Acapulco.....	Aug. 28-Sept. 17.....	2	2	
Persia:				
Teheran.....	June 23-July 23.....		2	
Portugal:				
Lisbon.....	Sept. 25-Oct. 8.....	6		
Siam:				
Bangkok.....				Sept. 4-10, 1927: Cases, 3; deaths, 1. Apr. 1-Sept. 10, 1927: Cases, 250; deaths, 7.

TYPHUS FEVER

Argentina:				
Rosario.....	Aug. 1-31.....		1	
Bulgaria:				
Sofia.....	Sept. 24-30.....	8		
Chile:				
Antofagasta.....	Sept. 25-Oct. 1.....		1	
China:				
Manchuria—				
Harbin.....	Aug. 15-21.....	2		
Egypt.....	Aug. 20-Sept. 2.....	7	1	
Palestine:				
Jaffa.....	Sept. 27-Oct. 3.....	1		

Reports Received from June 25 to October 28, 1927¹

CHOLERA

Place	Date	Cases	Deaths	Remarks
China:				
Amoy.....	May 22-Sept. 10.....	70	11	
Canton.....	May 1-Sept. 10.....	74	39	
Foochow.....	July 24-Sept. 10.....			Present.
Hong Kong.....	July 17-Sept. 3.....	3	3	
Kulsangsu.....	June 21.....	1		
Shanghai.....	June 19-25.....	2		
Do.....	July 31-Sept. 17.....		104	In international settlement and French concession.
Swatow.....	May 15-Sept. 10.....	138	13	
Tientsin.....	Aug. 27-Sept. 10.....	4		

¹ From medical officers of the Public Health Service, American consuls, and other sources.

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

Reports Received from June 25 to October 28, 1927—Continued

CHOLERA—Continued

Place	Date	Cases	Deaths	Remarks	
India.....	Apr. 17-Aug. 13.....	-----	-----	Cases, 148,274; deaths, 82,048.	
Bombay.....	May 8-Sept. 10.....	126	57		
Calcutta.....	.....do.....	688	410	
Karachi.....	May 29-June 4.....	1	1		
Madras.....	June 19-Sept. 17.....	812	427		
Rangoon.....	May 8-Aug. 13.....	18	14		
India, French settlements in.....	Mar. 30-July 16.....	171	109	Cases, 13,640.	
Indo-China (French).....	Apr. 1-Aug. 10.....	-----	-----		
Annam.....	.....do.....	2,936	-----	
Cambodia.....	.....do.....	335	-----	
Cochin-China.....	.....do.....	1,519	-----	
Saigon.....	June 4-July 21.....	10	4		
Laos.....	July 11-Aug. 10.....	137	-----		
Tonkin.....	Apr. 1-Aug. 10.....	9,713	-----		
Iraq:					
Baghdad.....	July 24-30.....	29	18		
Basra.....	July 17-Sept. 17.....	383	288		
Japan:					
Yokohama.....	July 31-Aug. 6.....	1	1		
Persia:					
Abadan.....	July 24-Aug. 13.....	215	183		
Ahwaz.....	July 31-Aug. 13.....	20	13		
Minab.....	Aug. 7-13.....	-----	23		
Mohammerah.....	July 17-Aug. 27.....	194	155		
Nasseri.....	July 19-31.....	-----	10		
Philippine Islands:					
Manila.....	July 17-Aug. 27.....	2	-----		
Bulacan Province.....	June 7-July 8.....	3	2		
Leyte Province—					
Barugo.....	June 29.....	1	1		
Carigara.....	June 23.....	1	1		
Palo.....	May 18.....	1	-----		
Siam.....	May 1-Sept. 3.....	-----	-----	Cases, 320; deaths, 195.	
Bangkok.....	.....do.....	46	14	
On vessel:					
S. S. Adrastus.....	Reported Aug. 6.....	1	1	At Yokohama, Japan.	
S. S. Morea.....	Sept. 2.....	-----	-----	At Hong Kong.	
S. S. War Mehtar (oil tanker).....	Aug. 4.....	1	1	At Saffagha, Egypt.	

PLAGUE

Algeria:				
Algiers.....	Aug. 21-31.....	1	-----	Cases, 80; deaths, 44.
Oran.....	Aug. 21-Sept. 10.....	5	4	
Argentina.....	Jan. 1-Aug. 2.....	-----	-----	
Buenos Aires.....	Apr. 10-May 7.....	4	3	
Cordoba.....	Jan. 11-Aug. 6.....	52	29	
Corrientes.....	June 1.....	1	1	
Entre Rios.....	Mar. 29-Aug. 13.....	8	1	
Santa Fe.....	Apr. 28-May 16.....	4	3	
Territory—				
Chaco—				
Barranqueras.....	May 29.....	2	2	
Formosa.....	June 25.....	3	2	
Pampa.....	July 27-Aug. 2.....	4	-----	
Rio Negro.....	Aug. 6.....	1	-----	
City—				
Merou.....	Reported July 14.....	-----	-----	Present.
Rosario.....	May 7.....	1	1	
Santa Fe.....	May 16.....	4	2	
Azores:				
St. Michaels Island.....	May 15-Aug. 27.....	6	-----	
Ribeira Grande.....	June 12-18.....	1	-----	
Brazil:				
Sao Paulo.....	June 3-9.....	1	1	
British East Africa:				
Kenya.....	Apr. 24-July 31.....	73	14	
Mombassa.....	July 24-30.....	1	1	
Nairobi.....	May 22-28.....	6	-----	
Tanganyika.....	Mar. 29-May 23.....	-----	37	
Do.....	July 24-Aug. 6.....	-----	10	
Uganda.....	Jan. 1-Feb. 28.....	138	121	
Do.....	Mar. 27-June 18.....	366	300	

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

Reports Received from June 25 to October 28, 1927—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Canary Islands:				
Laguna district—				
Tejina	June 17	1		
Las Palmas	Oct. 8	4		
Ceylon:				
Colombo	May 1-Sept. 3	19	12	Plague rats, 4.
China:				
Amoy	July 3-23			Present in surrounding country.
Mongolia	Reported Oct. 11		200	Approximate.
Tientsin	Aug. 14-20	2		
Tungliao	Reported Oct. 15			Outbreak.
Ecuador:				
Guayaquil	June 1-Aug. 31	7		Rats taken, 72,410; found infected, 45.
Egypt:				
Alexandria	June 4-Sept. 2	4		
Beni-Souef	June 4-July 13	5	2	
Biba	June 4-10	1		At Nama.
Dakhalia	June 24-July 9	6	1	
Minia	Aug. 8-9	4		
Port Said	June 24-July 21	4	1	
Suez	Sept. 4	1		
Tanta district	June 4-10	1		
Greece	May 1-June 30	4	3	
Athens	June 1-Aug. 29	3		Including Piræus.
Mytilene	Aug. 9	1		
Patras	May 30-Oct. 1	9	2	
Hawaii Territory:				
Hamakua	July 15-Aug. 30			2 plague rodents.
Honokaa	May 17-23	2	2	
Kukuihaele	Aug. 12-17	1	1	Do.
Paauilo	July 26-Aug. 1		4	
India	Apr. 17-July 16			Cases, 22,523; deaths, 8,530.
Bombay	May 8-Sept. 10	99	84	
Calcutta	Aug. 21-Sept. 3	18	10	
Madras	May 1-Aug. 20	982	430	
Rangoon	May 8-Sept. 3	66	60	
Indo-China (French):	Apr. 1-Aug. 10	50		
Kwang-Chow-Wan	May 21-July 31	73		
Iraq:				
Baghdad	Apr. 8-May 28	12	1	
Java:				
Batavia	May 1-Sept. 10	275	276	Province.
East Java and Madura	May 22-July 16	28	27	
Paseroean Residency	May 9			Outbreak reported at Nagdiwano.
Surabaya	Apr. 17-Aug. 27	70	69	Mar. 16-Apr. 30, 1927: Cases, 255; deaths, 135.
Madagascar:				
Province—				
Ambositra	Mar. 16-July 31	99	92	
Antsirabe	Mar. 16-May 15	8	8	
Miarinarivo (Itasy)	Mar. 16-July 31	69	63	
Moramanga	May 16-July 31	28	27	
Tananarive	Mar. 16-July 31	233	204	
Tananarive Town	Mar. 16-June 30	22	20	
Mauritius:				
Port Louis	May 1-June 30	1	1	
Nigeria	Mar. 1-May 31	228	177	
Peru	Apr.-May 31			Cases, 22; deaths, 8.
Departments—				
Ica	Apr. 1-30	1		
Lambayeque	do	1		
Libertad	Apr. 1-May 31	7	4	
Lima	Apr. 1-July 31	13	8	
Lima City	Apr. 1-30	5	1	
Senegal	May 23-Sept. 25			Cases, 1,030; deaths, 606.
Baol	June 2-Oct. 2	179	95	
Cayor Frontier	July 4-Oct. 2	917	530	
Dakar	June 20-Oct. 2	147	94	
Facel	July 6	17	8	
Guindel	June 20-26	11	2	
Louga district	Sept. 18-25	5	4	
M'Bour	July 6-10	28	23	
Medina	June 13-19	2	2	
Pout	July 4-10	1		
Rufisque	May 23-Sept. 25	223	167	
Thies district	do	34	15	
Tivaouane	June 2-July 17	50	32	

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

Reports Received from June 25 to October 28, 1927—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Siam.....	Apr. 1-Aug. 27.....	-----	-----	Cases, 10; deaths, 7
Bangkok.....	May 8-June 11.....	2	1	
Syria:				
Beirut.....	June 11-July 10.....	3	-----	
Tunisia.....	Apr. 21-July 10.....	144	-----	
Tunis.....	July 25-Aug. 1.....	1	-----	
Turkey:				
Constantinople.....	May 13-19.....	1	-----	
Do.....	Sept. 18-24.....	1	-----	
Union of South Africa:				
Cape Province:				
Maraisburg district.....	May 1-14.....	2	2	Native.
Orange Free State:				
Edenburg district.....	July 17-26.....	3	3	Natives; on farm.
Rouxville district.....	July 24-Aug. 6.....	2	2	
On vessel:				
S. S. Avoroff.....	June 24-30.....	1	-----	Greek warship at port of Athens.
S. S. Capafric.....	Aug. 23.....	3	1	At Duala, French Cameroons, from Nigeria.
S. S. Elcano.....	Aug. 19.....	1	-----	At Piraeus, Greece.
S. S. Madonna.....	Aug. 24.....	1	-----	At Dakar, Senegal, from ports south.
S. S. Ransholm.....	Aug. 5.....	3	-----	At Gefle, Sweden, from Rufisque, Senegal.

SMALLPOX

Algeria.....	Apr. 21-July 31.....	-----	-----	Cases, 882.
Algiers.....	May 11-June 30.....	8	-----	
Oran.....	May 21-Sept. 30.....	63	-----	
Angola.....	June 1-July 31.....	45	-----	
Arabia:				
Aden.....	July 17-Aug. 1.....	2	1	
Brazil:				
Bahia.....	Aug. 7-13.....	1	-----	
Porto Alegre.....	July 1-Aug. 31.....	8	-----	
Rio de Janeiro.....	May 22-Sept. 17.....	23	19	
British East Africa:				
Kenya.....	Apr. 24-May 14.....	7	14	
Tanganyika.....	Mar. 29-June 18.....	2	22	
Zanzibar.....	Apr. 1-May 31.....	19	7	
British South Africa:				
Northern Rhodesia.....	Apr. 30-Sept. 9.....	179	3	
Canada.....	June 5-Oct. 8.....	-----	-----	Cases, 595.
Alberta.....	June 12-Oct. 8.....	-----	-----	Cases, 119.
Calgary.....	June 12-Aug. 27.....	9	-----	
British Columbia—				
Vancouver.....	May 23-Sept. 4.....	4	-----	
Manitoba.....	June 5-Oct. 8.....	-----	-----	Cases, 40.
Winnipeg.....	June 12-Oct. 8.....	22	-----	
Nova Scotia.....	Sept. 11-17.....	1	-----	
Ontario.....	June 5-Oct. 8.....	-----	-----	Cases, 247.
Ottawa.....	June 12-Oct. 15.....	179	-----	
Sarnia.....	Aug. 7-13.....	1	-----	
Toronto.....	June 19-Oct. 8.....	14	-----	
Windsor.....	Oct. 2-15.....	9	-----	
Quebec.....	June 19-Aug. 27.....	15	-----	
Saskatchewan.....	June 12-Oct. 1.....	-----	-----	Cases, 132.
Moose Jaw.....	Aug. 14-Sept. 24.....	21	-----	
Regina.....	July 17-Oct. 8.....	15	-----	
Ceylon.....	May 1-7.....	-----	-----	Cases, 3; deaths, 1.
Colombo.....	July 31-Aug. 6.....	1	1	
China:				
Amoy.....	May 8-28.....	1	-----	Present in surrounding country.
Do.....	July 3-16.....	-----	-----	
Antung.....	July 4-31.....	3	-----	
Chefoo.....	May 8-14.....	-----	-----	Present.
Foochow.....	May 8-Sept. 10.....	-----	-----	Do.
Hong Kong.....	May 8-Sept. 3.....	22	20	

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

Reports Received from June 25 to October 28, 1927—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
China—Continued.				
Manchuria—				
Anshan	May 22-28	1		
Changchun	May 15-July 30	8		
Dairen	May 2-July 3	10	5	
Fushun	May 15-July 30	10		
Harbin	June 13-July 10	4		
Kaiyuan	July 3-9	2		
Mukden	May 22-July 30	6		
Pensihu	July 3-9	1		
Senpingkal	May 8-July 9	3		
Tientsin	May 8-Sept. 10	18	4	
Chosen	Feb. 1-June 30			Cases, 507; deaths, 205.
Chinnampo	Apr. 1-May 31	2		
Fusan	Apr. 1-30	1		
Gensan	May 1-31	1		
Seishin	Apr. 1-30	1		
Curacao	May 29-June 4	1		Alastrim.
Ecuador:				
Guayaquil	June 1-Aug. 31	4		
Egypt				
Alexandria	May 7-July 29			Cases, 21; deaths, 3.
Cairo	May 21-June 17	4	1	
Cairo	Jan. 22-Apr. 15	14	3	
France				
Lille	Apr. 1-July 31			Cases, 201.
Lille	July 24-30	1		
Paris	May 21-July 31	14	2	
Gold Coast	Mar. 1-June 30	41	7	
Great Britain:				
England and Wales				
Birmingham	May 22-Oct. 1			Cases, 3,337.
Birmingham	Aug. 14-Sept. 30	2		
Bradford	May 29-June 11	2		
Cardiff	June 19-July 2	4		
Leeds	July 17-Oct. 1	16		
Liverpool	July 17-30	1		
London	May 15-June 18	2		
Newcastle upon Tyne	June 12-Oct. 1	6		
Sheffield	June 12-Sept. 24	26		
Stoke-on-Trent	Aug. 21-27	1		
Scotland—				
Dundee	May 29-Sept. 3	6		
Greece	June 1-30	14		
Saloniki	July 12-Aug. 15		2	
Guatemala:				
Guatemala City	June 1-30		9	
Guinea (French)				
Guinea (French)	June 4-10	9		
India				
Bombay	Apr. 17-Aug. 13			Cases, 72,048; deaths, 19,005.
Bombay	May 29-Sept. 10	242	157	
Calcutta	May 8-Sept. 10	400	308	
Karachi	May 15-Aug. 6	10	5	
Madras	May 22-Sept. 17	29	7	
Rangoon	May 8-Sept. 3	185	156	
Rangoon	Mar. 20-June 18	174	111	
India, French Settlements in				
Indo-China (French)	Mar. 21-Aug. 10			Cases, 318.
Saigon	May 14-Aug. 19	3	1	
Iraq:				
Baghdad	Apr. 10-Sept. 4	3	1	
Basra	Apr. 10-Sept. 17	5	4	
Italy				
Rome	Apr. 10-May 21	13		
Rome	June 13-July 10	2		
Jamaica	May 29-Sept. 24	37		Reported as alastrim.
Japan				
Nagasaki City	Apr. 3-May 7			Cases, 19.
Nagasaki City	June 20-Aug. 14	26	7	
Taiwan Island	May 21-31	1		
Java:				
Batavia	May 22-Aug. 20	7		
East Java and Madura	Apr. 24-Aug. 20	17		
Latvia				
Latvia	Apr. 1-30	1		
Mexico				
Durango	Mar. 1-May 31			Deaths, 557.
Durango	June 1-30		1	
Monterey	July 1-31	6	4	
San Luis Potosi	May 29-Aug. 13		11	
Tampico	June 1-July 31	1	2	
Torreon	Aug. 7-Oct. 1		2	
Morocco	Apr. 1-July 31	207		

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

Reports Received from June 25 to October 28, 1927—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Netherlands India:				
Borneo—				
Holoë Soengei.....	Apr. 21.....			Epidemic in 2 localities. Epidemic outbreak. Do.
Pasir Residency.....	Apr. 30-May 6.....			
Samarinda Residency.....	May 21-27.....			
Nigeria.....	Mar. 1-June 30.....	2,352	570	
Paraguay:				
Asuncion.....	July 10-23.....		2	
Persia:				
Teheran.....	Feb. 21-June 22.....		14	
Poland.....	Apr. 10-Aug. 6.....	20	2	
Portugal:				
Lisbon.....	May 29-Sept. 24.....	20	1	
Oporto.....	Sept. 3-9.....	1		
Senegal:				
Medina.....	July 4-10.....	7		
Siam.....	Apr. 1-Sept. 3.....			Cases, 246; deaths, 66.
Bangkok.....	May 1-July 23.....	13	7	
Spain:				
Madrid.....	Aug. 1-31.....		1	
Valencia.....	May 29-June 4.....	3		
Do.....	Sept. 25-Oct. 1.....	1		
Straits Settlements.....	June 12-18.....			Cases, 3.
Singapore.....	Apr. 1-June 18.....	7	2	
Sumatra:				
Medan.....	June 5-Aug. 20.....	3		
Switzerland:				
Berne.....	June 26-July 2.....	1		
Syria:				
Damascus.....	Aug. 11-31.....	3		
Tunisia.....	Apr. 1-June 10.....			Cases, 10.
Tunis.....	June 1-10.....	1		
Union of South Africa:				
Cape Province.....	July 7-Aug. 20.....			Outbreaks. Do. Do. Do. Do. Do.
Elliott district.....	May 11-June 10.....			
Idutywa district.....	July 3-9.....			
Kalanga district.....	May 11-June 10.....			
Mount Ayliffe district.....	July 31-Aug. 6.....			
Oranga Free State.....	Aug. 7-13.....			
Transvaal—				
Barberton district.....	May 1-7.....			Do.
Venezuela:				
Maracaibo.....	July 12-Sept. 12.....		3	

TYPHUS FEVER

Algeria.....	Apr. 21-July 20.....			Cases, 399; deaths, 39.
Algiers.....	May 11-Sept. 20.....	32		
Oran.....	May 21-Aug. 31.....	34		
Bulgaria.....	Mar. 1-July 10.....			Cases, 226; deaths, 20.
Sofia.....	June 4-Aug. 5.....	2		
Chile:				
Antofagasta.....	Apr. 16-May 31.....	1		
Concepcion.....	May 29-June 4.....		1	
La Calera.....	Apr. 16-May 31.....	1		
Ligua.....	Mar. 16-31.....	2		
Puerto Montt.....	Apr. 16-May 31.....	1		
Santiago.....	do.....	5	1	
Talcahuano.....	July 10-16.....		1	
Valparaiso.....	Apr. 16-Sept. 3.....	5	3	
China:				
Manchuria—				
Harbin.....	July 25-31.....	3		
Mukden.....	May 29-June 4.....	1		
Tientsin.....	July 10-16.....	1		
Chosen.....	Feb. 1-June 30.....			Cases, 721; deaths, 60.
Chemulpo.....	May 1-Aug. 31.....	3		
Gensan.....	do.....	4		
Seoul.....	Apr. 1-Aug. 31.....	35	3	
Czechoslovakia.....	do.....			Cases, 55.

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

Reports Received from June 25 to October 28, 1927—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Egypt.....	May 28-July 29.....			Cases, 120; deaths, 18.
Alexandria.....	May 21-Aug. 5.....	13	5	
Cairo.....	Jan. 15-June 24.....	42	16	
Port Said.....	Sept. 24-30.....	1		
Estonia.....	Apr. 1-June 30.....			Cases, 5.
Greece.....	June 1-30.....	2		
Athens.....	June 1-July 31.....		9	
Guatemala:				
Guatemala.....	Aug. 25-31.....		1	
Iraq:				
Baghdad.....	Apr. 24-30.....	1		
Irish Free State:				
Cork County.....	July 3-9.....	1		In urban district.
Latvia.....	Apr. 1-July 31.....	32		
Lithuania.....	Feb. 1-July 31.....	347	42	
Mexico:				
Mexico City.....	Feb. 2-May 31.....			Deaths, 140.
San Luis Potosi.....	May 29-Sept. 24.....	59		Including municipalities in Federal district.
Morocco.....	July 31-Aug. 6.....		1	
Morocco.....	Apr. 1-Aug. 20.....	952		
Palestine.....	May 24-Sept. 26.....			Cases, 29.
Haifa.....	May 24-Aug. 29.....	8		
Jaffa.....	Aug. 2-15.....	2		
Jerusalem.....	June 28-Aug. 15.....	3		
Mahdaim.....	May 17-23.....	1		In Safad district.
Nazareth.....	July 19-25.....	1		
Safad.....	May 17-Aug. 8.....	10		
Peru:				
Arequipa.....	Apr. 1-30.....		1	
Poland.....	Apr. 10-Sept. 3.....	1,100	100	
Portugal:				
Lisbon.....	May 29-June 4.....	1		
Oporto.....	Aug. 20-27.....	1		
Rumania.....	Apr. 3-July 23.....	956	64	
Spain:				
Seville.....	Aug. 19-25.....		2	
Syria:				
Aleppo.....	Sept. 11-17.....	2		
Tunisia.....	Apr. 22-July 20.....			Cases, 158.
Tunis.....	July 5-Aug. 21.....	2		
Turkey:				
Constantinople.....	May 13-19.....		2	
Union of South Africa:				
Cape Province.....	Apr. 1-30.....			Cases, 55; deaths, 8, native. In Europeans, cases, 2.
Albany district.....	Apr. 1-Aug. 27.....	42	5	Outbreaks.
East London.....	June 5-11.....			Do.
Glen Gray district.....	May 22-28.....	1		Do.
Kentani district.....	May 1-7.....			Do.
Port Elizabeth.....	June 26-July 2.....			Do.
Qumbu district.....	Aug. 7-13.....	1		Do.
Umzimkulu district.....	May 1-7.....			Do.
Natal.....	June 26-July 2.....			Do.
Impendhle district.....	Apr. 1-Aug. 6.....	7	3	
Orange Free State.....	June 5-11.....			Do.
Transvaal.....	Apr. 1-July 23.....	5		
Johannesburg.....	Apr. 1-30.....	1		
Johannesburg.....	July 3-Aug. 20.....	19	5	
Yugoslavia.....	May 1-Aug. 31.....			Cases, 24; deaths, 5.

YELLOW FEVER

Ashanti:				
Obuasi.....	Aug. 6.....	1	1	
Dahomey (West Africa):				
Porto Novo.....	July 1.....	1	1	In Syrian woman.
Gold Coast:				
Do.....	Apr. 1-June 30.....	60	22	
Do.....	Aug. 4.....	2		
Ivory Coast.....	July 29.....	1	1	
Liberia:				
Monrovia.....	May 29-July 8.....	4	5	

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

Reports Received from June 25 to October 28, 1927—Continued

YELLOW FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Senegal:				
Dakar.....	July 9.....	1		
Do.....	Aug. 8.....	2	2	
Do.....	Sept. 17.....			Present.
Geoul.....	Sept. 26-Oct. 2.....	1	1	
Island of Goree.....	Aug. 22-Sept. 4.....	2	2	
Khombole.....	Aug. 1-Oct. 2.....	4	1	
Louga.....	Sept. 26-Oct. 2.....	1	1	
M'Bour.....	May 27-June 19.....	5	5	
Ouakam.....	June 2-Aug. 14.....	4	2	
Pout.....	Sept. 19-25.....	1	1	
St. Louis.....	Aug. 1-Oct. 2.....	3	3	
Thies.....	July 10.....	1	1	In European.
Do.....	Sept. 12-Oct. 2.....	4	4	
Tiaroye.....	Aug. 22-Sept. 4.....	1	1	
Tivaouane.....	May 27-Sept. 11.....	6	5	
Togoland:				
Meiatza.....	Aug. 15-21.....	1	1	