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CURRENT PREVALENCE OF COMMUNICABLE DISEASES IN THE UNITED STATES[1]

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

Poliomyelitis.—The number of cases of poliomyelitis dropped from 4,122 during the 4-week period ended October 10 to 1,804 during the current period. Each geographic area, and, in fact, each reporting State, shared in the decline. For the first time since the beginning of the outbreak the incidence was slightly below that for the corresponding period of last year, the number of cases being about 11 per cent lower for the current period than for last year. The number was, however, about four times the number of cases recorded for 1929.

From a comparison of the recent reports of poliomyelitis with the incidence in previous years, it is evident that the present outbreak has been largely confined to States along the Atlantic coast and in the Great Lakes region, with very little rise in the Mississippi Valley and far western States. In 1930 poliomyelitis was much above normal in the West, first in the Mountain and Pacific States, passing to the South Central areas, and then to the West North Central States. The East North Central States and New England and Middle Atlantic States experienced rises in 1930, but the number of cases reported was far less than the number reported in those regions during the current year.

In the New England and Middle Atlantic and East North Central groups of States a decline of more than 60 per cent from the preceding 4-week period was reported for the current 4-week period of 1931. In the former group the number of cases was still more than double the number reported for the same period last year and about six times the number in 1929. In the latter group the number (443) represented a 20 per cent decline from last year's figure, but it was more than four

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

times the number in 1929. In the South Atlantic States the cases dropped from 95 during the preceding period to 51 for the current period. While in this area the reported cases have been considerably above those of 1930, the number of cases has not at any time equaled the number reported in 1929.

In the other areas, those mostly affected by the 1930 epidemic, the Mountain and Pacific States, reported 48 cases for the current period, as compared with 329 cases for the same period in 1930 and 27 in 1929; the South Central groups reported 27 cases as against 98 last year and 18 in 1929; in the West North Central 221 cases were reported as compared with 571 in 1930 and 39 in 1929.

Diphtheria.—The number of cases of diphtheria, 9,816, was the highest on record for the corresponding period in the four years since 1927, when 9,842 cases were reported for this period. Increases in the various geographic areas were shown as follows: In the East North Central States the number of cases was one and two-tenths times the number in the corresponding period of last year; in the West North Central group more than twice as many cases were reported during the current period as occurred in 1930; and in the South Atlantic, South Central, and Mountain and Pacific groups the numbers of cases were one and four-tenths, two and seven-tenths, and one and two-tenths times, respectively, the numbers in 1930 for the same period. The New England and Middle Atlantic States were the only groups not participating in this unfavorable increase; there a decrease of 21 per cent was shown.

Approximatley 3,500 more cases of diphtheria were reported during the 4-week period ended November 7 than were reported during the preceding 4-week period.

Smallpox.—In relation to previous years, the smallpox situation was very favorable. The number of cases reported for the current period represented only about 73 per cent of the number reported for the same period of 1930 and approximately 35 per cent of the number in 1929. All regions except the New England and Middle Atlantic and South Central were lower than last year. In the former groups, Vermont and New York showed the largest increases, while in the South Central group Kentucky, Alabama, and Mississippi seemed to be mostly responsible for the increase over the preceding year.

An increase of about 80 per cent was noted in the number of cases of smallpox reported for the 4-week period ended November 7 over the preceding 4-week period. All areas shared to some extent in this seasonal increase.

Measles.—The incidence of measles in relation to that for the same period of last year was considerably higher in the New England and Middle Atlantic States (72 per cent) and in the South Atlantic States (66 per cent), but all other regions showed decreases, ranging from 23 per cent in the Mountain and Pacific States to 60 per cent in the

South Central groups. For the country as a whole, the excess over last year was only about 8 per cent. During the same period in 1929 the number of cases totaled 5,573.

The number of reported cases of measles (4,244) for the current 4-week period was more than twice the number reported for the preceding 4-week period. All regions contributed to this seasonal increase except the South Central; in that group a decrease of about 50 per cent in the number of cases was shown.

Scarlet fever.—The reported current incidence of scarlet fever continued to be about 23 per cent in excess of that of last year for the same period and was 10 per cent above 1929. The excess over last year has, during recent weeks, been apparent in all parts of the country. The areas showing the greatest increases during the current period over last year were the New England and Middle Atlantic (35 per cent), South Central (36 per cent), and Mountain and Pacific (55 per cent).

Typhoid fever.—The incidence of typhoid fever for the current year reached its peak during the latter part of September. For the current 4-week period there were 3,015 cases reported, which was approximately 1,100 less than occurred during the preceding 4-week period. In relation to the experience of previous years, the current incidence was about 4 per cent below the incidence for the same period in 1930, but was 35 per cent above the incidence in 1929. Decreases in the various areas ranged from 11 per cent to 32 per cent. The number of cases in the South Atlantic States approximated last year's figure, and in the South Central areas an increase in the number of cases of 16 per cent was reported.

Influenza.—During the current 4-week period the incidence of influenza increased about 35 per cent over the preceding period, but for the first time for several 4-week periods the number of cases reported was less than for the corresponding period last year. For the entire reporting area, the number of cases totaled 2,233 as compared with 2,522 last year and 3,416 in 1929. While the number of cases reported from the Mountain and Pacific regions was small (347), it was almost double the number reported last year at this time and was slightly above the figure for 1929.

Meningococcus meningitis.—For this disease the incidence continued very favorable during the current period. The total number of reported cases was 225 as compared with 319 for the corresponding period in 1930 and 384 in 1929. Practically all areas participated in the decline, the decreases ranging from 33 per cent to 49 per cent in the various regions.

Mortality, all causes.—The deaths from all causes in large cities as reported by the Bureau of the Census continued low, viz, 10.1 per thousand population, annual basis. The average for the preceding five years for the corresponding period was 11.6.

PATHOLOGY OF THE EASTERN TYPE OF ROCKY MOUNTAIN SPOTTED FEVER

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Only about 20 autopsies on cases dying of Rocky Mountain spotted fever have been published. Buckley (1), in 1897, reported a much enlarged spleen as the only abnormal finding. Wilson and Chowning (1) reported six more autopsies in detail, and in a later report (2) included another case, no details of which are available, and the autopsy published in detail by Anderson (3, 4) which was performed by Anderson and Wilson. Almost identical reports on one case in 1904 were published independently by Stiles (5) and Ashburn (6). Ricketts (7) reported generally on the gross findings in six cases and Le Count (8) recorded the histologic details on the same cases. Wolbach (9) added one partial and four complete autopsy reports. These 21 cases all occurred in the Bitterroot Valley region of Montana.

The first recorded autopsy on what was probably a case of the eastern type of spotted fever was reported by Pinkerton and Maxcy (10) as endemic typhus. This case occurred on an isolated farm near Charlottesville, Va. In regard to this case Pinkerton now expresses his opinion as follows: "If Doctor Lillie finds an identical pathological picture, and if the strain recovered from the patient showing that picture is immunologically spotted fever and not typhus, I am quite willing to admit the probability of our case belonging to Dyer's (15) group of 'Eastern spotted fever'." (Letter of October 8, 1931, addressed to Maxcy.) And Maxcy says, "In reviewing all of the clinical and epidemiological facts in this case, it is my opinion that the evidence is more in favor of spotted fever than of endemic typhus." The demonstration of brain lesions in spotted fever hereinafter to be reported were communicated to Maxcy, and he considered this as strengthening his opinion that this case was in fact spotted fever.

The details of the above reports will be discussed in conjunction with and following the original data herein presented.

No attempt has been made thoroughly to review the pathology of European typhus for comparison with spotted fever, reference being made only to Ceelen's (11) review and two rather extensive articles not included therein, those of Grzywo-Dabrowsky (12) and Wolbach, Todd, and Palfrey (13). Citations of several other authors have been taken from Ceelen's and Wolbach's papers, and are not included in the list of references.

The following account is based on four autopsies attended or performed by the writer and on histologic material obtained from these and one other case. I am indebted for this material to Drs. E. C. Rice, M. A. Selinger, and L. Neuman, of Washington, and to

Maj. J. V. Falisi, Medical Corps, United States Army, and to the laboratory staff of the Walter Reed Hospital in Washington.

Further acknowledgment is made to Passed Assist. Surg. A. Rumreich for the clinical and epidemiological data which identify the cases herein reported as Rocky Mountain spotted fever.

Summary of Clinical and Epidemiological Protocols

Case 1.—White male automobile mechanic, aged 48. Onset July 12, 1930, with headache and chill. Fever rose to 105.2° F. by end of first week, with pulse of 102–140. Involuntary urination and defecation, stupor and delirium after first week. Coma late in second week to death on sixteenth day. Generalized red macular eruption first noted on sixth day, becoming petechial on ninth day. Leucocytes 21,000 on tenth day. Spinal fluid clear on eighth day. Weil-Felix positive 1:160 on fifteenth day. Tick found attached to left arm six days prior to onset.

Case 2.—White schoolboy, aged 9. Prodromal restlessness began September 3, 1930; onset with headache and stomach ache, constipation, and rigidity of neck September 5, and spleen palpable. Appendectomy September 6. Spinal fluid clear September 8. That afternoon a red macular rash appeared first on arms and chest, generalizing the same evening and becoming petechial in a few days. Leucocytosis of 10,000 on September 7 and 27,000 on September 11. Death September 12. Autopsy 27 hours postmortem. Weil-Felix positive, 1:1280, on postmortem serum specimen. Had removed ticks from dog and crushed them about a week before onset.

Case 3.—White female housekeeper, aged 37. Onset June 2, 1931, with chilliness and headache. Temperature ranged from 100.5° to 104° F., pulse 100 to 136. Meningismus, hyperesthesia, and enlarged spleen noted. Macular rash appeared June 5 on ankles and wrists, generalized June 7, became petechial June 12, being most abundant on extremities. Spinal fluid negative; leucocytes 12,400; and Weil-Felix positive, 1:1280, June 13. Died June 13, autopsy same afternoon. Engorged tick found attached to scalp 3 days before onset.

Case 4.—White male farmer, aged 65. Onset July 1, 1931, with chills and fever. Temperature range 99.6° to 102.3° F. Red macular rash appeared July 4 on arms, legs, and back, later generalizing sparsely and becoming petechial. Hemorrhage from mouth and bowel on July 9 and 11. Muscular twitching, hypertonicity and late coma. Leucocytes 10,700 on tenth day; Weil-Felix positive, 1:5120, July 12. Death July 13, 11 a. m.; autopsy 5 p. m. Ticks removed from clothing several times during week preceding onset, but no definite history of bites.

Case 5.—White male, aged 7. Onset August 5, 1931, with persisting headache and fever of 101° F., rising to 106° F. by fourteenth day, and pulse range of 110–150. Constipation in first week, involuntary urination and defecation later. Restlessness, irritability, and periods of delirium; coma late in second week. Meningismus; clear spinal fluid; splenomegaly noted. Red macular rash appeared on arms August 8; generalized next day; becoming petechial August 13. Leucocyte counts of 5,000 on fourth day, 9,000 on ninth, and 16,000 on fourteenth day. Weil-Felix positive 1:5120 on sixteenth day. Death August 21 (sixteenth day). Engorged tick found attached to scalp 5 days before onset.

Gross Pathology

Skin.—The eruption was much less distinct than during life, indistinctly macular or mottled in character, bluish in color; distinctly

petechial in case 4. The rash was most distinct on the chest and abdomen in two cases and on the extremities in one case.

In the western type of spotted fever there have been generally noted hypostatic lividity and more or less numerous petechiae and extravasations (Wilson and Chowning (1), (2), Anderson (3), (4), Stiles (5), Ashburn (6). Purplish and red and white mottling of the arms and legs was recorded by Wilson and Chowning. Anderson (3) described marked diffuse icterus in his one detailed report (case 120) and noted less marked jaundice in his summary based on seven autopsies (presumably Wilson and Chowning's material). Icterus was also noted constantly by Ricketts. Scrotal sloughing or hemorrhage and necrosis were reported in Anderson's case 120 and by Wolbach (9), and were noted clinically by Ricketts (7) as occurring in Idaho cases, but were absent in Pinkerton and Maxcy's (10) case and in the writer's three autopsies on male subjects.

Body musculature.—Noted as pale red in two cases, dry in one case, and moist in the other. Stiles (5) and Ashburn (6) reported the muscles as normal.

Serous membranes—Peritoneum.—Not remarkable, except in case 2, in which appendectomy was performed six days before death and there was much clear dark brownish fluid with some fibrin over the lower ileum and reddening of the caecum. *Pleurae.*—In case 2 similar exudate to that in the peritoneum was seen on the right side. In case 3 there was total fibrous adhesion on the left; otherwise the pleurae were not remarkable. *Pericardium.*—Epicardial thickening and opacity along the vessels was recorded in case 2 (a boy of nine years), otherwise no significant changes were seen.

Wilson and Chowning (1) noted an increase in pericardial fluid in two of their six autopsies and a similar increase was found by Ashburn (6) and Stiles (5) in their case. The latter authors also reported an excess of clear yellowish peritoneal fluid. The pleurae and pericardium were normal in Anderson's (3) case 120, and the pericardial, pleural, and peritoneal cavities were essentially negative in Pinkerton and Maxcy's (10) case.

Heart.—The heart was very soft and flabby in two cases, somewhat dilated in one, and thickened and firm in case 4 (generalized and coronary arteriosclerosis). The muscle was moist and more or less congested. The valves were normal.

Wilson and Chowning (1) found the heart muscle softened in five cases, pale in one case, the organ dilated in one, and noted epicardial hemorrhages in three of their six cases. The heart of Anderson's (3) case 120 was contracted, the myocardium rather pale and flabby. The heart muscle was normal in Ashburn (6) and Stiles' (5) case. In Wolbach's (9) three autopsies the heart was normal in size, contracted and firm, with yellowish foci in the myocardium in one case. The heart was essentially negative in Pinkerton and Maxcy's (10) case.

Lungs.—Generally more or less congested and edematous, exuding pinkish frothy fluid from the bronchi. In cases 1 and 4 poorly defined areas of soft consolidation were found in the left lower lobe. Slightly or moderately enlarged anthracotic lymph nodes were seen in the hilus region; in case 2 some of these were caseous.

The lungs of Wilson and Chowning's (1) four cases showed only hypostatic congestion, while in Anderson's (3) case 120 there were only a few points resembling emboli. Stiles (5) and Ashburn (6) found marked congestion and edema with hypostatic pneumonia in the lower lobes posteriorly, and in one of his six cases Ricketts (Le Count (8)) found a lobular pneumonia. Wolbach (9) described a broncho-pneumonia in his case 5, and Pinkerton and Maxcy (10) also noted a dark red consolidation in the lower lobe of the right lung in their case.

The bronchial lymph glands were enlarged and black in Ashburn (6) and Stiles' (5) case.

Liver.—Moderate fatty infiltration in case one, firm, cloudy and opaque on section in cases two and three, rather soft in case four, not notably enlarged in any.

In spotted fever in the Rocky Mountain area slight enlargement was described by Wilson and Chowning (1) (2), moderate enlargement by Ashburn (6) and Stiles (5) and by Ricketts (7), and marked enlargement (92.5 oz., or 2,622 gm.) by Anderson (1). Pallor and more or less fatty infiltration have appeared in Wilson and Chowning's, Anderson's, Ashburn and Stiles'; and some of Ricketts' cases. In Wolbach's (9) three autopsies and in Pinkerton and Maxcy's (10) case of the eastern type of spotted fever the liver was normal. No softening or focal lesions were noted in any of these reports.

Spleen.—Slightly to moderately enlarged (11 by 8 by 3 cm. in case 1, 150 gm. in case 2 (9-year-old boy), 335 gm. in case 3, 280 gm. in case 4), firm and dark bluish red in cases 1 and 2, very soft in cases 3 and 4, grayish pink in case 3, purplish red in case 4. Malpighian corpuscles were inconspicuous. That the enlargement was not attributable to the coincidence of grossly demonstrable pneumonia is shown by the relatively greater splenomegaly in cases 2 and 3 in which pulmonary consolidation was not grossly evident.

In the western type of spotted fever Buckley in 1897 (Wilson and Chowning (1)) found the "spleen largely increased in size." Wilson and Chowning's six cases, Anderson's (3) case and Stiles' (5) and Ashburn's (6) case showed enlargement to between 250 and 700 gm., the color was dark red or purple, and the organ was regularly soft and diffluent. Ricketts (7) found an enlargement to two or three times normal size, Wolbach (9) to two to five times. The spleen was firm in Ricketts' and two of Wolbach's cases, soft, diffluent and ruptured in the third. Ricketts said the spleen appeared as if very cellular in structure and noted multiple foci resembling infarctions in one case.

In Pinkerton and Maxcy's (10) case of the eastern type of spotted fever the spleen was essentially negative.

Kidneys.—In cases two and three the cortex was pale and opaque, in case four the surface was granular, the cortex narrow and the arteries thickened.

In the western type of spotted fever capsular ecchymoses were reported regularly by Wilson and Chowning (1) and by Anderson (3), and pelvic hemorrhage by Anderson. Slight to moderate cortical congestion was noted by Wilson and Chowning and by Anderson. Stiles (5) and Ashburn (6) noted capsular adhesion, and the cortex was normal in one kidney, pale and swollen in the other. Swollen degenerated kidneys were noted by Ricketts, while in Wolbach's (9) three autopsies the kidneys were normal in size, the cortex was rather narrow (6–7 mm.) in two, and pale in one. Acute lesions were absent in the kidneys of Pinkerton and Maxcy's (10) case of the eastern type of spotted fever.

Adrenals.—Thin bright yellow cortex in cases 3 and 4, pale in case 2, normal in case 1. The two adrenals were respectively normal and congested in Stiles (5) and Ashburn's (6) case.

Gastrointestinal tract.—Dull serosa and injected mucosa, but no other lesions in case 2 (the appendix was not preserved); few punctate hemorrhages in mucosa in case 1; no evident abnormalities in cases 3 and 4.

The gastrointestinal tract was normal in Wilson and Chowning's (1) six cases, as it was in Anderson's (3) case 120, while Ashburn (6) and Stiles (5) noted slight swelling of the solitary follicles and Peyer's patches, and injection of the colon.

Mesenteric lymph nodes.—Enlarged and grayish pink in case 2, slightly enlarged and one calcified in case 1, not enlarged in cases 3 and 4.

Small pale retroperitoneal and mesenteric lymph glands were noted by Anderson (3), while Ricketts (7) described uniformly enlarged, moderately congested lymph nodes.

Prostate and bladder.—Normal in two cases. The bladder was normal also in Wilson and Chowning's (1) six cases and in Anderson's (3) case.

Ovaries.—Fibrotic and atrophied in case 3; adhesions and cyst about tubes; some white subserous nodules on right cornu of uterus. No specific lesions were noted in Stiles' (5) and Ashburn's (6) puerperal case.

Testes.—In the two adults (cases 1 and 4) rather soft, but without evident abnormality; in case 2 normal; in case 5 (boy of 7) there was radial hemorrhagic streaking on the cut surface.

Marked injection of the tunica vaginalis and epididymis was noted by Wolbach (9) in two of his three autopsies. The testes also showed

some injection. Interstitial hemorrhages were seen in one epididymis in one case. The testes were essentially negative in Pinkerton and Maxcy's (10) case of spotted fever of the eastern type.

Bone marrow.—Fatty and congested in the shaft of the femur in cases 1 and 2, dark red and moist in ribs, vertebrae, or sternum in all.

Brain.—The pia mater showed slight, moderate, and rather marked injection of vessels, in cases 1, 2, and 3, respectively, with some areas of gelatinous edema in the last, and scattered small opaque areas in the first. Case 4 presented marked arteriosclerosis of the great vessels at the base and in the small meningeal vessels, with moderate cortical atrophy. The brains were hardened whole in formalin before sectioning. No evident gross lesions were discerned in any of the five cases.

Generally no gross lesions of the brain have been reported in spotted fever in the Rocky Mountain area, (Wilson and Chowning (1), 2 cases; Anderson (3), general summary, no specific cases; Stiles (5) and Ashburn (6), 1 case; Ricketts (7), 6 (?) cases; Wolbach (9), 1 case). Stiles and Ashburn noted meningeal injection, Ricketts slight meningeal congestion and edema; Wolbach marked pial injection and considerable excess of clear fluid in the pia-arachnoid. In Pinkerton and Maxcy's (10) case of spotted fever (eastern type) the brain was markedly congested and rather soft and pink in color on section.

Technique

Material from the various organs was fixed in Orth's fluid and frozen and paraffin sections were prepared. The frozen sections were stained with alum hematoxylin and sudan IV for fats, the paraffin sections with Weigert's iron chloride hematoxylin and Van Gieson's picrofuchsin, alum hematoxylin and eosin, with French's tetrachrome Giemsa modification or eosin and polychrome methylene blue for rickettsiae and leucocyte granules, with Gram and with Weigert's fibrin method.

Blocks from 16 to 30 areas of the brain were impregnated for 48 hours in 2½ per cent potassium bichromate after formalin fixation, then dehydrated, cleared, and imbedded in paraffin. A few blocks were prepared by the Marchi method. The sections of the chromated material were stained with iron chloride hematoxylin and Van Gieson's (Freeborn) picrofuchsin for nerve tissues, toluidine blue for Nissl granules, and some by Weil's modification of the Weigert myelin stain.

Microscopic Pathology

Brain.—In all five cases the pia mater showed patches of edema and of cellular infiltration. The latter were often dense and perivascular and comprised chiefly small lymphocytes, or more or less diffuse, and were composed of large mononuclear cells of macrophage

type mingled in varying proportions with lymphocytes. Meningeal vessels mantled by lymphocytes occasionally showed hyaline thrombosis. (Fig. 1.)

In one case (case 5) the chorioid plexus of the lateral ventricle showed several foci of pericapillary lymphocyte infiltration. Some macrophages were present in some of the foci. Some of the included capillaries showed endothelial necrosis and hyaline or necrotic cellular thrombosis. (Fig. 2.) In another case (case 2) occasional capillaries showed swollen vacuolated endothelium; rarely others showed concentric endothelial proliferation, and there were focal areas of infiltration by numerous large vacuolated, occasionally phagocytic macrophages, lymphocytes, and few plasma cells and polymorphonuclears. Other nodules were composed of vacuolated stellate fibroblasts and round cells. Perivascular lymphocyte infiltration was seen about a single vessel in case 1 and about occasional vessels in case 3, while case 4 showed no lesions in the chorioid plexus.

Lesions were constantly present within the brain substance, in contrast to the negative findings of Wilson and Chowning (2), Le Count (8), and Wolbach (9) in spotted fever as seen in the Rocky Mountain area. In Wolbach's one case there were only three vascular lesions observed in the brain, consisting of intimal collections of mononuclears which were sometimes phagocytic, and polymorphonuclear leucocytes on the intimal surface and in the walls of two veins and one artery.

In our material, lesions were relatively scanty in the cerebral cortex and more numerous in the medulla, though never as numerous as reported in some cases of European typhus. As in typhus (Krinitzky (14), Wolbach (13)) lesions were found in the olivary nuclei and in the cerebellar cortex. In case 2 lesions were very scanty, and in none were they very numerous.

The brain lesions fall into three general classes: Those involving vessels and their sheaths, focal proliferative lesions in the brain substance, and focal necroses.

The vascular lesions present various pictures in the same case. Some vessels show only scanty to moderate lymphocyte infiltration in the perivascular sheath, between the vessel wall and the surrounding brain substance. (Figs. 3, 4.) Arterioles and venules often show more marked vessel sheath infiltration, here by lymphocytes and sometimes macrophages and plasma cells, and in some complete necrosis with karyorrhexis extending through the media and the adventitia. Other small vessels present endothelial swelling, necrosis, and thrombosis. Such thrombi are hyaline in character or may contain nuclear fragments, indicating a cellular origin. There are occasional pericapillary hemorrhages confined to the vessel sheaths. (Fig. 5.) Some small vessels show concentric proliferation and

occlusion either by the endothelial cells (fig. 6) or by central thrombi. Definite adventitial fibroblast proliferation is not often seen.

Proliferative reaction may be manifest only as an accumulation of medium sized, oval, leptochromatic glia nuclei in single rows along the sheaths of vessels which may be apparently normal (fig. 7) or may present endothelial proliferation or swelling and thrombosis. More often characteristic nodes are formed, often adjacent to vessels (figs. 8, 9, 10), often not apparently related to vessels. (Fig. 11.) These are compact and fairly well defined. They are composed of small, round, densely stained nuclei, without cytoplasm being evident by ordinary methods; others include also rod-shaped nuclei, other larger round cells with leptochromatic nuclei, and broader cytoplasm. The last cell type may sometimes fuse into apparently syncytial masses.

As focal necroses there are defined sharply circumscribed areas of rarefaction and vacuolation of brain substance. These are usually in the white matter and contain rounded and elongate masses of hyaline material stained red to pink by Van Gieson (Freeborn) and light yellow by the Weil-Weigert myelin technique. These hyaline masses, when elongate, lie parallel to each other and are two to three times the thickness of the near-by normal myelinated fibers. The formation of these hyaline masses seems to be an early phase in the evolution of these lesions. (Fig. 12.) The included nuclei of small glia cells are dense, small, and pyknotic, or may be entirely lacking. A somewhat later phase appears to be that in which large central vacuoles appear and coalesce (fig. 13), and in such lesions the hyaline fuchsinophil material may be lacking (fig. 14). These phases both lack any trace of marginal proliferative reaction. Thrombosed necrotic arterioles are often seen in the centers of such lesions (fig. 15), or may be found near their borders (fig. 13), or not evidently associated with focal necroses. The hyaline fuchsinophil masses are interpreted as coagulated necrotic myelinated fibers, and a few normal fibers may be seen traversing such lesions (myelin stains). A few such lesions are partly hemorrhagic. As a still later phase there are interpreted less frequent circumscribed areas of coarse vacuolation of ground substance without marginal hyaline masses and with marginal accumulation of loosely packed large amoeboid, stellate, and rod glia cells with oval leptochromatic nuclei.

Such focal necroses were found in all but case 2 and occurred chiefly in the white substance in the brain stem, in the internal capsules, and in the corpus callosum. The number found in the routine examination of 18 to 20 blocks of brain tissue varied from none in case 2 to 14 in case 5.

From the frequent presence in or in relation to these lesions of thrombosed vessels of precapillary or arteriolar size, it seems probable that

the necroses are infarctive in nature and dependent on the vascular injury.

No especial search for rickettsiae was made in this material, though clumps of minute basophilic rod-shaped inclusions were occasionally found in swollen endothelial cells of thrombosed capillaries.

The brain lesions just described are strikingly similar to those described in Pinkerton and Maxcy's (10) case, all the above varieties of lesions being identifiable in their description or figures.

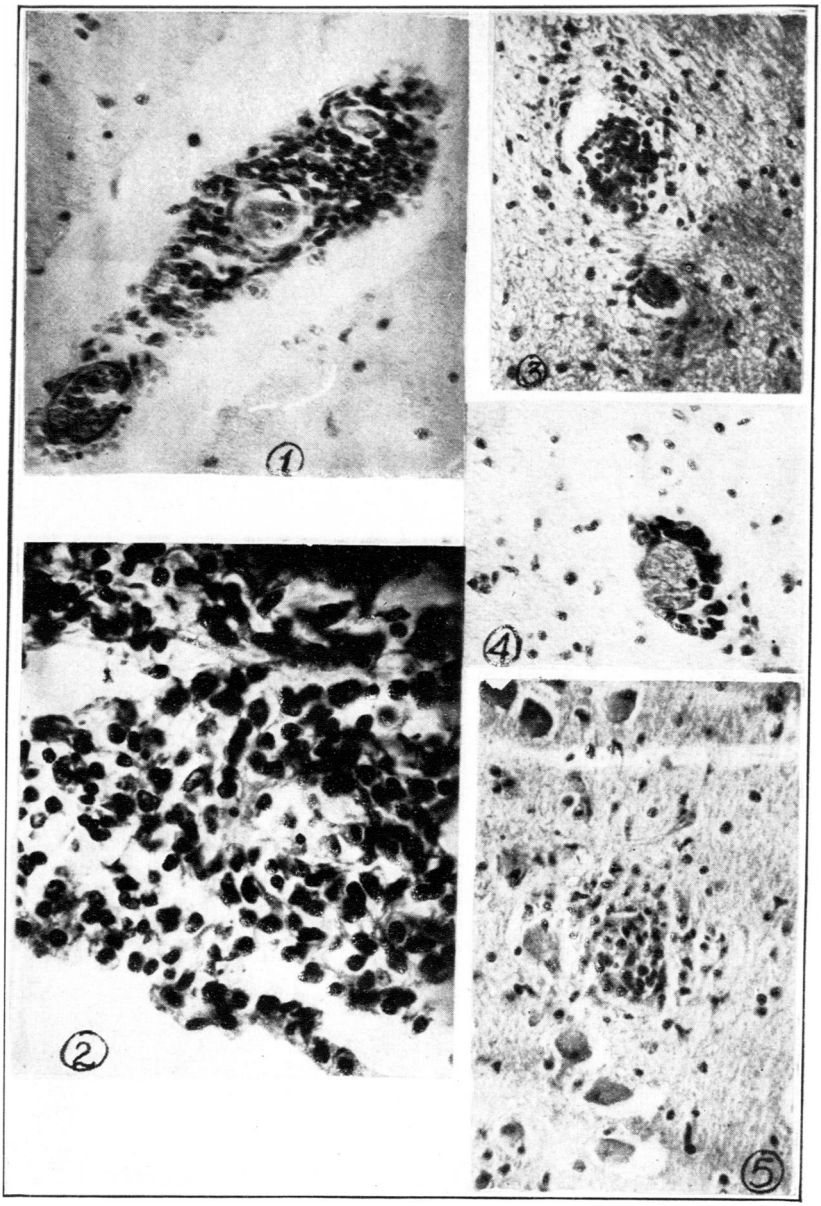
The lesions here reported in spotted fever bear a striking resemblance to those reported in European typhus, in so far as meningeal, proliferative, and vascular lesions are concerned. Such lesions as the focal necroses described by Pinkerton and Maxcy (10) and by the writer, do not appear to have been described in European typhus (Grzywo-Dabrowsky (12); Ceelen (11); Wolbach, Todd, and Palfrey (13); Krinitzky (14)) and may well constitute a differential diagnostic point when present.

Similar nodal and vascular lesions in the chorioid plexus have been noted as almost constantly present in European typhus by Ceelen (11), but were not found in any case by Wolbach, Todd and Palfrey (13).

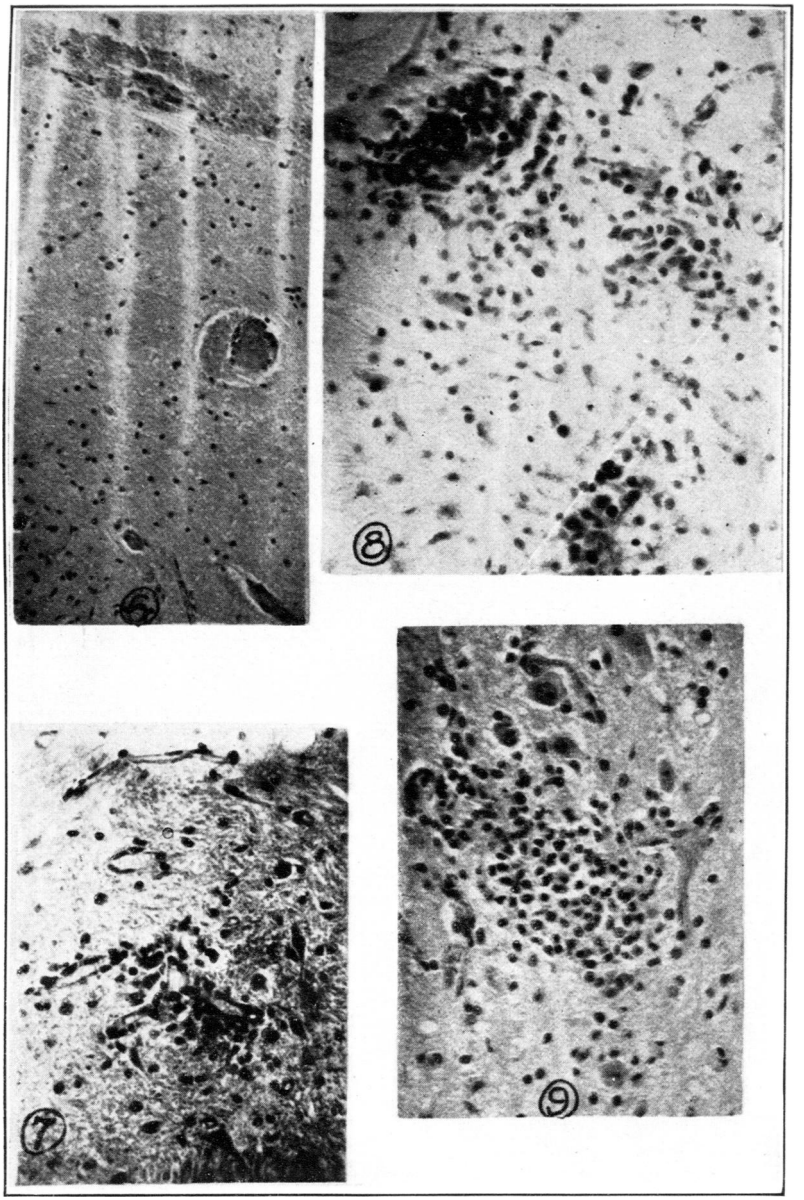
In guinea pigs inoculated with the virus of the eastern type of spotted fever the writer has demonstrated (Badger, Dyer, and Rumreich (15)) focal glioses and various vascular lesions in the brain, and similar lesions have been found late in the course of the disease in some guinea pigs inoculated with a spotted fever virus obtained from Hamilton, Mont. (unpublished data).

Heart.—Areas of transverse fragmentation of muscle fibers of greater or less extent were present in cases 1, 3, and 4, most marked in cases 1 and 3, in which the muscle was quite soft grossly. Focal areas of marked fatty degeneration showing many small fat droplets within the muscle fibers, and sharply limited peripherally, were seen in cases 1 and 5. (Fig. 16.) Focal areas of muscle fiber oxyphilia, hyalinization, and karyolysis or karyorrhexis, grading into coagulative necrosis, were observed in cases 3 and 5.

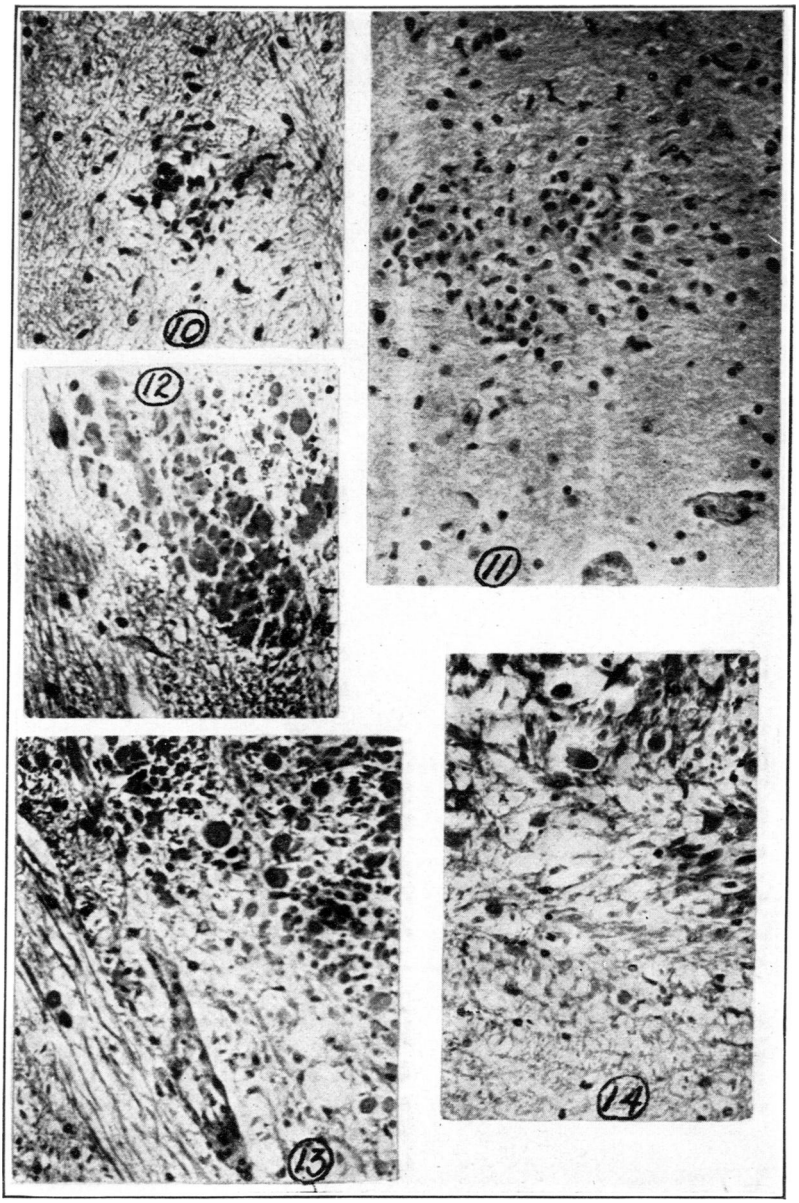
Vascular endothelial swelling, proliferation to several layers, and necrosis, with or without occlusion by masses of granular oxyphil material sometimes containing nuclear fragments were seen in all cases. Such vessels were usually of capillary or precapillary size, and these and other otherwise apparently uninjured vessels were often surrounded by adventitial cellular infiltrations comprising chiefly lymphocytes, and, to a less extent, plasma cells, macrophages, mast cells, and eosinophils. Similar, often dense, focal cellular infiltrations were seen not obviously associated with vessels. (Figs. 17, 18, 19.) Rickettsiae were not identified in the vascular lesions. Larger veins and muscular arteries were not involved except for lesions clearly assignable to atherosclerosis in cases 1 and 4. Cellular exudation of



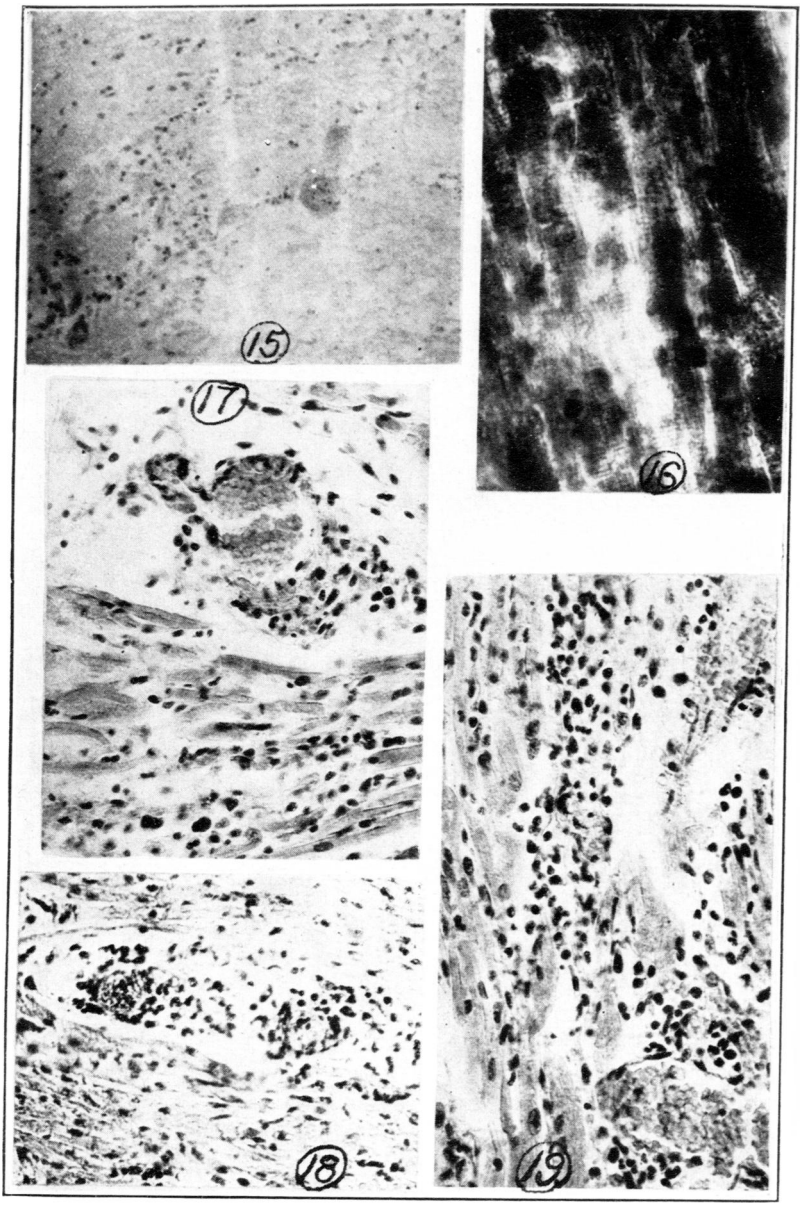
(1) Case 3: Hyaline thrombosis and perivascular infiltration, cerebellar pia, × 300. (2) Case 5: Vascular endothelial swelling, perivascular lymphoid infiltration, choroid plexus of lateral ventricle, × 200. (3) Case 5: Perivascular lymphocyte infiltration, olive, × 200. (4) Case 3: Perivascular lymphocyte infiltration, medulla, × 300. (5) Case 3: Proliferative obliterating endangeitis, olive, × 300. (All reduced approximately one-fourth)



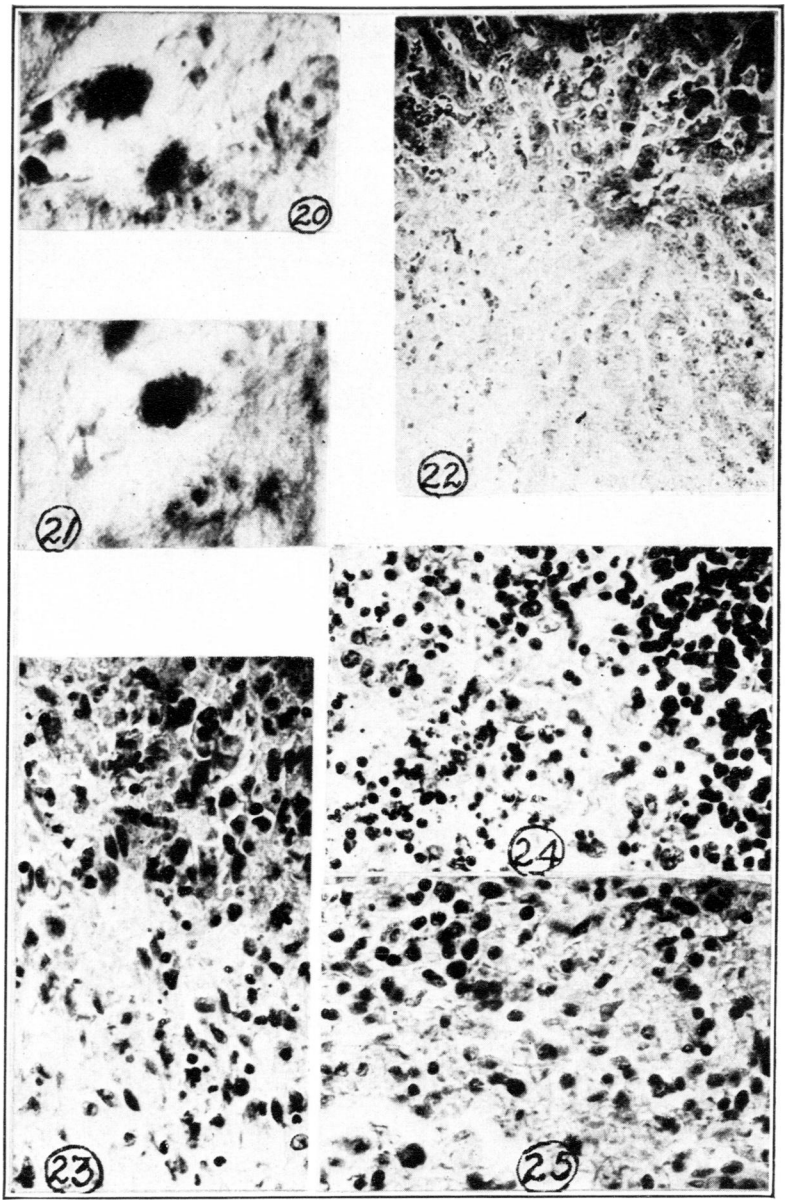
(6) Case 3: Perivascular hemorrhages, olive, × 300. (7) Case 5: Perivascular gliosis, floor or fourth ventricle, × 240. (8) Case 3: Focal glioses in medulla, × 300. (9) Case 3: Focal gliosis in pons, × 300. (All reduced approximately one-fourth)



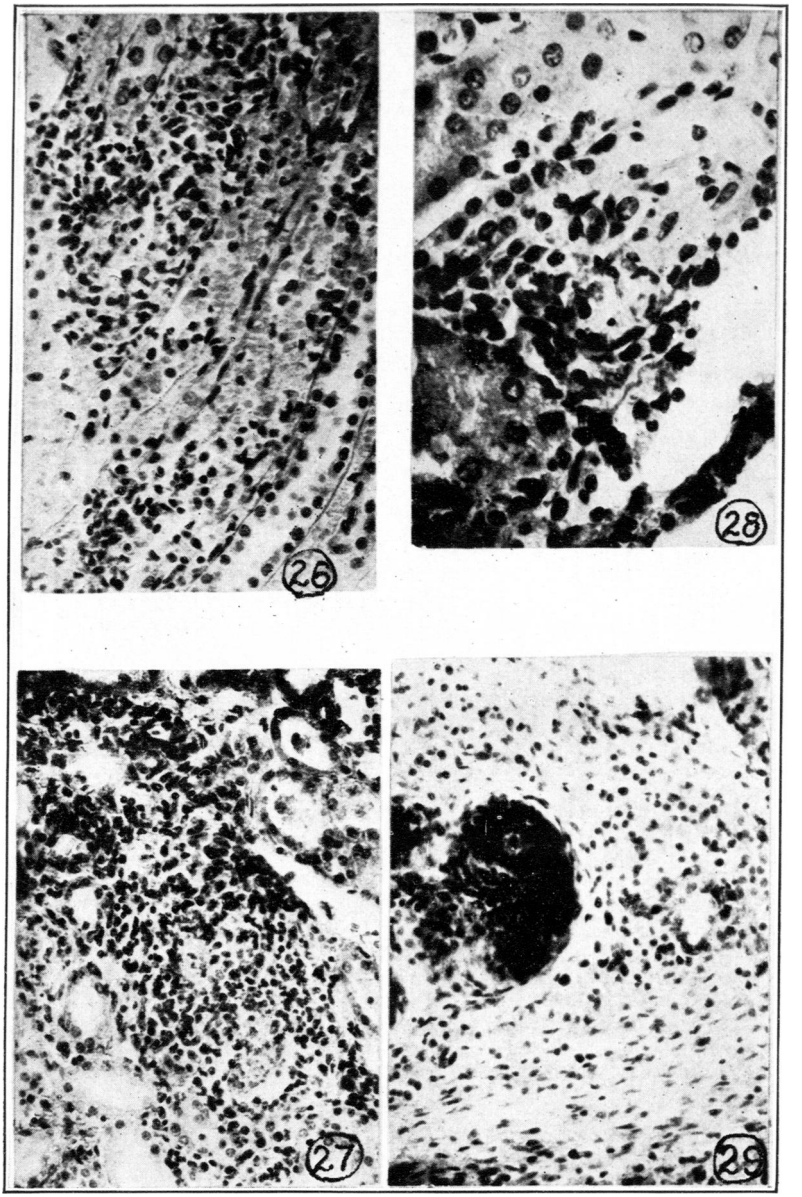
(10) Case 5: Perivascular gliosis, supraolivary zone, medulla, × 240. (11) Case 3: Focal glioses, hilus of olive, × 300. (12) Case 5: Focal necrosis, hyaline globules and masses, medulla, × 240. (13) Case 5: Focal necrosis, necrotic vessel, hyaline masses and rarefaction, medulla, × 240. (14) Case 5: Focal necrosis, more advanced rarefaction, medulla, × 240. (All reduced approximately one-fourth)



(15) Case 3: Focal necrosis, central necrotic arteriole, corpus callosum, × 300. (16) Case 5: Heart muscle, focal fatty degeneration (Sudan IV), × 495. (17) Case 3: Heart, vascular lesion, muscle necrosis, × 300. (18) Case 5: Heart, thrombosed vessels, perivascular lymphocyte infiltration, × 240. (19) Case 3: Heart, interstitial and perivascular infiltration, × 300. (All reduced approximately one-fourth)



(20) Case 5: Liver, Rickettsiae (?) in Kupffer cell, × 1,430. (21) Case 5: Liver, Rickettsiae (?) in Kupffer cell, × 1,430. (22) Case 5: Liver, margin of focal necrosis, × 240. (23) Case 5: Spleen, hyaline thrombosis in pulp, × 495. (24) Case 5: Spleen, follicular reticulum cell proliferation and necrosis, × 495. (25) Case 5: Spleen, lymphoid infiltration in pulp, × 495. (All reduced approximately one-fourth)



(26) Case 3: Kidney, congestion and lymphocyte infiltration in pyramid, × 300. (27) Case 5: Kidney, vascular thrombus and lymphocyte infiltration, × 240. (28) Case 5: Kidney, capillary thrombosis, perivascular infiltration, × 495. (29) Case 5: Testis, perivascular lymphocyte infiltration and hemorrhage, × 240. (All reduced approximately one-fourth)

similar character to that in the myocardium, accompanied by serous exudation, occurred in the epicardium in case 2, and here there was an occasional cell filled with minute, basophilic, sometimes paired, coccoid and occasionally bacillary cytoplasmic inclusions.

Wilson and Chowning (2) reported parenchymatous degeneraton, capillary distension with little extravasation, considerable round-cell infiltration, and, where the last was marked, "swelling of the muscle fiber nuclei and fragmentation." Anderson (3) found poor nuclear staining and granular, fragmented muscle fibers. Vascular and cellular infiltrative changes were comparatively slight in Le Count's (8) material, only leucocytic thrombi and small subendocardial hemorrhages being described. Wolbach's (9) case 3 showed focal areas of fine droplet fat deposition in the muscle fibers like that seen in two of our cases. Occasional mural endocardial thrombi were seen in his case 2 and beneath these and in his cases 3 and 5, about capillaries or interstitially, were foci of infiltration by macrophages, which were sometimes phagocytic, and fewer polymorphonuclears, lymphoid, and plasma cells. The epicardium of his cases 2 and 5 showed patchy infiltration of the same cellular type. In Pinkerton and Maxcy's (10) case the picture was identical with that seen in some of ours. Focal areas of fatty degeneration or of coagulative necrosis were not observed.

In typhus also vascular lesions have been reported (Ceelen (11), Wolbach (13)), perivascular cellular infiltration is noted (Nicol (13), Ceelen, Grzywo-Dabrowski (12), Wolbach (13)), areas of diffuse macrophage, lymphoid, and plasma cell infiltration are seen (Gruber (11), Grzywo-Dabrowski, Wolbach (13); the specificity of these is questioned by Ceelen) and foci of necrosis with polymorphonuclear invasion are noted (Wolbach (13)).

Great vessels.—Normal in two cases; in two there were in the adventitia, respectively, small, and extensive perivascular lymphocyte accumulations about the vasa vasorum, with, in the latter, some endothelial necrosis and perivascular hemorrhage. As the latter of these (case 2) was a boy of 9 years of age without other stigmata of syphilis, these lesions are probably assignable to spotted fever.

In Wolbach's (9) three cases the aorta showed no acute lesions either in the intima or in the vasa vasorum. Similarly negative findings were reported by Pinkerton and Maxcy (10).

In typhus, Grzywo-Dabrowski (12) and Ceelen (11) have noted respectively proliferative perivascular and endothelial lesions about the vasa vasorum of the aorta, and small perivascular nodules like those in syphilis but smaller in the adventitia and media. Wolbach (13) found slight perivascular infiltration in 3 of 34 cases and he and Nicol (13) found no lesions reminiscent of syphilis.

Lungs.—Generally there was more or less marked congestion with patches of alveolar hemorrhage and of serous exudate. In four of the five cases there were foci of polymorphonuclear exudation into the alveoli, varying from scattered small groups of alveoli in cases 1 and 3 to definite nodular consolidation in cases 4 and 5. The exudate included polymorphonuclear leucocytes, red corpuscles and, more often marginally, vacuolated karyolytic large round cells. Fibrin was scanty and finely fibrillar in cases 4 and 5, absent in cases 1 and 3. Gram positive cocci were present in the pneumonic areas, chiefly in pairs, and in case 5 there were very numerous small Gram negative bacilli. Pus-filled bronchioles were present in cases 3, 4, and 5. Perivascular and septal lymphocyte infiltration of very moderate grade was seen in cases 1, 2, and 4.

Capillary congestion and swelling was regularly present in Wilson and Chowning's (2) material. One case showed "considerable broncho-pneumonia." Le Count (8) noted occlusion of capillaries by leucocytes, but "no serious consequences resulted." The diffuse septal filling by phagocytic large mononuclear cells which was so prominent in Wolbach's (9) cases was absent in ours and does not appear to have been present in Ricketts and Le Count's (8) material. The pneumonia seen in Wolbach's (9) case 5 seems to have been very similar to that occurring in our cases, in that in it, too, the exudate was fibrin free, polymorphonuclear and alveolar epithelial in character. The broncho-pneumonia in Pinkerton and Maxcy's (10) case seems also to have been similar to that in our cases.

The frequency of broncho-pneumonic involvement in the eastern type of spotted fever is interesting, as is the uniformity of its type, though this lesion is probably a secondary complication. Broncho-pneumonia has also been a frequent finding in European typhus (Ceelen (11), Wolbach (13)).

Trachea and large bronchi.—Congestion of mucosa in one case, lymphocyte infiltration in another, normal in a third.

Tracheobronchitis is notoriously frequent in typhus (Ceelen (11)).

Thyroid.—Normal in the two cases studied.

Endothelial swelling and mural and occlusive thrombi with mural polymorphonuclear infiltration and perivascular polymorphonuclear and macrophage infiltration were noted in the small thyroid vessels of one of Wolbach's (9) two cases. Rickettsiae were numerous in swollen endothelia and in smooth muscle cells.

Wolbach (13) saw a thrombosed artery in 1 of 34 thyroids studied in European typhus; Grzywo-Dabrowski (12) found no lesions.

Thymus.—In case 2 the cortex was somewhat rarefied, but no focal lesions were noted.

Oesophagus.—Sections from the thyroid level were examined in cases 1 and 2. In both, perivascular lymphocyte infiltration was

seen in the mucosa; and in case 2, lymphocytes, plasma cells, and a few mast cells were seen among the mucous glands.

Liver.—The grade and character of the hepatic lesions were quite variable, cases 1 and 3 showing no significant lesions, cases 2 and 4 scattered clumps of lymphocytes in the parenchyma, with, in case 2, scattered minute hyaline thrombi and scattered swollen Kupffer cells with ingested red corpuscles and nuclear débris. Case 1 had a partly thrombosed cavernous hemangioma, the thrombosis being partly organized, partly recent and hyaline. In case 5 the lesions were so marked and of such interest as to merit a separate description. In this case there were numerous foci of centrolobular coagulative necrosis, sometimes confluent and partly surrounding the periportal areas. In these foci the cells were of about normal size, strongly oxyphil, and more or less karyolytic. In the surviving periportal zones the liver cells generally contained more or less fat in small globules. Kupffer cells both in necrotic foci and elsewhere were often swollen, sometimes phagocytic and sometimes contained minute rod-shaped cytoplasmic inclusions which stained clear blue with eosin and polychrome methylene blue, rarely showed polar granules, and measured 0.2 to 0.25 micron in width and 1.5 to 2 micra in length. (Figs. 20, 21.) Capillaries were moderately blood filled, sometimes occluded by hyaline thrombi in the focal necroses and less often elsewhere. (Fig. 22.)

Arterioles in the portal connective tissues rarely showed foci of mural necrosis and thrombosis.

Congestion, intracapillary leucocytosis, and parenchymatous and fatty degeneration were noted by Wilson and Chowning (2). Considerable blood pigment was present in some cases. Anderson (3) reported advanced fatty infiltration and full bile capillaries. Le Count (8) noted parenchymatous degeneration and in some cases evidence of biliary obstruction due to regressive changes in the liver cells. Occluded vessels with resultant necroses were also noted, but not specifically for man. In Wolbach's (9) four cases only a few scattered minute focal necroses were seen. Phagocytic macrophages and Kupffer cells were evidently more prominent than in our material, while the thromboses seen in two of our cases and in Le Count's material were absent. Periportal mononuclear cell accumulation and slight Kupffer cell "proliferation" were reported in Pinkerton and Maxcy's (10) case.

Kupffer cell swelling and phagocytic activity are seen also in typhus (Aschoff (11), Schmirke (11), Wolbach (13)). Nodules of lymphoid or other cells have been noted by Grzywo-Dabrowski (12), Fraenkel (11), Ceelen (11), and Wolbach (13). Thrombi in the capillaries and scattered necrotic cells were seen by Wolbach (13), while von Prowazek (11) observed centrolobular necroses.

Pancreas.—In two cases no lesions were present; in case 2 there was more or less interstitial hemorrhage, edema, lymphocyte, plasma cell, eosinophil, and neutrophil leucocyte infiltration with clumped and paired cocci in the infiltrated areas.

Wolbach's (9) three cases and Pinkerton and Maxcy's (10) case also showed no lesions in the pancreas. Significant lesions are usually absent in typhus; Wolbach (13) noted interstitial polymorphonuclear infiltration in two cases.

Spleen.—The splenic corpuscles were small and hypoplastic, showing central reticulum cell proliferation with much ingestion of nuclear débris only in one case. The pulp was regularly congested and to a quite variable degree infiltrated by more or less clumped lymphocytes and fewer large lymphoid and plasma cells, sometimes also polymorphonuclear and eosinophil leucocytes. In case 2 a few small areas, in case 5 more numerous foci of hyaline thrombosis were seen in the sinus and pulp spaces. More or less karyorrhexis was noted in the thrombosed areas. Areas of reticulum cell swelling were noted in the pulp in two cases, and pulp and follicular arteriolar endothelial swelling and proliferation in case 5, sometimes with thrombosis and endothelial necrosis. Occasional megakaryocytes were present in case 2. (See Figs. 23, 24, 25.)

Engorgement of the pulp by red cells and leucocytes was noted by Wilson and Chowning (2) with polymorphonuclear leucocyte infiltration of the splenic corpuscles and much free and phagocytosed blood pigment. The nature of the "pyroplasmata" described by them as numerous is not clear, but they may represent nuclear débris which has been plentiful in our cases. Besides diffuse hyperplasia Le Count (8) described focal clumping of polymorphonuclear leucocytes in the splenic pulp sinuses grading into minute focal necroses in both man and monkeys. These foci appear comparable to the foci of hyaline thrombosis and necrosis seen in some of our cases, though polymorphonuclear leucocytes participated to a less extent in our material. Le Count also found, as in our material, occasional cells resembling megakaryocytes. The large numbers of phagocytic macrophages in, and the intense engorgement of, the splenic pulp without thromboses or necroses described in Wolbach's (9) four cases contrast with the findings in Le Count's and our cases. This difference may possibly be due to the shorter course of most of Wolbach's cases as compared with ours. The duration of Ricketts and Le Count's six cases has not been reported. Thrombosis was not reported by Pinkerton and Maxcy (10), the spleen pulp showing only moderate congestion, "a predominance of mononuclear cells," some increased prominence of the reticulum cells, occasional small clumps of large mononuclear cells suggesting nodes, and patches of apparent occlusion of venous sinuses by endothelial proliferation.

Hyperaemia, phagocytosis of red cells, plasma cell infiltration of the pulp, hemorrhages, inflammatory changes in the Malpighian corpuscles, and rarely mural thrombi in sinusoids have been observed in typhus (Ceelen (11), Wolbach (13)), but necroses do not appear to have been observed, in contrast with spotted fever.

Lymph glands.—Peribronchial lymph glands were examined in cases 1 and 2, and mesenteric glands in case 2. One gland only in case 1 showed marginal sinus endothelial swelling. In case 2 both groups of glands were swollen and edematous, their sinus endothelia often swollen, and their sinuses contained numerous macrophages as well as red corpuscles in variable numbers. The macrophages were often vacuolated, sometimes fat laden, often phagocytic, and, in the mesenteric nodes, often in the process of coagulative necrosis. Some of the blood vessels in the mesenteric nodes contained hyaline or necrotic cellular thrombi. (This case showed a peritoneal reaction, *q. v.*).

Le Count (8) noted a hyperplasia in the lymph glands, and described in guinea pigs crowding of the sinuses by large phagocytic cells. Similar sinus endothelial swelling and packing of the sinuses of the lymph glands was observed by Wolbach (9), also occasionally showing phagocyte necrosis as in our case 2, but less marked. Polymorphonuclear leucocytes were also present in the sinuses in his cases, while blood vascular lesions were absent.

Crowding of lymph gland sinuses by macrophages and vascular thrombi were observed in the inguinal nodes in typhus cases, but not in the mesenteric glands by Wolbach, Todd, and Palfrey (13).

Bone marrow.—Marrow was obtained from the ribs, sternum, or vertebrae in cases 1, 2, and 4. Polymorphonuclear neutrophil leucocytes appeared increased in case 1, and a few capillaries in case 2 showed endothelial swelling and degeneration, rarely with thrombosis.

Le Count (8) found no focal lesions in the marrow of experimental animals, but examined no human material.

In typhus, increased myelopoietic activity in the femoral marrow was observed by Wolbach, Todd, and Palfrey (13); Grzywo-Dabrowski (12) reported perivascular nodes of plasma cells; while von Prowazek (11) reported degeneration and karyorrhexis of polynuclears and sometimes megakaryocytes. Vascular thrombosis was seen in one case by Wolbach (13).

Adrenals.—Small foci of lymphocyte infiltration, chiefly in the medulla, were seen in four of five cases. Vascular endothelial swelling and karyorrhexis were noted only in case 5, and there rarely. Cortical lipoid was decreased in cases 1, 2, and 5, and increased in case 4.

The vascular occlusions and focal necroses noted by Le Count (8) were not found in our material. On the other hand, Le Count did

not note the small medullary foci of lymphocyte infiltration seen in our material and in Wolbach's case 3. Wolbach (9) noted a similar, though irregular, decrease in lipoid in his cases 2 and 3, with foci of cortical necrosis and leucocyte invasion and patches of medullary lymphocyte and plasma cell infiltration in the latter. Vascular lesions were absent in all three cases.

Foci of cortical cell destruction and macrophage, lymphocyte, and plasma cell infiltration were noted in typhus by Grzywo-Dabrowski (12) and Wolbach, Todd, and Palfrey (13).

Kidneys.—There was moderate swelling and granular degeneration, slight, irregular fatty degeneration, and slight intratubular exudate in the convoluted tubules. Other acute lesions were absent in case 1, while the remaining four cases showed more or less numerous foci of dense, often perivascular, lymphocyte infiltration, some of which contained centrally small vessels with swollen or proliferating endothelia, in some with fatty degeneration, karyorrhexis, and central hyaline or necrotic cellular thrombi. Endothelial necrosis and thrombosis and pericapillary hemorrhages were present in two of the five cases. There was a moderately advanced arteriosclerotic nephritis in case 4. (Figs. 26, 27, 28.)

Anderson (3) reported minute hemorrhages in the cortex and beneath the capsule, and granular convoluted tubules with poor nuclear staining, containing casts and showing some desquamation. Wilson and Chowning (2) found congestion, cortical hemorrhages, many phagocytes and general acute parenchymatous degeneration. Le Count (8) noted vascular occlusions and necroses in the kidney, but did not describe the cellular infiltrations which were so prominent in our material. In Wolbach's (9) material there were some large mononuclear cell accumulation in the glomerular loops, and in one case some albuminous intratubular exudation, with slight fatty changes in the dilated convoluted tubules. Pinkerton and Maxcy's (10) case showed no lesions.

Perivascular small celled infiltration has been very frequently seen in typhus (Grzywo-Dabrowski (12), Ceelen (11), Wolbach (13), and others (11)), and Wolbach has noted capillary thrombi in such nodes.

Testes.—Testicle was obtained in all four male patients. The two adults (cases 1 and 4) showed more or less marked tubular degeneration and desquamation, with, in case 4, scattered perivascular foci of infiltration by lymphocytes and a few macrophages. Much more marked changes were present in the two boys (cases 2 and 5). In these there were intertubular congestion and more or less numerous hemorrhages, a few vessels showing endothelial swelling and, in case 5, hyaline or necrotic cellular thrombi and perivascular lymphocyte infiltration (Fig. 29). Occasional patches of mesothelial swelling and proliferation in the tunica vaginalis visceralis were seen in case 2.

Epididymis.—There were a few foci of perivascular lymphocyte infiltration in case 4, and in case 2, congestion, edema, hemorrhages, moderate, diffuse and denser perivascular infiltration by lymphocytes, plasma cells, macrophages and a few polymorphonuclears, and swollen endothelial cells which rarely contained a few minute deeply basophil rod-shaped inclusions. No significant changes appeared in case 1.

Prostate.—The prostate was examined only in case 4 and showed the usual changes of senile hypertrophy and a few small foci of lymphocyte infiltration which may or may not be significant.

Perivascular cell accumulation and multiplication, associated apparently with evidence of granulopoietic activity, was noted by Le Count (8) in the testis and epididymis of experimentally infected monkeys. One small group of capillaries in the tunica albuginea showed involvement of typhus type in Pinkerton and Maxcy's (10) case.

Perivascular nodes, diffuse interstitial lymphoid cell infiltration, and vascular thrombi have been noted in typhus by Schmorl (11), Ceelen (11), Grzywo-Dabrowski (12), and Wolbach, Todd, and Palfrey (13); but hemorrhage does not appear in these reports.

Uterus, tubes, and ovaries.—These organs in case 3 showed no significant changes. Nor are lesions found in European typhus (Grzywo-Dabrowski (12), Wolbach, Todd and Palfrey (13)).

Gastrointestinal tract.—The gastrointestinal tract was examined in detail only in case 2, which showed grossly a serofibrinous peritonitis. The stomach showed some lymphocyte infiltration about the bases of the peptic glands. Sections from the ileum, cecum, and colon showed no significant changes in the mucous membrane. The serosa showed more or less marked edema, mesothelial swelling, necrosis and fibrin exudation, and cellular infiltration by plasma cells, lymphocytes, macrophages, polymorphonuclears, and eosinophils in decreasing proportions, extending deepest into the muscularis and submucosa over the cecum. Various Gram positive and negative bacilli and Gram positive diplococci were present in the peritoneal exudate. The appendix, which had been removed earlier in the disease, was not available for study.

The character of the cellular exudate and the fact that somewhat similar reactions occur in the tunica vaginalis testis of guinea pigs infected with endemic typhus suggest that this peritonitis may be specific in origin, but with the obvious secondary infection present this is uncertain. The gross demonstration of serous exudations in the body cavities already referred to in the western type of spotted fever lends a certain amount of support to this view.

Wolbach (9) found only a single vascular lesion in an artery in the wall of the stomach in his case 2 and several partly thrombosed small vessels in case 3.

In European typhus, vascular lesions are rarely found (Wolbach, Todd, and Palfrey (13), fairly often (Bauer (11), Lubarsch (11), Ceelen (11), and Grzywo-Dabrowski (12)).

Voluntary muscles.—Moderate, irregular fatty degeneration was seen in the rectus femoris of case 1, swelling and hyaline degeneration of scattered fibers, and a few foci of pericapillary lymphocyte infiltration in the rectus abdominis of case 3.

In the muscles Wolbach (9) also described scattered hyaline degenerate fibers and vascular lesions. The latter were more severe than in our case 3, showing thrombi, destruction of the internal elastic laminae of arteries, polymorphonuclear and macrophage infiltration of the media, and numerous rickettsiae in endothelial and smooth muscle cells.

In European typhus similar vascular lesions and less often diffuse interstitial infiltration by lymphoid and plasma cells and eosinophils, as well as Zenker's degeneration, have been reported (Ceelen (literature) (11), Wolbach, Todd, and Palfrey (13)).

Skin.—Sections from one to three areas were studied in cases 1, 2, 3, and 4. The most frequent finding was pericapillary cellular infiltration, chiefly by lymphocytes and a few mast cells. Fewer capillaries presented a concentric adventitial hyperplasia. Endothelial swelling and multiplication to several layers were observed in two of the four cases, endothelial necrosis with hyaline thrombosis, and pericapillary hemorrhages, respectively, in one case each. Cell inclusions resembling rickettsiae were found in the endothelia and walls of small vessels in three cases. Arteriolar endothelial proliferation and obliteration was recorded only in case 4.

Anderson (3) reported capillary congestion and minute extravasations "in the rete extending into the stratum mucosum." Wilson and Chowning (2) noted capillary congestion and leucocytosis, and perivascular hemorrhages. Le Count (8) described cellular and agglutinative erythrocytic thrombi, and necroses and hemorrhages in the skin. These changes were apparently more extensive and advanced than in our material. Le Count considered the vascular lesions in Rocky Mountain spotted fever as beginning by leucocyte, lymphocyte, and macrophage accumulation within the vessels, agglutinated red cells and fibrin contributing later to the thrombosis. Endothelial swelling, degeneration and necrosis, concentric proliferation, and prominent perivascular cellular infiltration were not generally present, or not specifically noted. Foci of infarctive necrosis about occluded vessels appear to have been more prominent in his material than in ours, and perivascular hemorrhage was more frequent. The gangrenous changes seen by him in animals, which are probably of the same nature as those seen clinically in spotted fever in Idaho (Ricketts 1909), were not seen in our human material,

but have been observed in the scrotum in experimentally infected rabbits (unpublished data).

In Wolbach's (9) five cases vascular thrombosis by fibrin and large mononuclear cells which were often phagocytic were much more frequent than in our cases; the thrombi appear to have been more recent, as well preserved cells appeared in them, while these were represented by granular débris and nuclear fragments in our material; the arterial and venous mural infiltration by fibrin, large mononuclears and polymorphonuclears reported by him did not appear in our material; and the perivascular cellular infiltration in our material comprised chiefly lymphocytes and mast cells, while in his lymphoid cells, plasma cells, macrophages, and occasional eosinophils were seen about the vessels. The formation of granulomata in degenerating fatty tissue reported by him was absent in our material, as were the degenerative changes in the sweat glands. The thrombosis of the larger cutaneous arteries and veins so prominent in Wolbach's material was not evident in ours. These differences seem to indicate lesions of longer duration and of less local severity in our cases of eastern spotted fever. It should be noted also that rickettsiae seem to have been much more numerous and mast cells less so in his material than in ours.

The similarity of the skin lesions of European typhus to those of Rocky Mountain spotted fever is well known (9, 10, 13) and need not be discussed in detail.

Hypophysis.—In the three hypophyses studied, the pars anterior showed no focal lesions. Chromophobe cells appeared to predominate, but chromophil cells were moderately numerous.

The pars nervosa was studied only in two cases, showing in case 2 congestion, pericapillary fibroblast proliferation, and less often lymphocyte and plasma cell infiltration of capillary sheaths, and in case 4 an extensive area of rarefaction with proliferation of large bipolar glia cells and infiltration by large amoeboid and fusiform granule cells containing hemosiderin and hemofuscin.

Pineal gland.—In the one case studied (4), there were occasional thrombosed capillaries and a few foci of pericapillary lymphocyte infiltration.

Similar selective localization of vascular lesions in the posterior lobe of the hypophysis was reported in European typhus by Wolbach, Todd, and Palfrey (13).

Summary and Discussion

An account of the gross and microscopic pathology of the eastern type of Rocky Mountain spotted fever based on the study of five autopsies is presented.

Certain differences between the eastern and western forms of the disease and European typhus may be noted. Broncho-pneumonia of

greater or less extent is more frequent in the eastern type (in 5 of the 6 reported cases, as compared with 3 of 17 cases in the western type of the disease). Pneumonias have often been seen in typhus. Fatty changes in the liver seem to have been more frequent in the western type of disease, and splenomegaly appears to have been greater in that form. Scrotal gangrene has not so far been noted in the eastern type in man. Ecchymoses in the serous membranes and renal capsules have not been noted in the eastern form. Meningeal congestion has been more frequently noted in the eastern disease, and focal brain lesions of vascular degenerative and proliferative and focal gliotic characters have been constantly present in the eastern form as contrasted with their almost complete absence in the western type. The eastern type of spotted fever has shown in the brain an arteriolar thrombonecrosis with surrounding infarction which has not been specifically described in European typhus. Further study of the brain in the western type of spotted fever would seem to be indicated.

Vascular and diffuse cellular exudative lesions and focal necroses in the heart muscle have been more often observed in the eastern type of spotted fever than in the western, and the necroses are apparently more frequent than in European typhus. That both the eastern type of spotted fever and typhus give rise to lesions of the vasa vasorum of the aorta seems to be indicated, while the few cases of the western type of spotted fever in which the aorta has been studied have not shown such changes.

Capillary and sinus thrombosis and focal necroses in the liver and spleen have been noted in both varieties of spotted fever and seem to be more frequent than in European typhus, while reticulum cell swelling occurs in both diseases, with phagocytosis of erythrocytes more prominent in typhus. The reticulum cell-macrophage reaction in lymph nodes appears to have been more prominent in spotted fever than in typhus, and in the eastern type of spotted fever may go on to necrosis as in typhoid fever. The adrenal changes have been slight but fairly similar in character in typhus and spotted fever.

The focal vascular and cellular exudative reaction observed in the kidneys in the eastern type of spotted fever has occurred more often than in the western type, and the endovascular proliferation, degeneration, and thrombosis seem more prominent than have been reported in European typhus. The occurrence of focal exudative, hemorrhagic, and vascular lesions in the juvenile testis in the eastern type of spotted fever contrasts with the absence of these lesions in the western variety, but the male cases reported in that type have nearly all been adults. Similar vascular and cellular exudative lesions, but not hemorrhages or vascular necroses, are reported in European typhus.

Cutaneous hemorrhage seems to have been more prominent in the western type of spotted fever than in the eastern, in accord probably with its more acutely fatal course, and thrombonecrotic vessel changes were also relatively less frequent in the eastern type. Changes seen in the typhus exanthem seem also to have been more acute and severe than in the eastern type of spotted fever, but the more frequent vascular necroses, with medial involvement of larger vessels, of the western type of spotted fever are, according to Wolbach, Todd, and Palfrey, less prominent or absent in typhus.

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DEATH RATES IN A GROUP OF INSURED PERSONS

Rates for Principal Causes of Death for Month of September and First Nine Months of 1931

The accompanying tables, taken from the Statistical Bulletin for October, 1931, issued by the Metropolitan Life Insurance Co., present the mortality record of the industrial insurance department of the company for the first nine months of 1931 (total and by white and colored policyholders) and for the month of September, 1931. The rates are based on a strength of approximately 19,000,000 insured persons in the United States and Canada. In recent years the general death rate in this more or less selected group of persons has averaged about 72 per cent of the rate for the registration area of the United States.

FIRST NINE MONTHS OF 1931

With regard to the mortality in this group for the first nine months of 1931 the Bulletin states:

There is a fair prospect that the year 1931 will record a lower death rate than ever before in the United States and Canada; the state of the public health in the last quarter of the year will determine. The mortality record for the policyholders of the company shows that at the end of the third quarter the cumulative death rate was only three-quarters of 1 per cent higher than the previous minimum for the like period of any year—established only last year. So slight an adverse margin may be easily overcome during the final quarter.

The 1931 health record to date is in many respects the most remarkable of all the years. It is almost unbelievable that the United States and Canada could experience such excellent health in a year of severe business depression and widespread unemployment. Again, the year's remarkable record has been made in spite of a bad beginning. In January there was widespread prevalence of influenza, and the death rate from that disease rose sharply. So also did the mortality from the principal chronic diseases, namely, heart conditions, diabetes, cerebral hemorrhage, and nephritis, as invariably happens during an influenza epidemic. Increased death rates as compared with 1930 were recorded during February and March, and at the end of the first quarter there appeared to be small prospect that 1931 would rank as an exceptionally good health year. Beginning with the second quarter, however, a distinct change for the better was observed. The April death rate, with two exceptions, was the lowest ever registered for that month; in May, a new minimum mortality rate for that month was recorded, and the second quarter established a new low figure for that part of the year. Excellent health conditions continued during the third quarter, especially among the colored policyholders. The cumulative death rate now stands less than 1 per cent higher than the previous minimum. Among the policyholders living west of the Rocky Mountains and in Canada, 1931 to date has been the best health year on record.

Tuberculosis.—Foremost among the favorable developments of 1931 is a further decline (of 7½ per cent) in the tuberculosis death rate to a new minimal figure. If this drop is still in evidence at the end of the year, there will be recorded the largest year-to-year decrease registered for this disease in 10 years. Such improve-

ment is all the more remarkable in a year when unfavorable economic conditions would lead us to expect a rise in the mortality from tuberculosis.

Diphtheria.—The drop in the diphtheria death rate to a new minimum of 3.9 per 100,000 is another outstanding public health fact of 1931. This represents a decline of 34 per cent in a single year in the mortality from this former leader among the scourges of childhood. The diphtheria death rate is now about two-fifths of that recorded only 5 years ago, one-sixth of the figure registered 10 years ago, and one-seventh of the rate in 1911. The fight against diphtheria has been definitely won.

Other diseases.—Unless there are unfavorable developments in the final quarter of 1931, new low death rates will also be recorded for typhoid fever, diarrheal complaints, and puerperal conditions. The typhoid fever death rate has been reduced to a point where it is a negligible item in our mortality statistics; the mortality from infantile diarrhea has dropped 80 per cent in about two decades.

The "degenerative" diseases.—A small increase is shown in the mortality from heart disease. If this is still in effect at the end of the year, a new high point in the death rate will be reached. The increase this year is due, in large part, to the high mortality among cardiacs during the influenza outbreak of last winter. There has been a slight rise in the mortality from cerebral hemorrhage and a small drop in that from chronic nephritis.

Pneumonia.—There has been no rise in the pneumonia death rate thus far in 1931. This is unusual in a year with high mortality from influenza.

SOME UNFAVORABLE ASPECTS

Influenza.—The diseases which show important increases in mortality during the January–September period are influenza, cancer, diabetes, and poliomyelitis. Since the abatement of last winter's epidemic, influenza has exhibited about the normal mortality.

Cancer.—The mortality record for cancer is the most unfavorable item to date in the health record of 1931. We know of no explanation for the marked rise in the cancer death rate. It is true that, over a long period of years, an upward trend has been observed in the mortality from cancer, but no such decided rise (6.4 per cent) has been observed in any one previous year.

Diabetes.—The mortality from diabetes has increased nearly 12 per cent as compared with the corresponding period of 1930. The death rate for this disease has increased continuously since 1924; but the change from one year to the next has been larger in 1931 than ever before experienced among the industrial policyholders.

Death rates [1] (annual basis) per 100,000 persons exposed, first nine months of 1929, 1930, and 1931, by white and colored policyholders

[Metropolitan Life Insurance Co., industrial department]

Cause of death	Death rates per 100,000 persons exposed [1]					
	White			Colored		
	January-September, 1931	January-September, 1930	January-September, 1929	January-September, 1931	January-September, 1930	January-September, 1929
All causes of death	815.8	800.2	859.6	1,500.8	1,560.7	1,608.0
Typhoid fever	1.5	1.6	1.9	4.8	5.1	4.8
Measles	4.0	3.7	3.9	2.0	2.5	1.5
Scarlet fever	3.6	3.0	3.0	1.6	.8	1.0
Whooping cough	3.7	4.7	5.7	3.3	5.3	10.7
Diphtheria	4.2	6.3	8.6	2.1	2.8	5.9
Influenza	20.1	12.6	44.1	55.3	39.1	92.8
Meningococcus meningitis	2.1	3.1	4.7	6.4	9.9	8.2
Tuberculosis (all forms)	58.9	64.3	70.1	214.8	227.2	225.5
Tuberculosis of respiratory system	52.1	55.7	61.8	188.9	197.6	200.2
Tuberculosis of the meninges, etc	2.9	3.9	3.7	6.1	6.9	5.6
Other forms of tuberculosis	3.9	4.8	4.5	19.8	22.8	19.7
Cancer	82.3	77.2	77.2	84.1	80.5	79.8
Diabetes	20.6	18.3	18.5	22.7	21.9	21.0
Alcoholism	2.7	2.8	3.0	3.7	4.9	4.8
Cerebral hemorrhage; apoplexy	53.9	52.4	[2] 51.4	119.2	123.2	[2] 104.0
Organic diseases of the heart	137.7	131.7	136.6	249.8	259.4	245.9
Total respiratory diseases	82.7	82.2	97.1	153.2	159.4	183.7
Bronchitis	2.9	3.3	3.6	3.9	5.6	5.3
Broncho-pneumonia	31.3	30.5	37.1	42.6	45.0	55.4
Pneumonia (lobar and undefined)	41.3	41.1	48.4	95.1	96.9	109.8
Other diseases of respiratory system	7.2	7.3	8.0	11.6	12.0	13.2
Diarrhea and enteritis	15.3	19.3	20.5	15.0	19.3	22.2
Under 2 years	12.4	14.9	16.5	8.0	11.2	14.0
2 years and over	2.9	4.4	4.1	7.0	8.1	8.2
Acute nephritis	3.4	3.2	3.6	11.6	14.1	14.8
Chronic nephritis	58.4	59.4	61.8	132.0	138.3	129.5
Total puerperal state	10.5	11.7	12.6	17.5	19.2	22.9
Total external causes	74.6	74.9	74.2	105.1	117.1	116.3
Suicides	10.3	10.1	9.0	6.4	6.7	6.0
Homicides	3.9	3.4	2.9	28.3	30.0	30.1
Accidental and unspecified violence	60.4	61.4	62.2	70.5	80.3	80.3
Automobile accidents	20.9	20.0	19.1	22.8	20.7	19.7
All other and ill-defined causes of death	175.5	167.6	171.2	296.6	310.8	312.6

[1] All figures in this table include insured infants under 1 year of age. The rates for 1931 are subject to slight correction, since they are based on provisional estimates of lives exposed to risk.
[2] Rate not comparable with that for later years.

SEPTEMBER, 1931

Health conditions in this group during September, 1931, were about the same as last year, the death rate being practically the same (7.97 per 1,000 this year as compared with 7.92 last year). As compared with the corresponding month last year, the epidemic diseases of childhood are generally lower, while typhoid fever and the principal chronic diseases show increases. The bulletin especially points out the lower rate for cancer and the high rate for automobile fatalities. September is the first month of this year to have a lower cancer death rate than the corresponding period of last year, while the automobile mortality rate is the highest yet recorded for September of any year, and with one exception it is the highest for any month in the records of the company.

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

[Industrial department, Metropolitan Life Insurance Co.]

Cause of death	Annual death rate per 100,000 lives exposed [1]				
	September, 1931	August, 1931	September, 1930	Cumulative, January to September	
				1931	1930
Total, all causes	797.8	735.5	792.9	898.3	891.7
Typhoid fever	4.7	3.2	4.1	1.9	2.0
Measles	.4	.7	.6	3.8	3.6
Scarlet fever	1.2	1.7	1.1	3.4	2.7
Whooping cough	4.1	4.2	4.6	3.7	4.8
Diphtheria	2.2	1.9	2.7	3.9	5.9
Influenza	4.5	4.6	5.6	24.3	15.8
Tuberculosis (all forms)	69.5	63.5	73.7	77.7	84.0
Tuberculosis of respiratory system	62.0	55.7	64.8	68.5	72.8
Cancer	79.4	76.1	79.9	82.6	77.6
Diabetes mellitus	17.8	16.9	16.0	20.9	18.7
Cerebral hemorrhage	55.9	49.3	55.2	61.8	60.9
Organic diseases of heart	129.7	118.3	123.2	151.2	147.1
Pneumonia (all forms)	32.2	27.6	35.0	80.4	80.0
Other respiratory diseases	7.6	7.4	8.9	10.8	11.5
Diarrhea and enteritis	32.5	27.1	40.7	15.3	19.3
Bright's disease (chronic nephritis)	61.2	51.9	59.9	67.2	68.9
Puerperal state	9.8	9.1	10.5	11.4	12.6
Suicides	10.4	9.1	9.6	9.8	9.7
Homicides	6.6	7.5	7.5	6.8	6.6
Other external causes (excluding suicides and homicides)	63.4	70.2	65.4	61.6	63.7
Traumatism by automobiles	25.7	22.6	24.0	21.1	20.1
All other causes	204.7	185.0	188.6	199.9	196.3

[1] All figures in this table include insured infants under 1 year of age. The rates for 1931 are subject to slight correction, since they are based on provisional estimates of lives exposed to risk.

DEATHS DURING WEEK ENDED NOVEMBER 7, 1931

Summary of information received by telegraph from industrial insurance companies for the week ended November 7, 1931, and corresponding week of 1930. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

	Week ended Nov. 7, 1931	Corresponding week, 1930
Policies in force	74,329,360	75,344,536
Number of death claims	11,783	11,918
Death claims per 1,000 policies in force, annual rate	8.3	8.2
Death claims per 1,000 policies, first 45 weeks of year, annual rate	9.7	9.6

Deaths [1] from all causes in certain large cities of the United States during the week ended November 7, 1931, infant mortality, annual death rate, and comparison with corresponding week of 1930. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

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

City	Week ended Nov. 7, 1931				Corresponding week, 1930		Death rate [2] for the first 45 weeks	
	Total deaths	Death rate [2]	Deaths under 1 year	Infant mortality rate [2]	Death rate [2]	Deaths under 1 year	1931	1930
Total (82 cities)	7,338	10.7	627	[4] 49	11.7	729	11.9	11.9
Akron	32	6.5	3	30	7.8	1	7.7	7.9
Albany [5]	33	13.3	1	20	19.6	1	13.9	14.8
Atlanta [6]	68	12.8	5	51	12.9	4	14.9	15.6
White	31	8.8	2	32	11.5	1	11.6	11.6
Colored	37	20.7	3	86	15.5	3	21.6	23.5
Baltimore [5] [6]	223	14.3	17	58	15.8	43	14.3	14.0
White	162	12.7	7	30	14.2	31	13.0	12.7
Colored	61	21.7	10	156	23.6	12	20.2	20.0
Birmingham [6]	66	12.8	1	10	14.7	9	13.3	13.6
White	32	10.0	0	0	11.9	3	10.2	10.1
Colored	34	17.3	1	24	19.3	6	18.3	19.3
Boston	205	13.6	19	54	14.7	20	14.2	14.1
Bridgeport	35	12.4	6	100	11.0	5	11.1	10.9
Buffalo	133	11.9	10	41	10.6	9	13.0	12.9
Cambridge	23	10.5	2	40	7.3	1	12.0	11.8
Camden	34	14.9	3	52	14.9	5	14.1	13.5
Canton	32	15.6	0	0	10.4	0	10.1	10.0
Chicago [5]	566	8.5	33	29	9.5	46	10.6	10.4
Cincinnati	131	14.9	17	102	15.9	9	15.9	15.5
Cleveland	190	10.9	14	41	11.4	23	11.2	11.1
Columbus	73	12.9	2	20	15.7	6	13.5	15.5
Dallas [6]	71	13.6	10	-------	13.7	12	11.2	11.4
White	53	12.2	7	-------	10.1	6	9.8	10.4
Colored	18	19.8	3	-------	31.1	6	17.7	16.3
Dayton	35	8.8	5	70	10.6	2	11.8	10.7
Denver	66	11.8	4	39	15.7	14	13.8	14.8
Des Moines	19	6.9	2	35	11.7	0	11.0	11.7
Detroit	238	7.5	27	43	7.6	36	8.2	9.3
Duluth	30	15.4	1	25	10.8	0	11.2	11.4
El Paso	32	15.9	4	-------	14.7	9	15.4	17.2
Erie	16	7.1	3	56	10.8	1	10.4	11.2
Fall River [5] [7]	26	11.8	2	45	10.0	4	11.1	11.7
Flint	26	8.3	8	102	11.2	3	6.9	9.2
Fort Worth [6]	27	8.4	1	-------	10.5	3	10.7	10.9
White	23	8.6	1	-------	11.4	3	10.3	10.3
Colored	4	7.7	0	-------	5.9	0	12.8	13.6
Grand Rapids	30	9.1	1	15	8.9	4	9.1	10.2
Houston [6]	63	10.6	3	-------	12.4	7	11.0	12.1
White	51	11.7	3	-------	12.5	2	10.2	10.7
Colored	12	7.5	0	-------	12.0	5	13.2	15.7
Indianapolis [6]	88	12.4	10	82	11.1	3	13.7	14.5
White	68	10.9	6	56	10.7	2	13.3	13.6
Colored	20	23.1	4	268	14.1	1	17.1	21.7
Jersey City	56	9.2	8	71	11.7	7	11.3	11.3
Kansas City, Kans. [6]	38	16.1	4	82	12.0	4	12.7	11.7
White	30	15.7	4	98	12.1	3	12.0	11.0
Colored	8	17.8	0	0	11.4	1	15.6	14.8
Kansas City, Mo	87	11.1	4	30	13.1	13	13.0	13.3
Knoxville [6]	36	17.2	5	107	10.8	1	12.4	13.5
White	31	17.7	4	95	9.4	1	11.5	12.6
Colored	5	14.6	1	204	18.1	0	16.6	17.8
Long Beach	28	9.6	2	48	10.5	2	9.8	9.9
Los Angeles	261	10.3	12	35	11.6	22	10.6	11.0
Louisville [6]	73	12.3	10	86	13.0	4	14.0	13.6
White	54	10.8	6	59	9.8	3	12.6	12.1
Colored	19	20.8	4	265	30.7	1	22.0	21.6
Lowell [7]	20	10.4	0	0	13.5	1	12.7	13.4
Lynn	15	7.6	1	26	7.1	2	9.4	10.3
Memphis [6]	81	16.3	10	106	15.8	13	16.6	17.0
White	39	12.7	4	67	15.6	7	13.6	13.2
Colored	42	22.1	6	174	16.1	6	21.5	23.1
Miami [6]	27	12.5	1	25	8.9	2	11.7	10.9
White	18	10.8	0	0	7.9	0	10.8	9.6
Colored	9	18.5	1	88	12.4	2	15.0	15.3

See footnotes at end of table.

Deaths [1] from all causes in certain large cities of the United States during the week ended November 7, 1931, infant mortality, annual death rate, and comparison with corresponding week of 1930. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended Nov. 7, 1931				Corresponding week, 1930		Death rate [2] for the first 45 weeks	
	Total deaths	Death rate [2]	Deaths under 1 year	Infant mortality rate [3]	Death rate [2]	Deaths under 1 year	1931	1930
Milwaukee	106	9.4	1	4	10.6	15	9.2	9.7
Minneapolis	74	8.1	7	45	11.7	15	11.1	10.7
Nashville [6]	43	14.4	4	60	18.3	12	16.8	16.6
White	37	17.1	4	80	17.3	8	14.4	14.0
Colored	6	7.3	0	0	20.7	4	23.1	23.4
New Bedford [7]	18	8.3	4	106	10.7	1	12.1	11.0
New Haven	26	8.3	2	38	13.1	1	12.4	12.7
New Orleans [6]	165	18.4	16	88	16.2	19	16.8	17.3
White	99	15.5	9	74	14.0	10	13.6	14.3
Colored	66	25.5	7	114	21.8	9	24.6	24.9
New York	1,252	9.2	121	51	10.1	119	11.1	10.8
Bronx Borough	162	6.3	9	20	7.9	12	8.1	7.9
Brooklyn Borough	444	8.8	75	79	9.4	45	10.2	9.8
Manhattan Borough	470	13.5	28	48	14.5	49	16.7	16.0
Queens Borough	129	5.8	6	16	7.2	12	7.2	7.0
Richmond Borough	47	15.0	3	54	9.5	1	13.7	14.1
Newark, N. J	81	9.5	7	37	10.8	8	11.5	12.0
Oakland	62	11.1	4	51	10.0	4	10.5	10.9
Oklahoma City	35	9.3	1	14	8.6	5	10.7	10.6
Omaha	54	13.0	4	45	14.6	5	13.8	13.6
Paterson	37	13.9	4	69	8.3	0	13.3	12.2
Peoria	20	9.6	6	158	15.3	3	12.5	12.3
Philadelphia	417	11.1	35	51	12.1	36	12.9	12.6
Pittsburgh	187	14.4	22	76	15.5	19	14.4	13.8
Portland, Oreg	75	12.7	5	61	11.4	3	11.6	12.1
Providence	55	11.3	3	28	14.0	3	12.7	12.9
Richmond [6]	54	15.3	4	58	16.2	10	15.4	14.8
White	35	13.9	3	66	12.8	4	13.0	12.1
Colored	19	18.7	1	43	24.6	6	21.5	21.5
Rochester	60	9.4	4	36	14.4	6	11.8	11.6
St. Louis	216	13.6	27	91	14.1	16	15.0	14.1
St. Paul	47	8.9	0	0	11.9	5	10.5	10.1
Salt Lake City [4]	31	11.3	5	74	12.6	7	12.0	12.4
San Antonio	54	11.7	8		11.6	8	14.2	16.1
San Diego	49	16.3	1	20	12.9	1	13.5	14.3
San Francisco	138	11.1	0	0	17.3	3	13.0	13.0
Schenectady	22	11.9	3	88	8.2	0	10.7	11.2
Seattle	82	11.5	1	9	10.8	2	11.3	10.8
Somerville	20	9.9	1	37	9.0	1	8.8	9.7
South Bend	18	8.7	1	25	11.4	2	8.0	8.9
Spokane	29	13.0	3	78	15.3	1	12.3	12.5
Springfield, Mass	28	9.6	3	46	11.1	4	11.6	12.1
Syracuse	46	11.3	4	47	14.9	2	11.5	11.6
Tacoma	30	14.5	3	77	10.7	1	12.2	12.5
Toledo	59	10.4	7	64	12.7	5	11.9	12.7
Trenton	31	13.1	2	35	16.9	7	16.4	16.6
Utica	23	11.7	3	78	16.9	3	14.1	14.9
Washington, D. C. [6]	144	15.3	17	94	16.2	15	15.9	15.1
White	90	13.2	8	65	14.4	10	13.6	12.9
Colored	54	20.9	9	155	21.1	5	21.9	20.8
Waterbury	16	8.3	3	90	8.3	0	9.6	9.4
Wilmington, Del. [7]	28	13.7	3	65	10.8	3	13.9	14.3
Worcester	35	9.3	6	82	10.1	4	12.0	12.6
Yonkers	13	4.9	0	0	7.7	2	8.3	8.1
Youngstown	25	7.5	1	14	8.6	2	10.0	10.2

[1] Deaths of nonresidents are included. Stillbirths are excluded.

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

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

[4] Data for 77 cities.

[5] Deaths for week ended Friday.

[6] For the cities for which deaths are shown by color, the percentages of colored population in 1930 were as follows: Atlanta, 33; Baltimore, 18; Birmingham, 38; Dallas, 17; Fort Worth, 16; Houston, 27; Indianapolis, 12; Kansas City, Kans, 19; Knoxville, 16; Louisville, 15; Memphis, 38; Miami, 23; Nashville, 28; New Orleans, 29; Richmond, 29; and Washington, D. C., 27.

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

PREVALENCE OF DISEASE

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

UNITED STATES

CURRENT WEEKLY STATE REPORTS

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

Reports for Weeks Ended November 14, 1931, and November 15, 1930

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended November 14, 1931, and November 15, 1930

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Nov. 14, 1931	Week ended Nov. 15, 1930	Week ended Nov. 14, 1931	Week ended Nov. 15, 1930	Week ended Nov. 14, 1931	Week ended Nov. 15, 1930	Week ended Nov. 14, 1931	Week ended Nov. 15, 1930
New England States:								
Maine	3	7	----	----	127	15	0	1
New Hampshire	4	----	----	----	4	----	0	0
Vermont	17	3	----	----	21	11	0	0
Massachusetts	65	59	5	2	72	150	1	3
Rhode Island	8	6	----	----	165	----	0	0
Connecticut	6	9	3	1	26	67	0	1
Middle Atlantic States:								
New York	102	105	[1] 7	[1] 25	175	146	11	8
New Jersey	35	52	15	5	22	81	3	4
Pennsylvania	132	127	----	----	250	257	4	6
East North Central States:								
Ohio	210	86	27	22	24	17	1	6
Indiana	80	52	6	7	27	93	2	3
Illinois	140	162	5	3	111	91	4	9
Michigan	34	86	----	----	230	45	2	3
Wisconsin	28	19	20	21	21	112	0	6
West North Central States:								
Minnesota	18	16	1	2	17	17	1	2
Iowa	30	10	----	----	4	1	3	0
Missouri	95	76	319	7	----	247	3	2
North Dakota	1	5	----	----	----	----	1	5
South Dakota	8	6	1	----	80	2	0	0
Nebraska	26	16	1	----	10	5	0	0
Kansas	68	27	----	1	25	4	1	2
South Atlantic States:								
Delaware	42	4	----	----	----	----	0	0
Maryland [2]	69	33	12	17	5	2	1	0
District of Columbia	6	6	----	1	----	4	2	2
West Virginia	64	21	1	34	127	10	1	0
North Carolina	147	134	31	5	15	5	4	4
South Carolina	46	57	361	547	4	----	0	1
Georgia	52	36	35	107	7	18	0	1
Florida	21	18	1	7	23	10	0	0

[1] New York City only.

[2] Week ended Friday.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended November 14, 1931, and November 15, 1930—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Nov. 14, 1931	Week ended Nov. 15, 1930	Week ended Nov. 14, 1931	Week ended Nov. 15, 1930	Week ended Nov. 14, 1931	Week ended Nov. 15, 1930	Week ended Nov. 14, 1931	Week ended Nov. 15, 1930
East South Central States:								
Kentucky	162	----	----	----	----	36	0	0
Tennessee	143	61	37	37	4	13	1	3
Alabama [3]	74	118	23	36	----	43	5	2
Mississippi	98	53	----	----	----	----	1	4
West South Central States:								
Arkansas	74	19	1	21	13	2	0	0
Louisiana	55	30	11	11	1	1	5	2
Oklahoma [4]	135	58	18	44	5	14	0	1
Texas	82	61	6	10	6	26	2	0
Mountain States:								
Montana	----	1	2	----	54	1	0	3
Idaho	6	1	----	----	1	7	2	1
Wyoming	----	----	----	----	2	1	0	0
Colorado	9	10	----	----	6	46	1	0
New Mexico	20	3	----	----	----	8	1	1
Arizona	30	5	3	3	3	29	2	0
Utah [2]	----	1	4	6	1	----	0	1
Pacific States:								
Washington	11	10	----	----	26	10	2	4
Oregon	----	3	34	7	7	32	0	0
California	132	61	42	27	104	94	5	5

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Nov. 14, 1931	Week ended Nov. 15, 1930	Week ended Nov. 14, 1931	Week ended Nov. 15, 1930	Week ended Nov. 14, 1931	Week ended Nov. 15, 1930	Week ended Nov. 14, 1931	Week ended Nov. 15, 1930
New England States:								
Maine	8	3	31	20	0	0	5	13
New Hampshire	0	1	7	1	0	0	0	0
Vermont	0	0	14	1	0	0	0	0
Massachusetts	11	14	218	164	0	0	3	10
Rhode Island	1	0	14	18	0	0	0	0
Connecticut	9	2	35	38	0	0	4	3
Middle Atlantic States:								
New York	52	16	390	329	11	1	21	24
New Jersey	14	3	121	120	0	0	6	9
Pennsylvania	15	7	401	393	0	0	64	31
East North Central States:								
Ohio	9	52	586	435	6	58	53	27
Indiana	0	8	89	161	6	43	10	15
Illinois	27	15	315	376	6	14	21	16
Michigan	12	10	157	239	28	54	14	10
Wisconsin	10	13	61	93	10	3	4	7
West North Central States:								
Minnesota	27	11	51	56	1	9	4	5
Iowa	9	10	60	70	21	13	6	4
Missouri	0	4	92	95	3	3	19	10
North Dakota	0	2	16	9	29	11	8	3
South Dakota	4	8	21	7	2	13	3	2
Nebraska	2	15	33	29	3	24	0	2
Kansas	1	10	84	57	3	13	5	4
South Atlantic States:								
Delaware	0	0	9	17	0	0	1	2
Maryland [2]	1	1	103	57	0	0	30	40
District of Columbia	0	0	21	18	0	0	2	1
West Virginia	1	1	59	33	1	4	37	28
North Carolina	1	0	167	143	0	0	19	8
South Carolina	3	2	26	19	0	4	6	26
Georgia	0	0	37	63	0	0	18	15
Florida	1	0	5	12	0	0	7	0

[2] Week ended Friday.
[3] Typhus fever, 1931, 1 case in Alabama.
[4] Exclusive of Oklahoma City and Tulsa.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended November 14, 1931, and November 15, 1930—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Nov. 14, 1931	Week ended Nov. 15, 1930	Week ended Nov. 14, 1931	Week ended Nov. 15, 1930	Week ended Nov. 14, 1931	Week ended Nov. 15, 1930	Week ended Nov. 14, 1931	Week ended Nov. 15, 1930
East South Central States:								
Kentucky	3	0	104	66	2	1	49	15
Tennessee	1	1	93	71	4	4	37	32
Alabama [3]	2	3	70	77	1	0	28	42
Mississippi	1	0	51	26	2	0	10	20
West South Central States:								
Arkansas	1	0	31	8	0	19	15	33
Louisiana	0	0	47	30	0	1	25	31
Oklahoma [4]	0	0	53	46	1	0	23	32
Texas	1	3	47	41	2	15	7	17
Mountain States:								
Montana	5	0	16	32	2	1	2	2
Idaho	0	1	3	11	0	1	3	0
Wyoming	0	2	6	5	0	0	0	1
Colorado	0	4	47	34	1	2	9	7
New Mexico	0	1	13	5	0	0	7	5
Arizona	0	1	6	0	0	2	1	0
Utah [3]	0	0	7	10	0	0	0	0
Pacific States:								
Washington	3	0	64	38	12	14	3	9
Oregon	1	0	17	6	4	17	4	2
California	5	44	146	91	4	11	12	12

[3] Week ended Friday.
[3] Typhus fever, 1931, 1 case in Alabama.
[4] Exclusive of Oklahoma City and Tulsa.

SUMMARY OF MONTHLY REPORTS FROM STATES

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

State	Meningococcus meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
July, 1931										
Delaware					96		0		0	
August, 1931										
Delaware					5				0	
September, 1931										
Delaware					1				0	
Mississippi	3	534	315	6,230	8	492	8	106	16	169
October, 1931										
Delaware					2				0	
Indiana	11	270	15		77		19	293	31	71
Iowa	4	76	2	1	16		44	119	73	25
Maine [1]		17	10		346		44	64	0	36
New Hampshire		15					13	27	0	2
North Dakota	3	21			21		9	44	17	24
Porto Rico		43	115	4,551	58	4			0	19
Wyoming	3	2	1		1		1	17	1	1

[1] Report of typhus fever in Maine in September, published in Public Health Reports dated Oct. 23, was in error. The disease was typhoid fever.

July, 1931

Delaware:	Cases
Mumps	3
Undulant fever	1
Whooping cough	39

August, 1931

Delaware:	
Chicken pox	3
Mumps	11
Whooping cough	24

September, 1931

Chicken pox:	
Delaware	2
Mississippi	162
Dengue:	
Mississippi	12
Dysentery (amebic):	
Mississippi	41
Hookworm disease:	
Mississippi	206
Mumps:	
Delaware	11
Mississippi	42
Ophthalmia neonatorum:	
Mississippi	8
Puerperal septicemia:	
Mississippi	16
Trachoma:	
Mississippi	9
Whooping cough:	
Delaware	31
Mississippi	266

October, 1931

Chicken pox:	
Delaware	3
Indiana	120
Iowa	126
Maine	50
North Dakota	35
Porto Rico	5
Wyoming	29
Colibacillosis:	
Porto Rico	1
Conjunctivitis:	
Maine	3
Dysentery:	
Iowa	2
Porto Rico	68
Filariasis:	
Porto Rico	14
Framboesia:	
Porto Rico	1
German measles:	
Iowa	2
Maine	9
Impetigo contagiosa:	
Indiana	104
Iowa	10
Leprosy:	
Porto Rico	1
Lethargic encephalitis:	
Maine	1
Mumps:	
Delaware	11
Indiana	44
Iowa	19
Maine	8
North Dakota	54
Porto Rico	4
Wyoming	7
Ophthalmia neonatorum:	
Maine	1
Porto Rico	14
Paratyphoid fever:	
Maine	3
Porto Rico	3
Puerperal septicemia:	
Porto Rico	3
Scabies:	
North Dakota	1
Septic sore throat:	
Iowa	1
Maine	2
Tetanus:	
Iowa	1
Porto Rico	4
Tetanus, infantile:	
Porto Rico	4
Trachoma:	
Porto Rico	7
Tularaemia:	
Indiana	1
Iowa	1
Undulant fever:	
Indiana	8
Iowa	4
Vincent's angina:	
Iowa	8
Maine	11
North Dakota	59
Whooping cough:	
Delaware	25
Indiana	95
Iowa	61
Maine	36
North Dakota	89
Porto Rico	212
Wyoming	8

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 93 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 33,180,000. The estimated population of the 88 cities reporting deaths is more than 31,800,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended November 7, 1931, and November 8, 1930

	1931	1930	Estimated expectancy
Cases reported			
Diphtheria:			
46 States	2,735	1,769	
93 cities	601	518	927
Measles:			
45 States	1,572	1,321	
93 cities	250	350	
Meningococcus meningitis:			
46 States	57	82	
93 cities	29	26	
Poliomyelitis:			
46 States	307	291	
Scarlet fever:			
46 States	3,481	3,301	
93 cities	1,081	1,049	834
Smallpox:			
46 States	221	236	
93 cities	11	13	8
Typhoid fever:			
46 States	553	699	
93 cities	75	66	71
Deaths reported			
Influenza and pneumonia:			
88 cities	576	663	
Smallpox:			
88 cities	0	0	

City reports for week ended November 7, 1931

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

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1922 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland	0	1	1		0	1	0	2
New Hampshire:								
Concord	0	0	0		0	0	0	0
Nashua	0	1	0		0	0	0	0
Vermont:								
Barre	0	0	0		0	0	1	0
Burlington	0	1	0		0	27	0	0

City reports for week ended November 7, 1931—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND—con.								
Massachusetts:								
Boston	27	27	24	5	4	5	4	11
Fall River	6	3	3	----	0	0	1	1
Springfield	2	5	1	----	0	0	4	1
Worcester	8	6	0	----	0	1	52	2
Rhode Island:								
Pawtucket	0	1	0	----	0	0	0	0
Providence	11	8	6	----	0	60	3	3
Connecticut:								
Bridgeport	1	4	0	----	1	0	1	5
Hartford	2	4	0	----	0	0	10	1
New Haven	9	0	0	1	0	0	2	2
MIDDLE ATLANTIC								
New York:								
Buffalo	13	12	4	----	0	1	6	19
New York	60	127	46	5	7	24	22	134
Rochester	5	3	3	----	0	4	4	2
Syracuse	15	2	0	----	0	1	1	0
New Jersey:								
Camden	5	7	4	----	2	0	0	5
Newark	13	14	1	3	0	2	2	7
Trenton	1	2	1	----	1	0	1	2
Pennsylvania:								
Philadelphia	33	59	5	5	4	8	9	26
Pittsburgh	36	25	8	4	4	20	38	44
Reading	26	2	0	----	0	1	0	1
EAST NORTH CENTRAL								
Ohio:								
Cincinnati	3	11	7	----	2	0	0	14
Cleveland	31	34	9	8	0	1	23	13
Columbus	1	5	19	1	1	0	1	4
Toledo	27	9	5	1	0	0	0	5
Indiana:								
Fort Wayne	0	4	7	----	0	0	0	2
Indianapolis	9	12	11	----	0	0	8	9
South Bend	0	2	0	----	0	0	0	2
Terre Haute	4	2	2	----	0	0	0	2
Illinois:								
Chicago	54	107	60	7	4	18	6	36
Peoria	13	----	10	----	0	0	0	3
Springfield	1	1	5	----	0	0	0	1
Michigan:								
Detroit	22	64	34	----	0	4	1	14
Flint	18	4	1	----	0	2	9	3
Grand Rapids	2	2	0	----	0	0	0	0
Wisconsin:								
Kenosha	4	1	0	----	0	3	5	0
Madison	1	1	2	----	0	0	2	0
Milwaukee	21	14	3	1	1	1	18	6
Racine	7	2	1	----	0	0	5	0
Superior	1	0	0	----	0	0	11	0
WEST NORTH CENTRAL								
Minnesota:								
Duluth	12	0	0	----	0	0	0	1
Minneapolis	43	26	9	----	0	7	25	2
St. Paul	21	9	0	----	1	0	1	1
Iowa:								
Davenport	8	3	0	----	----	0	0	----
Des Moines	2	2	1	----	----	0	0	----
Sioux City	6	2	1	----	----	0	1	----
Waterloo	12	0	0	----	----	0	0	----
Missouri:								
Kansas City	7	8	13	----	0	0	0	6
St. Joseph	0	0	5	----	0	0	0	2
St. Louis	8	41	23	2	----	0	3	7
North Dakota:								
Fargo	1	0	0	----	0	1	0	0
Grand Forks	0	0	0	----	----	0	0	----

City reports for week ended November 7, 1931—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
WEST NORTH CENTRAL—continued								
South Dakota:								
Aberdeen	12	0	0	----	----	30	0	----
Nebraska:								
Omaha	16	11	17	----	0	0	0	5
Kansas:								
Topeka	0	2	1	1	1	0	0	2
Wichita	4	3	12	----	0	0	0	1
SOUTH ATLANTIC								
Delaware:								
Wilmington	0	3	0	----	0	0	0	4
Maryland:								
Baltimore	14	22	10	3	0	1	23	17
Cumberland	3	0	0	----	0	0	0	3
Frederick	0	1	0	----	0	0	0	0
District of Columbia:								
Washington	1	16	11	----	0	1	0	10
Virginia:								
Lynchburg	0	3	3	----	0	0	0	0
Norfolk	1	3	3	1	0	0	0	3
Richmond	0	21	27	----	0	0	0	1
Roanoke	0	5	9	----	0	0	0	1
West Virginia:								
Charleston	11	3	1	----	0	0	0	0
Wheeling	3	0	0	----	0	0	0	2
North Carolina:								
Raleigh	1	3	1	----	0	1	0	0
Wilmington	1	1	0	----	0	0	0	3
Winston-Salem	0	6	8	----	0	1	0	1
South Carolina:								
Charleston	2	1	1	15	0	0	0	2
Columbia	1	2	1	----	0	1	0	5
Greenville	0	2	0	----	0	0	0	0
Georgia:								
Atlanta	0	9	10	6	2	1	0	7
Brunswick	0	0	0	----	0	0	2	0
Savannah	0	2	2	10	0	0	0	2
Florida:								
Miami	0	1	2	----	0	8	0	1
Tampa	0	2	8	----	0	0	0	1
EAST SOUTH CENTRAL								
Kentucky:								
Covington	----	2	----	----	----	----	----	----
Tennessee:								
Memphis	5	10	19	----	0	0	0	9
Nashville	1	3	9	----	0	1	0	1
Alabama:								
Birmingham	1	7	15	1	0	0	0	5
Mobile	0	2	2	2	0	0	0	3
Montgomery	0	3	1	----	----	1	0	----
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith	0	2	5	----	----	0	0	----
Little Rock	0	2	10	----	0	0	0	0
Louisiana:								
New Orleans	0	13	11	2	4	0	0	10
Shreveport	8	1	1	----	0	6	2	2
Oklahoma:								
Tulsa	0	5	15	----	----	0	0	----
Texas:								
Dallas	2	19	16	2	1	2	0	1
Fort Worth	2	6	6	----	0	0	0	0
Galveston	0	1	1	----	0	0	0	2
Houston	0	8	14	----	0	0	0	1
San Antonio	0	4	2	----	0	0	0	4

City reports for week ended November 7, 1931—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
MOUNTAIN								
Montana:								
Billings		0						
Great Falls	0	0	0		0	2	0	3
Helena	1	0	0		0	12	0	0
Missoula	0	0	3		0	0	0	0
Idaho:								
Boise	1	0	0		0	0	0	1
Colorado:								
Denver	43	10	2		2	1	3	6
Pueblo		1						
New Mexico:								
Albuquerque	5	0	5		0	0	0	0
Arizona:								
Phoenix	0	0	3		0	0	0	0
Utah:								
Salt Lake City	21	3	0		0	0	1	1
Nevada:								
Reno	0	0	0		0	1	0	2
PACIFIC								
Washington:								
Seattle	0	5	3			26	12	
Spokane		2						
Tacoma	4	4	1		0	1	11	4
Oregon:								
Portland	29	9	0	3	3	1	8	9
Salem	2	0	0	1	0	0	0	0
California:								
Los Angeles	10	35	44	24	2	5	6	9
Sacramento	1	2	2	1	0	17	0	3
San Francisco	28	14	1	3	0	4	1	6

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	2	6	0	0	0	2	1	0	0	2	24
New Hampshire:											
Concord	0	0	0	0	0	0	0	0	0	0	6
Nashua	0	0	0	0	0	0	0	1	0	0	
Vermont:											
Barre	0	0	0	0	0	0	0	0	0	4	2
Burlington	0	0	0	0	0	0	0	0	0	0	8
Massachusetts:											
Boston	45	32	0	0	0	7	2	0	0	8	205
Fall River	3	8	0	0	0	3	0	2	0	0	26
Springfield	5	2	0	0	0	2	0	0	0	2	24
Worcester	9	19	0	0	0	1	0	0	0	5	35
Rhode Island:											
Pawtucket	0	0	0	0	0	0	0	0	0	0	13
Providence	7	11	0	0	0	3	0	0	0	3	55
Connecticut:											
Bridgeport	6	5	0	0	0	2	0	2	0	2	35
Hartford	4	1	0	0	0	1	0	0	0	2	40
New Haven	2	0	0	0	0	0	0	0	0	0	26
MIDDLE ATLANTIC											
New York:											
Buffalo	18	24	0	0	0	12	1	1	0	17	131
New York	73	75	0	0	0	65	17	13	0	110	1,252
Rochester	5	29	0	0	0	3	1	2	0	8	57
Syracuse	5	11	0	0	0	1	0	4	0	14	46

City reports for week ended November 7, 1931—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		
MIDDLE ATLANTIC—continued											
New Jersey:											
Camden	3	5	0	0	0	1	0	0	0	7	34
Newark	9	11	0	0	0	6	1	2	0	61	86
Trenton	2	3	0	0	0	5	1	2	0	2	31
Pennsylvania:											
Philadelphia	50	73	0	0	0	23	6	1	0	106	417
Pittsburgh	35	68	0	0	0	8	1	0	0	32	187
Reading	1	1	0	0	0	0	0	0	0	3	32
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	16	40	0	0	0	13	1	0	0	9	131
Cleveland	24	67	0	0	0	13	1	1	0	109	199
Columbus	9	16	0	0	0	6	0	0	0	11	73
Toledo	10	12	0	0	0	3	0	0	0	37	59
Indiana:											
Fort Wayne	2	0	0	0	0	0	1	0	0	1	22
Indianapolis	13	10	1	0	0	5	0	0	0	6	----
South Bend	3	0	0	0	0	1	1	0	0	0	18
Terre Haute	2	1	0	0	0	0	0	0	0	0	18
Illinois:											
Chicago	81	129	0	0	0	46	4	3	1	143	566
Peoria	----	4	----	0	0	0	----	0	0	11	20
Springfield	2	13	0	0	0	0	0	0	0	3	14
Michigan:											
Detroit	63	54	0	0	0	20	2	6	1	65	238
Flint	12	13	0	0	0	2	0	0	0	2	26
Grand Rapids	8	5	0	0	0	1	0	0	0	0	20
Wisconsin:											
Kenosha	2	2	1	0	0	0	1	0	0	0	7
Madison	3	0	0	0	----	----	0	1	----	2	----
Milwaukee	17	35	0	0	0	4	0	0	0	55	106
Racine	3	8	0	0	0	0	0	0	0	4	18
Superior	2	0	0	0	0	1	0	0	0	0	5
WEST NORTH CENTRAL											
Minnesota:											
Duluth	8	1	0	0	0	3	0	0	0	0	30
Minneapolis	35	13	0	0	0	1	1	0	1	12	74
St. Paul	15	3	0	0	0	1	1	0	1	0	51
Iowa:											
Davenport	1	0	0	0	----	----	0	0	----	0	----
Des Moines	7	8	0	0	----	----	0	0	----	0	19
Sioux City	3	5	0	5	----	----	0	0	----	3	----
Waterloo	2	0	0	0	----	----	0	3	1	9	----
Missouri:											
Kansas City	12	13	0	0	0	12	0	1	0	11	87
St. Joseph	3	0	0	0	0	1	0	1	0	0	26
St. Louis	33	19	1	0	0	11	4	5	0	42	216
North Dakota:											
Fargo	2	5	0	0	0	0	1	0	0	2	0
Grand Forks	2	0	0	0	----	----	0	0	----	0	----
South Dakota:											
Aberdeen	0	1	1	0	----	----	0	0	----	1	----
Nebraska:											
Omaha	5	3	1	1	0	3	0	1	0	2	54
Kansas:											
Topeka	4	2	0	0	0	2	0	0	0	1	21
Wichita	4	9	0	0	0	1	0	0	0	0	34
SOUTH ATLANTIC											
Delaware:											
Wilmington	1	1	0	0	0	0	0	0	0	5	28
Maryland:											
Baltimore	14	17	0	0	0	15	4	6	0	115	223
Cumberland	1	11	0	0	0	0	0	0	0	0	14
Frederick	0	0	0	0	0	0	0	0	0	0	3

City reports for week ended November 7, 1931—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		
SOUTH ATLANTIC—continued											
District of Columbia:											
Washington	16	22	0	0	0	12	2	5	0	19	144
Virginia:											
Lynchburg	1	3	0	0	0	0	0	0	0	6	9
Norfolk	2	7	0	0	0	1	0	0	0	3	------
Richmond	10	20	0	0	0	2	0	0	0	0	47
Roanoke	3	1	0	0	0	1	0	0	1	1	19
West Virginia:											
Charleston	2	3	0	0	0	0	0	[1]3	0	6	------
Wheeling	2	1	0	0	0	1	0	0	0	0	22
North Carolina:											
Raleigh	2	1	0	0	0	1	0	0	0	0	5
Wilmington	1	0	0	0	0	0	0	0	0	0	11
Winston-Salem	3	3	0	0	0	0	0	0	0	9	12
South Carolina:											
Charleston	1	1	0	0	0	2	1	0	0	0	25
Columbia	0	2	0	0	0	1	0	0	0	0	22
Greenville	1	0	0	0	0	0	0	0	0	0	------
Georgia:											
Atlanta	7	8	0	0	0	3	1	1	0	1	68
Brunswick	0	0	0	0	0	0	0	0	0	0	2
Savannah	1	1	0	0	0	1	0	0	0	0	37
Florida:											
Miami	1	0	0	0	0	3	0	0	0	0	27
Tampa	0	1	0	0	0	1	0	0	0	0	15
EAST SOUTH CENTRAL											
Kentucky:											
Covington	2	------	0	------	------	------	0	------	------	------	------
Tennessee:											
Memphis	6	8	0	2	0	6	3	2	0	15	81
Nashville	3	0	0	0	0	2	2	0	0	2	42
Alabama:											
Birmingham	5	7	1	0	0	7	1	1	0	0	66
Mobile	1	0	0	0	0	1	0	0	0	0	23
Montgomery	2	2	0	0	------	------	0	0	------	0	------
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	1	0	0	0	------	------	0	0	------	1	------
Little Rock	2	3	0	0	0	1	0	1	0	1	1
Louisiana:											
New Orleans	6	9	0	1	0	12	2	4	2	1	165
Shreveport	1	1	0	0	0	3	0	0	0	4	38
Oklahoma:											
Tulsa	4	8	0	1	------	------	0	0	------	0	2
Texas:											
Dallas	7	14	0	0	0	4	1	2	1	5	71
Fort Worth	2	8	0	0	0	3	0	0	0	0	27
Galveston	0	0	0	0	0	2	0	1	0	0	14
Houston	3	1	0	0	0	1	0	0	0	0	63
San Antonio	1	0	0	0	0	8	0	1	1	0	54
MOUNTAIN											
Montana:											
Billings	1	------	0	------	------	------	0	------	------	------	------
Great Falls	1	4	0	0	0	0	0	0	0	0	6
Helena	0	0	0	0	0	0	0	0	0	0	6
Missoula	1	3	0	0	0	0	0	0	0	0	6
Idaho:											
Boise	1	0	1	0	0	0	0	0	0	0	11
Colorado:											
Denver	11	16	0	0	0	3	1	1	0	3	64
Pueblo	1	------	0	------	------	------	0	------	------	------	------

[1] 2 cases nonresidents.

City reports for week ended November 7, 1931—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		
MOUNTAIN—contd.											
New Mexico:											
Albuquerque	1	1	0	0	0	1	0	1	0	0	11
Arizona:											
Phoenix	0	0	0	0	0	6	0	0	0	0	
Utah:											
Salt Lake City	2	4	0	0	0	1	1	0	1	0	31
Nevada:											
Reno	0	1	0	0	0	0	0	0	0	0	8
PACIFIC											
Washington:											
Seattle	8	9	0	0			1	0		1	
Spokane	6		1				0				
Tacoma	3	1	2	0	0	1	0	0	0	0	30
Oregon:											
Portland	6	3	2	0	0	4	1	1	0	1	75
Salem	0	0	0	0	0	0	0	0	0	0	
California:											
Los Angeles	20	47	0	0	0	22	1	0	0	7	261
Sacramento	3	0	0	0	0	1	0	0	0	0	28
San Francisco	12	5	0	2	0	8	1	0	0	7	153

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
NEW ENGLAND									
Massachusetts:									
Boston	3	2	1	0	2	0	2	6	0
Worcester	1	0	0	0	0	0	0	1	0
Rhode Island:									
Providence	0	0	0	0	0	0	0	1	0
Connecticut:									
Hartford	0	0	0	0	0	0	0	1	1
MIDDLE ATLANTIC									
New York:									
New York	7	3	3	1	0	0	7	20	3
Rochester	0	0	0	0	0	0	0	1	0
New Jersey:									
Camden	0	0	0	0	0	0	0	1	0
Newark	0	0	0	0	0	0	0	6	1
Pennsylvania:									
Philadelphia	2	2	0	0	0	0	1	6	0
Pittsburgh	0	0	0	0	0	0	0	0	1
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	1	0	0	0	0	0	1	1	0
Toledo	0	0	0	0	0	0	0	1	0
Illinois:[1]									
Chicago	3	0	0	0	0	0	2	15	1
Peoria	0	0	0	0	0	0		2	0
Michigan:									
Detroit	2	0	0	0	0	0	1	2	0
Flint	0	0	0	0	0	0	1	1	0
Grand Rapids	0	0	0	0	0	0	0	2	0
Wisconsin:									
Milwaukee	1	1	0	0	0	0	0	3	0

[1] Typhus fever, 3 cases: One case at Springfield, Ill., and 2 cases at Savannah, Ga.

City reports for week ended November 7, 1931—Continued

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
WEST NORTH CENTRAL									
Minnesota:									
Duluth	0	0	0	0	0	0	0	2	0
Minneapolis	1	0	0	0	0	0	0	8	0
St. Paul	0	0	0	1	0	0	0	8	0
Iowa:									
Davenport	0	0	0	0	0	0	0	0	1
Missouri:									
Kansas City	0	0	0	0	1	0	0	0	0
St. Joseph	0	0	0	0	0	0	0	[2]1	0
St. Louis	3	1	0	0	0	0	1	2	0
North Dakota:									
Fargo	0	0	0	0	0	0	0	1	0
SOUTH ATLANTIC									
Maryland:									
Baltimore	0	0	1	1	0	0	1	1	0
Virginia:									
Lynchburg	0	0	0	0	0	0	0	1	0
Richmond	0	0	0	0	0	1	0	0	0
West Virginia:									
Wheeling	1	0	0	0	0	0	0	0	0
North Carolina:									
Raleigh	0	0	0	0	1	0	0	0	0
South Carolina:									
Charleston [3]	0	0	0	0	0	2	0	0	0
Columbia	0	0	0	0	0	1	0	0	0
Georgia:									
Atlanta	1	1	0	0	1	0	0	0	0
Savannah [1]	0	1	0	0	1	1	0	0	0
WEST SOUTH CENTRAL									
Louisiana:									
New Orleans	0	0	0	0	5	1	0	1	1
Shreveport	0	0	0	0	0	1	0	0	0
Texas:									
Dallas	1	1	0	0	0	0	0	0	0
Fort Worth	0	0	0	0	0	2	0	0	0
Galveston	0	0	0	0	0	1	0	0	0
PACIFIC									
Washington:									
Seattle	1	0	0	0	0	0	1	0	0
California:									
Los Angeles	0	0	0	0	0	0	1	1	0
Sacramento	1	1	0	0	0	0	0	0	0
San Francisco	0	0	0	0	0	0	1	1	0

[1] Typhus fever, 3 cases: 1 case at Springfield, Ill., and 2 cases at Savannah, Ga.
[2] Nonresident.
[3] Dengue, 1 case at Charleston, S. C.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended November 7, 1931, compared with those for a like period ended November 8, 1930. The population figures used in computing the rates are estimated mid-year populations for 1930 and 1931, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 33,000,000. The 91 cities reporting deaths have more than 31,500,000 estimated population.

Summary of weekly reports from cities, October 4 to November 7, 1931—Annual rates per 100,000 population compared with rates for the corresponding period of 1930 [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Oct. 10, 1931	Oct. 11, 1930	Oct. 17, 1931	Oct. 18, 1930	Oct. 24, 1931	Oct. 25, 1930	Oct. 31, 1931	Nov. 1, 1930	Nov. 7, 1931	Nov. 8, 1930
98 cities	65	70	70	70	82	77	[2] 85	90	[3] 94	[4] 82
New England	72	58	46	70	87	106	63	92	84	85
Middle Atlantic	40	40	34	33	32	34	41	44	32	33
East North Central	53	99	61	91	74	105	82	130	97	109
West North Central	99	68	128	76	145	66	174	93	155	[4] 77
South Atlantic	132	116	170	100	223	106	146	116	182	86
East South Central	221	96	233	143	122	179	204	293	[5] 289	215
West South Central	74	59	101	118	142	80	162	101	203	199
Mountain	36	44	52	18	35	62	[2] 9	35	[6] 49	123
Pacific	47	81	47	87	76	101	92	67	[7] 104	93

MEASLES CASE RATES

98 cities	29	22	26	35	32	36	[2] 37	59	[3] 39	[4] 59
New England	137	34	70	48	180	75	115	138	161	128
Middle Atlantic	15	15	20	22	19	29	30	27	27	34
East North Central	13	11	13	14	18	16	18	18	18	16
West North Central	2	77	10	143	6	143	11	294	15	[4] 282
South Atlantic	6	12	14	8	10	14	12	20	12	48
East South Central	0	18	0	6	17	24	23	42	[5] 13	84
West South Central	27	0	10	3	24	3	17	0	27	0
Mountain	52	115	78	194	17	141	[2] 63	414	[6] 157	229
Pacific	106	20	96	57	69	18	125	24	[7] 109	24

SCARLET FEVER CASE RATES

98 cities	99	95	101	120	126	121	[2] 139	161	[3] 170	[4] 169
New England	144	116	137	162	195	157	142	213	202	225
Middle Atlantic	76	51	74	85	100	78	127	132	134	133
East North Central	112	135	139	177	140	171	161	218	239	231
West North Central	86	93	94	116	119	116	136	163	140	[4] 140
South Atlantic	142	126	124	126	156	162	158	166	190	158
East South Central	233	161	70	132	145	149	198	245	[5] 107	293
West South Central	61	35	41	73	57	70	47	66	95	91
Mountain	139	291	44	238	174	167	[2] 172	344	[6] 275	282
Pacific	67	75	110	51	141	89	133	47	[7] 127	95

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1931, and 1930, respectively.
[2] Boise, Idaho, not included.
[3] Covington, Ky.; Billings, Mont.; Pueblo, Colo.; and Spokane, Wash.; not included.
[4] Waterloo, Iowa, not included.
[5] Covington, Ky., not included.
[6] Billings, Mont., and Pueblo, Colo., not included.
[7] Spokane, Wash., not included.

Summary of weekly reports from cities, October 4 to November 7, 1931—Annual rates per 100,000 population compared with rates for the corresponding period of 1930—Continued

SMALLPOX CASE RATES

	Week ended—									
	Oct. 10, 1931	Oct. 11, 1930	Oct. 17, 1931	Oct. 18, 1930	Oct. 24, 1931	Oct. 25, 1930	Oct. 31, 1931	Nov. 1, 1930	Nov. 7, 1931	Nov. 8, 1930
98 cities	1	2	1	2	2	2	[2] 2	3	[3] 2	[4] 2
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	2	0	4	0	2	1	1	0	4
West North Central	2	6	6	0	10	0	6	19	11	[4] 6
South Atlantic	4	0	0	0	4	0	0	0	0	0
East South Central	0	0	6	0	0	0	0	0	[5] 13	0
West South Central	0	3	0	3	3	7	0	3	3	7
Mountain	0	0	9	26	0	0	[2] 0	9	[6] 0	9
Pacific	10	6	2	0	12	18	12	14	[7] 4	6

TYPHOID FEVER CASE RATES

98 cities	20	20	18	16	22	17	[2] 16	14	[3] 12	[4] 11
New England	19	22	10	10	29	29	5	5	10	5
Middle Atlantic	15	14	16	10	24	12	11	9	11	5
East North Central	5	9	8	7	12	5	16	7	6	9
West North Central	11	10	33	15	19	8	19	14	21	[4] 4
South Atlantic	53	70	49	62	26	40	38	32	30	32
East South Central	64	42	52	42	105	84	6	102	[5] 19	24
West South Central	78	49	41	21	37	24	17	14	30	28
Mountain	35	44	9	35	17	79	[2] 0	0	[6] 10	18
Pacific	10	16	4	22	6	16	25	18	[7] 0	16

INFLUENZA DEATH RATES

91 cities	3	5	5	5	4	5	[2] 5	9	[8] 7	9
New England	2	5	2	7	2	2	10	2	12	2
Middle Atlantic	4	6	6	4	2	6	4	9	8	12
East North Central	2	3	2	4	3	3	6	6	5	6
West North Central	0	6	0	3	3	9	0	9	6	3
South Atlantic	0	2	0	6	10	4	4	18	4	10
East South Central	6	0	6	0	13	6	6	13	[5] 0	26
West South Central	7	11	14	7	17	7	0	21	17	14
Mountain	17	9	35	9	9	9	[2] 18	18	[6] 20	9
Pacific	5	0	5	7	7	7	2	2	5	7

PNEUMONIA DEATH RATES

91 cities	55	71	64	72	69	86	[2] 82	99	[8] 87	101
New England	77	70	75	87	50	99	90	104	67	89
Middle Atlantic	56	74	63	70	78	102	96	109	107	116
East North Central	35	55	45	50	52	52	63	87	64	74
West North Central	56	87	100	54	91	60	75	96	80	87
South Atlantic	79	86	87	96	67	136	113	134	117	152
East South Central	69	123	69	162	95	84	101	65	[5] 123	136
West South Central	76	110	59	82	97	125	86	103	66	110
Mountain	35	97	87	104	78	79	[2] 54	107	[6] 128	104
Pacific	55	40	65	65	55	60	46	32	53	42

[2] Boise, Idaho, not included.
[3] Covington, Ky.; Billings, Mont.; Pueblo, Colo.; and Spokane, Wash., not included.
[4] Waterloo, Iowa, not included
[5] Covington, Ky., not included.
[6] Billings, Mont., and Pueblo, Colo., not included.
[7] Spokane, Wash., not included.
[8] Covington, Ky.; Billings, Mont.; and Pueblo, Colo., not included.

FOREIGN AND INSULAR

CANADA

Provinces—Communicable diseases—Week ended October 31, 1931.—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended October 31, 1931, as follows:

Province	Cerebro-spinal fever	Influ-enza	Polio-myelitis	Smallpox	Typhoid fever
Prince Edward Island [1]					
Nova Scotia		2	2		
New Brunswick					4
Quebec Province			39		31
Ontario	4	1	1	7	13
Manitoba					3
Saskatchewan	1			3	3
Alberta				2	1
British Columbia					1
Total	5	3	42	12	56

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

Quebec Province—Communicable diseases—Week ended October 31, 1931.—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended October 31, 1931, as follows:

Disease	Cases	Disease	Cases
Chicken pox	49	Poliomyelitis	39
Diphtheria	59	Puerperal fever	3
Erysipelas	5	Scarlet fever	81
German measles	2	Tuberculosis	54
Measles	69	Typhoid fever	31
Mumps	7	Whooping cough	22

LATVIA

Communicable diseases—September, 1931.—During the month of September, 1931, cases of certain communicable diseases were reported in Latvia as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	3	Mumps	51
Diphtheria	53	Poliomyelitis	5
Dysentery	7	Puerperal fever	9
Erysipelas	27	Scarlet fever	46
Influenza	64	Tetanus	2
Leprosy	1	Trachoma	52
Lethargic encephalitis	1	Typhoid fever	141
Measles	6	Whooping cough	47

MEXICO

Tampico—Communicable diseases—October, 1931.—During the month of October, 1931, certain communicable diseases were reported in Tampico, Mexico, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Enteritis, various		37	Tuberculosis	89	23
Influenza	5	1	Typhoid fever	4	2
Malaria	321	23	Whooping cough	4	1
Paratyphoid fever	1				

PORTO RICO

San Juan—Communicable diseases—Four weeks ended November 7, 1931.—During the four weeks ended November 7, 1931, cases of certain communicable diseases were reported in San Juan, P. R., as follows:

Disease	Cases	Disease	Cases
Diphtheria	7	Measles	33
Filariasis	6	Mumps	2
Influenza	6	Pellagra	2
Malaria	96	Whooping cough	33

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

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

CHOLERA

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

Place		May 3-30, 1931	May 31-June 27, 1931	June 28-July 25, 1931	July 26-Aug. 22, 1931	Week ended— Aug. 29, 1931	September, 1931 5	12	19	26	October, 1931 3	10	17	24	31	November, 1931 7	14
Ceylon: Colombo	C	1	1		3												
	D	1	1		3												
China:																	
Canton	C	2	1			1	1										
	D	1															
Shanghai	C			1	7	1	58	30	36	35	29	17	17	8			
	D						3	4	2	5	8			4			
Swatow	C		10	7													
Tientsin	C	1	10														
	D	1	1														
India	C	13,604	18,001	22,074	36,5141	0,734	9,834	9,740	8,915								
	D	7,270	10,337	12,093	20,276	6,044	5,518	5,321	4,800								
Bombay	C			23	44	27	5	5	5	1	1	2					
	D			16	25	9	5	2	1		1	2					
Calcutta	C	265	292	237	110	10	3	15	18	18	23	3	7				
	D	149	168	155	30	4	2	3	6	6	12		5				
Chittagong	C												1				
Karikal	C	12			1	1			1	1							
	D	7			1	1			1								
Madras	C	52	9	4	6	3	1	1									
	D	17	4														
Moulmein	C			1													
	D			1													
Negapatam	C					1											
Rangoon	C	2	4	4	1					1				1			
	D	1	2	1	1					1				1			
Vizagapatam	C		1														
India (French):																	
Chandernagor	C	4	3	5	7		1	1		1							
	D	4	3	1	7		1	1		1							
Pondicherry	C	17	3	3	3	2			2		1						
	D	7	3	3	2	1			1								

India (Portuguese)	C		1	2	2	1	2	25	6								
	D			1	2	1	1	10	6								
Indo-China (see also table below):																	
Cochin-China—Rachgia	C				P												
Pnompenh	C		1	5	2			1	1		1						
	D	2	1	2	1			1	1		1						
Saigon and Cholon	C	104	61	14								1					
	D	76	41	7								1					
Iraq:																	
Abulkhasib	C					6											
	D					5											
Amara	C				2	22	35	8	1			2	2	2			3
	D				1	21	30	7	1				1	1			2
Amara Province	C					6	11	106	73	32	21	15	27	13	7	15	
	D					5	4	67	44	29	24	14	17	10	6	8	
Basra	C				547	148		54	91	77	19	29	32	38	30	9	1
	D				287	76		30	48	34	11	13	26	7	18	10	1
Basra Province	C				5	14	6	10	23	26	14	1	1	3	7		
	D				2	10	3	7	10	9	8	1	1	1	4		
Dinwaniyah	C									1							
Dinwaniyah Province	C									15	8	14	24	22	1		
	D									11	6	5	22	10	5		
Iwaniyah	C									22							
	D									15							
Muntafiq Province	C					10	21	66	128	55	54	45	55	17	19	9	23
	D					8	20	42	75	38	57	28	37	10	18	6	17
Nasiriyah	C						22	50	16	4	4	18	7	4	7	6	7
	D						15	49	20	3	4	18	3	3	6	3	6
Suqelshuyukh	C					2											
	D					2											
Japan: Taiwan—Kelung	C															2	
Persia: [1] Rafsanjan [2]	C	36															
	D	14															
Philippine Islands: [3] Provinces—																	
Capiz	C	17	4				9	9	17	49	21	5	4		7	5	
	D	15	4				5	6	5	35	16	5	3		5	4	
Cebu	C				3												
	D				3												
Iloilo	C		26	27													
	D		21	25													
Negros, Occidental	C		2														
	D		1														
Pampanga	C	1															
Siam	C	14	4	3	1	1											
	D	5	2	1		1											
Bangkok	C	3	1	4	1	1											
	D	1	1	2													

[1] On Oct. 23, 1931, cholera was reported at Mohammerah, Abadan, and Ahwaz, Persia. During the period from Oct. 22 to Nov. 7, 1931, 141 cases and 97 deaths were reported. The diagnosis of cholera was not confirmed upon bacteriological examination.

[2] From May 3 to 25 1931, 152 cases of cholera with 75 deaths were reported in Rafsanjan and vicinity, Karman district, Persia.

[3] Figures for cholera in the Philippines Islands are subject to correction.

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

CHOLERA—Continued

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

Place		May 3–30, 1931	May 31–June 27, 1931	June 28–July 25, 1931	July 26–Aug. 22, 1931	Week ended— Aug. 29, 1931	September, 1931 5	12	19	26	October, 1931 3	10	17	24	31	November, 1931 7	14
On vessel:																	
S. S. Arankola, at Rangoon, from Calcutta	C	1															
S. S. City of Eastborne, at Calcutta from Cocanada	C		1														
S. S. Tairea, at Penang, from Calcutta	C		1														
S. S. Bandar Shalpour, at Bushire, Persia, from Basra	C			1													
	D			1													
S. S. Kohistan, at Basra, from Bushire, Persia	C			2													
S. S. Cathay, at Kobe, Japan, from Shanghai	C				4												
	D				1												
S. S. Kasagi Maru, at Moji, from Shanghai	C						1										
S. S. Ankoo, at Nagasaki, from Shanghai	C							2									
	D							1									

Place		March, 1931	April, 1931	May, 1931	June, 1931	July, 1931 1–10	11–20	21–31	August, 1931 1–10	11–20	21–31	September, 1931 1–10	11–20	21–30	October, 1931 1–10	11–20
Indo-China (French) (see also table above):																
Cambodia [1]	C	100	113	117	308	72	82	87	12				8	6	1	16
	D	29	70	63	109			60	2				4	3	1	16
Cochin-China [1]	C	105	107	174	140	66	30	47	39				9	9	11	10
	D	73	74	133	106			42	32				6	7	2	2

[1] Reports incomplete.

PLAGUE

Place		May 3–30, 1931	May 31–June 27, 1931	June 28–July 25, 1931	July 26–Aug. 22, 1931	Week ended— Aug. 29, 1931	Sept. 5	Sept. 12	Sept. 19	Sept. 26	Oct. 3	Oct. 10	Oct. 17	Oct. 24	Oct. 31	Nov. 7	Nov. 14
Algeria:																	
Algiers	C				2												
Bone	C		1														
Philippeville	C			1	2												
	D			1	1												
Argentina: San Juan Province	C			P													
Belgian Congo	C		1														
	D		1														
British East Africa (see also table below):																	
Tanganyika	C	46	17	6	8				4	8	2						
	D	30	10	6	2				4	4							
Uganda	C	138	298	418	285	59	59	107	84	83	62						
	D	126	286	400	281	61	56	107	83	82	63						
Ceylon: Colombo	C	3	2	1	6		1	1	1	1	1	2					
	D	3	2	1	6		1	1	1	1	1	1					
Plague-infected rats		5			8												
China: [1]																	
Amoy	C	1															
	D	1															
Shansi Province [2]	C														P		
Shensi Province	C														P		
Dutch East Indies:																	
Batavia and West Java	C	59	116	75	58	19	18	8	20	21	31					1	
	D	59	66	75	58	19	18	8	20	21	31						
East Java and Madura	C	1															
	D	1															
Java and Madura	D	176	192	212	205	58	68	51	56	77	69	85					
Egypt:																	
Alexandria	C		4	13	9	2	2		1	1				1	1	3	1
	D		4	5	3	1	1									1	1
Assiout	C	18	11														
	D	7	1														

[1] On July 27, 1931, 1,250 cases of plague were reported in Chiobe and Changchow, China, since April. On September 19, 1931, 18 deaths were reported in Changchuanpu and new cases in Kaitung and Fengtien.

[2] On October 17, 1931, plague epidemic was reported in western Shansi Province, China, with 2,000 deaths at Hsinghsien.

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

PLAGUE—Continued

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

Place		May 3–30, 1931	May 31–June 27, 1931	June 28–July 25, 1931	July 26–Aug. 22, 1931	Week ended— Aug. 29, 1931	September, 1931 5	12	19	26	October, 1931 3	10	17	24	31	November, 1931 7	14
Egypt—Continued																	
Beni-Suef	C	5															
	D	3															
Beheira	C				3		2										
Dakahlia	C			1	2												
Deirout	C	10	3														
	D	4	1														
Gharbieh	C		1														
	D		1														
Girga	C	7		1													
	D	2															
Kena	C	1															
	D	1															
Minieh	C	6	3	12												1	3
	D	3	1	4												1	1
Port Said	C		3	5	2									1			
	D	1	2	1													
Tanta	C				2		1		1						P		
France: Rouen-Devilleles	C																
Hawaii Territory:																	
Hawaii—Hamakua—Plague-infected rats		1			1												
Maui Island—																	
Hallimaile—Plague-infected rats									1								
Kula District	C				1												
	D				1												
Makawao—Plague-infected rats									1								
Paia—Plague-infected rats										1							
Paaulo—Plague-infected rats														1			
India	C	752	88	221	684	282	337	554	659								
	D	692	51	128	440	146	179	238	200								
Bassein	C	1		4	2		1	2	1	1				1			
	D	1		3	2		1	2	1	1				1			

Bombay	C	8		12								1		1			
	D	6		6								1					
Plague-infected rats		94	37	48	47	23	17	7	10	9	9	12	12	4			
Burma	C			16													
	D			10													
Madras Presidency	C	2	6	21		9	75	88	114			3	90				
	D	1	1	9		4	51	52	55			1	59				
Moulmein	C			9		P	5										
	D			1			4	3	2	2							
Rangoon	C	2	1	2	1	2	1							5			
	D	2	1	1	1	1	1							1			
Plague-infected rats		7	3	6	3	1	1	1	1	1	1	1	1	1			
Indo-China (see also table below): Pnompenh	C		3														
	D		2														
Iraq:																	
Baghdad	C	23	23	3	1		2	1						1			
	D	9	9	2			1										
Maudhan	C	3														2	1
	D															1	
Madagascar (see also table below): Tamatave	C				1			2		1							
Morocco	C									10		8	2	2			
	D											8		4			
Peru (see table below).																	
Senegal (see table below).																	
Siam	C	2	1		1	1	1				1	1					
	D	2	1			1	1				1						
Spain: Hospitalet—Barcelona Province	C				5	1			1	1	1			5		1	
	D				2				1		1			1			
Syria: Beirut	C			2	1			1	1	1	2					1	
Tunisia: Tunis	C	16	11					1				1					
	D	3	1														
Union of South Africa:																	
Cape Province—Plague-infected rats					1												
Orange Free State	C	2															
	D	2															

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

PLAGUE—Continued

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

Place		May, 1931	June, 1931	July, 1931	August, 1931	September, 1931	October, 1931
British East Africa (see also table above):							
Kenya	C	245	154	484	235	14	19
Indo-China (see also table above)	C	-------	2	1	-------	1	3
	D	-------	2	1	-------	1	1
Madagascar (see also table above):							
Ambositra Province	C	19	15	1	2	-------	-------
	D	18	15	1	1	-------	-------
Antisirabe Province	C	7	12	13	22	-------	-------
	D	7	12	12	22	-------	-------
Miarinarivo Province	C	2	-------	8	20	-------	-------
	D	2	-------	7	19	-------	-------
Moramanga Province	C	2	1	1	3	-------	-------
	D	2	-------	-------	3	-------	-------
Tananarive Province	C	18	10	5	45	-------	-------
	D	18	9	5	44	-------	-------
Peru	C	2	5	3	19	-------	-------
	D	-------	1	2	14	-------	-------

Place		May, 1931	June, 1931	July, 1931	August, 1931	September, 1931	October, 1931
Senegal:							
Baol[1]	C	4	-------	27	101	13	6
	D	3	-------	13	58	8	2
Dakar[1]	C	63	64	95	194	45	4
	D	49	56	73	106	31	4
Diourbel[1]	C	-------	-------	-------	-------	9	-------
	D	-------	-------	-------	-------	3	-------
Louga[1]	C	5	4	3	2	10	1
	D	2	2	1	1	4	2
Rufisque[1]	C	1	2	34	2	1	7
	D	-------	-------	-------	-------	-------	1
Thies[1]	C	-------	12	16	26	12	7
	D	-------	8	7	16	8	5
Tivaouane[1]	C	19	3	3	-------	-------	-------
	D	11	2	2	-------	-------	-------

[1] Reports incomplete.

SMALLPOX

Place		May 3-30, 1931	May 31-June 27, 1931	June 28-July 25, 1931	Week ended— August, 1931 1	8	15	22	29	September, 1931 5	12	19	26	October, 1931 3	10	17	24	31	
Algeria:																			
Algiers	C	1	8	1															
Constantine	C	1		1						1									
Belgian Congo	C	47	42																
Bolivia.[1]																			
Brazil: Porto Alegre (alastrim)	C	19	5	41	11	6	17		7	13	12	16	12	18					
	D			1	1				2		2			2					
British East Africa: Tanganyika	C	13	7	149	1	18			31	4	6	9			1, 121				
	D			17							1	4			91				
British South Africa:																			
Northern Rhodesia	C			21			26												
Southern Rhodesia	C		1	2						1									
Canada:																			
Alberta	C			1		1							12				1	2	2
British Columbia	C			2	2			3		1	1								1
Manitoba	C		4									1							
Winnipeg	C										1								
Ontario	C	17	32	35	1		2	2	4		2		5	2	1	9		7	3
Kingston	C									1									
Ottawa	C		1								1		5	2		1		4	3
Sault Ste. Marie	C	1																	
Toronto	C	1	1																
Quebec	C			1															
Saskatchewan	C	48	54	42		10	6	10	8	8	12	5	1	6	3	1	11	3	1
Regina	C	2											1			1			
Chile:																			
Antofagasta	C			1															
Chanaral	C	1																	
China:																			
Amoy	C	6	4	2	1						1		1			1			
	D	3	3	2	1						1		1						
Canton	C	3	1	2					1										
Foochow	C	P	P	P		P		P		P		P		P					
Hankow	C	5	4	3	1		1	1					1						
Hong Kong	C	1																	
	D	2																	

[1] An epidemic of smallpox was reported on May 18 with 716 cases and 314 deaths since the middle of April, 1931, in Mendez Province, Bolivia.

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

SMALLPOX—Continued

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

Place		May 3–30, 1931	May 31–June 27, 1931	June 28–July 25, 1931	Week ended— August, 1931 1	8	15	22	29	September, 1931 5	12	19	26	October, 1931 3	10	17	24	31	Nov.
China—Continued.																			
Manchuria—																			
Harbin (see also table below)	C	3																	
Kwantung—Dairen	C	2	1																
Nanking	C	P				1													
Shanghai—																			
Foreigners only	C	7	11	3									35	29	17	17	1	6	
Including natives	D	7	13	6				1	1			1	5	8					
Tientsin	C	2		3															
Chosen (see table below).																			
Colombia:																			
Cali	D	1																	
Santa Marta	D										1								
Dutch East Indies:																			
Batvia and West Java	C	2																	
East Java and Madura	C	1																	
Eritrea	C	3		2					10										
	D								2										
France (see table below).																			
Great Britain:																			
England and Wales	C	570	287	187	26	25	19	21	33		19	45	45	41	34	41	39	42	
Bradford	C	8	5																
Leeds	C	2																	
London	C	183	122	54	6	12	4	4	8	9	5	15	5	17	15	21	20	27	
London and Great Towns	C	403	228	152	22	20	17	10	13	30	11	34	35	31	25	37	31	37	
	D		1	1															
Sheffield	C										1	1							
Greece (see table below).																			
Honduras: Puerto Castilla	C													1					
India	C	11,403	7,313	5,359	978	904	645	400	483	484	409	329							
	D	1,849	1,704	1,352	234	213	179	120	144	108	109	72							
Bassein	C	1																	
Bombay	C	9	6	6	1		1			1	2	2							
	D	4	5	6	1					1									

Calcutta	C	89	47	21	4	4		5	2	1	2		1				1		
	D	75	41	18		4		5	2	1	2		1				1		
Cochin	C	3				1	1	1					1	1	2	4	3		
Karachi	C		2		1												1		
	D		1																
Madras	C	8	2	2	1					1			1	5	6	1	2		
	D	6	1												2				
Negapatam	C		3	1		2			3		1			1		1			
Rangoon	C	13	6	3	2		1	1	1		1			2		1			
	D	5	2	1	1			1			1			1	1				
Vizagapatam	C	6	6	5		3		2	3	1	1	1	2	4			1		
	D	1	2	1		3		1	3	1	1	1		1			1		
India (French):																			
Chandernagor	C	7	1	3															
	D	5		2															
Karikal	C	4	6	4	1	1	3	2		2	5			5		1			
	D	4	6	4	1	1	2	2		2	1			1		1			
Pondicherry Province	C	11	7	28	11	6		3	1	6	1	18	1	4	14	4			
	D	11	7	28	11	6		3	1	6	1	16	1	4	12	4			
India (Portuguese)	C	3																	
	D	1																	
Indo-China (see also table below):																			
Pnompenh	C	1	2																
	D	1																	
Saigon and Cholon	C	2		3	1	1			1		3	2	1	4	1			4	
	D	1		1	1				1		2		1	2				4	
Iraq:																			
Baghdad	C	3	1								1								
	D	2																	
Basra	C	2	1																
Mosul Liwa	C			1				1					5						
Ivory Coast (see table below).																			
Japan: Nagoya	C			1															
Mexico (see also table below).																			
Jalisco (State)—Guadalajara	D	2	1	3			2						1	1	2				2
Mexico City and surrounding territory	C	45	25	22	8	2			2	2	1		2	1	2	2			
	D	11	13	8	1	1					1	1	1	2		1			
Monterrey	C		1															2	
Torreon	C	1	3							1	1			1					
	D		2								1								
Vera Cruz	C	1																	
Morocco (see table below).																			
Netherlands: Friesland—Opsterland	C																[1] 1		
Poland	C	3	3	18								1						1	
Portugal: Lisbon	C	67	48	45	17	12	8		10	21	18	17	16	11	6	15	19		
Rumania (see table below).																			
Siam	C	6	5	1							3								
	D	1	1	1															
Spain	C			7															
Straits Settlements	C	2				1											15		
	D	2															1		

[1] Imported case.

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

SMALLPOX—Continued

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

Place		May 3–30, 1931	May 31–June 27, 1931	June 28–July 25, 1931	Week ended— August, 1931 1	8	15	22	29	September, 1931 5	12	19	26	October, 1931 3	10	17	24	31	Nov. 7, 1931
Sudan (Anglo-Egyptian)	C	6	1								32								
	D	2									6								
Syria (see table below).																			
Turkey (see table below).																			
Union of Socialist Soviet Republics (see table below).																			
Union of South Africa:																			
Cape Province	C	P																	
Natal	C							P			P								
Orange Free State	C	P	P	P			P	P	P	P			P						
Transvaal	C		P	P															
Upper Volta	C	88	12	2															
	D	1																	
On vessel:																			
S. S. Taif (pilgrim ship) at Suakin from Jeddah	C							1											
S. S. Talodi at Suakin	C	1																	

Place		April, 1931	May, 1931	June, 1931 1–10	11–20	21–30	July, 1931 1–10	11–20	21–31	August, 1931 1–10	11–20	21–31	September, 1931 1–10	11–20	21–30	October, 1931 1–10	11–20
Indo-China (see also table above)	C	142	58	30	16	1	1		7	29				7	27	10	11
	D						1		4	11				4	8	3	3
Ivory Coast	C											7					
	D											4					
Syria: Beirut	C				1												

Place		February, 1931	March, 1931	April, 1931	May, 1931	June, 1931	July, 1931	August, 1931
China: Harbin (see also table above)	C		7		13	10		
Chosen	C		11		1	4	2	
	D		3				1	
France	C	16	15	6	54	9	20	
Greece	C	4			3	1		
Mexico (see also table above)	D	3		1	1	2		
Morocco	C	4	6	7	49	48	23	23
Rumania	C		1		1			1
Turkey	C	37	1		9	1		
	D	6						
Union of Socialist Soviet Republics	C		1,963	1,516	1,345			
Territories in Asia	C	532						
Ukraine	C	23						
Other territories in Europe	C	1,577						
Railroads, etc	C	77						

TYPHUS FEVER

Place		May 3–30, 1931	May 31–June 27, 1931	June 28–July 25, 1931	Week ended— August, 1931: 1	8	15	22	29	September, 1931: 5	12	19	26	October, 1931: 3	10	17	24	31	Nov. 7, 1931
Algeria:																			
Algiers	C	7	9	2												1		1	
Bone	C						1	1											
Constantine Department	C	22	26	3	1							2		1				11	
Oran	C	2	2			1				1									
Australia, Western	C	1																	
Bulgaria	C	16	30						1								1		
	D	4	6																
China:																			
Manchuria—Harbin	C		16						1										
Shanghai	C			3			1						1						
Chosen (see table below).																			
Colombia: Cali	D									1									
Czechoslovakia (see table below).																			
Egypt:																			
Alexandria	C		3								1	1							
Cairo	C								1										
Gharbeh	C																		1
	D																		1
Great Britain: Scotland—Fife County	C	1																	

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

TYPHUS FEVER—Continued

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

Place		May 3–30, 1931	May 31–June 27, 1931	June 28–July 25, 1931	Week ended— August, 1931					September, 1931				October, 1931					Nov. 7, 1931
					1	8	15	22	29	5	12	19	26	3	10	17	24	31	
Greece (see table below).																			
Guatemala (see table below).																			
Iraq: Baghdad	C	2																	
	D	2																	
Irish Free State:																			
Cork County—																			
Schull	C			1															
Skibbereen	C		2	1															
Kerry County—																			
Dingle	C	1																	
Listowel	C		1																
Kildare County—Naas	C												1						
Limerick County—																			
Croom	C													1					
Glin	C										2			1					
Limerick	C			2	1														
Michelstown	C			1															
Rathkeale	C													1					
Mayo County—																			
Belmullet	C	1																	
Castlebar	C							1											
Westport	C							1											
Japan	C		1																
Lithuania (see table below).																			
Mexico (see also table below):																			
Durango	D			1															
Mexico City, including municipalities in Federal District	C	75	46	53	7	6		5	5	1	2	2	4	2	5	3			
	D	33	19	12	5	3		2	1	1		2	2	2	2	2			
San Luis Potosi	D	2		4				1											
Torreon	C			1											1	1		3	
	D			1											1	1		5	1
Morocco	C	42	101	102		2	1	5						1		3		1	
	D	4	6	8															

Palestine	C	4	5	2	3	3	1	4				4	4	1	1		2		1
Panama Canal Zone—Balboa	C	2																	
Poland	C	298	97	53	10	4	10	7	6	2	1	2	2	8	3	1	2	6	
	D	18	4	5	1		1							1				1	
Rumania	C	169	80	11	7	9	4	3		4	6	3	1	6					
	D	18	13	5		1		1				1							
Syria	C	4																	
Tunisia: Tunis	C	29	73	2					1		1	1							
	D	3	4																
Turkey (see table below).																			
Union of Socialist Soviet Republics (see table below).																			
Union of South Africa:																			
Cape Province	C	P	P	P		P	P	P	P	P	P	P	P	P					
Municipality of East London	C		1		1														
Natal	C	P	P	P		P					1								
Orange Free State	C	P	P	12															
Transvaal	C	P	P	P		P	P	P	P	P	P	P	P	P					
Yugoslavia (see table below).																			

Place		March, 1931	April, 1931	May, 1931	June, 1931	July, 1931	August, 1931	September, 1931
Chosen: Seoul	C	3	4		6	1		
	D		1		1	1		
Czechoslovakia	C		5	11	2			
Greece	C	8	22	6	9	2	13	5
	D	1	3				2	
Guatemala	C				33	34	3	
	D				15	5		
Lithuania	C	99	34	10	13	8	2	
	D	3	5		2			

Place		March, 1931	April, 1931	May, 1931	June, 1931	July, 1931	August, 1931	September, 1931
Mexico (see also table above)	D	238						
Turkey	C	15	32	13	11	9		
Union of Socialist Soviet Republics	C	2,206	1,513	1,324				
Yugoslavia	C	10	43	14	2	3	1	
	D	1	5					

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

YELLOW FEVER

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

Place		May 3–30, 1931	May 31–June 27, 1931	June 28–July 25, 1931	July 26–Aug. 22, 1931	Week ended—										
						Aug. 29, 1931	September, 1931				October, 1931					November, 1931	
							5	12	19	26	3	10	17	24	31	7	14
Brazil:																	
Alagoas State	C				1												
	D				1												
Maceio	D															1	
Ceara State	C	1	1		1												
	D	1			1												
Minas Geraes State	C	2															
	D	1															
Rio de Janeiro State	C	2															
Sergipe State	C		1														
British Cameroons: Mamfe	C	3	2														
	D	2															
Colombia: Magdalena Province—Near Cienaga	C			4													
Gold Coast:																	
Akuso	C			2													
	D			1													
Dagomba District	C				4												
Kete Krachi	C												1				
Kintampo	C			1													
	D			1													
Oda	C								1								
	D								1								
Tamale	C			2						2				1			
	D			2						2							
Wale Wale	C				1												
	D				1												
Ivory Coast:																	
Bobo Dioulasso	C			1													
	D			1													
Grand Bassam	C				4			1									
	D				2			1									
Kong Circle	C			4													
Seguela	C				P												
Tehini	C															1	

Nigeria	C				1											1			
	D				1														
Senegal:																			
Podor (Hinterland)	C				1														
	D				1														
St. Louis	C									1									
Thies	C									1									
	D									1									
Sudan (French)	C			4															
Macina—Kayo Circle	C																		2
Togo (French): Atakpame—Anie Circle	C																1		
Upper Volta:																			
Banfora	C			2						2									
	D			1						1									
Dedougou	C															2			
Diarabakoko	C									2									
	D									1									
Ouagadougou	C				1					1				1					

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