Public Health Reports

Vol. 61 • SEPTEMBER 27, 1946 • *No. 39*

Printed With the Approval of the Bureau of the Budget as Required by Rule 42 of the Joint Committee on Printing

NATIONAL INSTITUTE OF HEALTH RESEARCH FELLOWSHIPS

The United States Public Health Service announces the continuation of the National Institute of Health Research Fellowships which were created in 1945. An increased number of these fellowships will be available during 1946 and 1947.

The National Institute of Health Research Fellowships are awarded to individuals who have had postgraduate work in institutions of recognized standing in the various fields of science allied to public health, as biology, chemistry, physics, entomology, medicine, dentistry, veterinary medicine, etc.

Applications for these fellowships may be made at any time during the year, are acted upon promptly, and are effective for one year from the time of award with a possibility of renewal for a second year.

Junior research fellowships are available to individuals holding master's degrees or to those who have completed an equivalent number of hours of postgraduate study. The stipend is $2,400 per annum.

Senior research fellowships are available to individuals holding doctorate degrees. The stipend is $3,000 per annum.

These fellowships will offer an opportunity for study and research in association with highly trained specialists in the candidate's chosen field at the Institute or some other institution of higher learning.

Letters of inquiry should be addressed to The Director, National Institute of Health, Bethesda 14, Md.

TYPICAL STRUCTURES ON REPLICAS OF APPARENTLY INTACT TOOTH SURFACES [1]

By DAVID B. SCOTT, *Senior Assistant Dental Surgeon* (R), and RALPH W. G. WYCKOFF, *Scientist Director, United States Public Health Service*

A method of studying tooth surfaces *in situ* and *in vitro* by examination of metal-shadowed collodion replicas has been described in a previous publication (*1*). Such replicas are suitable for either optical or electron microscopy, but it has seemed unwise to make an extensive

[1] From the Division of Physiology and Industrial Hygiene Research Laboratory, National Institute of Health.

investigation of ultra-structures seen under the electron microscope until a thorough understanding has been gained of the wealth of detail visible under low magnifications. The present paper is devoted to a description and illustration of typical structures commonly seen under the optical microscope. It is based on an inspection of approximately 2,000 replicas, about 500 of which have been obtained from teeth *in situ*.

The replica method is most generally applicable to the study of smooth surfaces of the teeth, but sometimes replicas can be made of occlusal inclined planes. Replicas for the present work have been taken from the various smooth surfaces of extracted teeth, and from the accessible surfaces of teeth in the mouth. The latter have consisted of buccal, labial, and lingual surfaces of all teeth except third molars, and of proximal surfaces when either the adjacent tooth was missing or approximal contact was such that at least a partial replica could be taken buccal or labial to the contact point.

Prior to taking replicas, all extracted teeth have been washed with soap and water and a hand brush, and inspected for debris or plaques, Bender's disclosing solution (*2*) generally being used for the detection of the latter. Replicas have been made of surfaces before and after pumicing, before and after removing visible surface deposits, and under a variety of other conditions. In the intra oral work some teeth have been pumiced, others have been checkstained with the disclosing solution prior to taking replicas, but usually the preparatory treatment has been limited to ordinary brushing with a toothbrush by the individual, followed by inspection and cleaning by the operator with cotton pellets saturated with ether and alcohol.

A number of structures appearing on the replicas can be identified and described in terms of histologic components of the enamel as seen in ground sections. Other details appear only on a surface, and have no counterparts in ground sections. Most tooth surfaces are subject to great variation from point to point, and show several of these structures within a single microscope field; very few are homogeneous. The most common structures on replicas from surfaces which have seemed intact on visual inspection are the following:

1. *Enamel rod-ends.*—These are visible to some extent on nearly every replica. Sometimes they appear only in small areas (fig. 5) and at other times the entire surface shows an evenly distributed rod pattern (figs. 1, 2, 7). The rod outlines resemble those described from ground sections, i. e. three sides, with two of these concave and the third convex (Ref. 1, fig. 4). The rod-ends, from 5μ to 10μ in diameter, are apparently concave since they appear as elevations on the replicas (figs. 1, 2, 5, 7). Occasionally they are very smooth, but more often they are rough and show a fine dotted pattern at magnifications

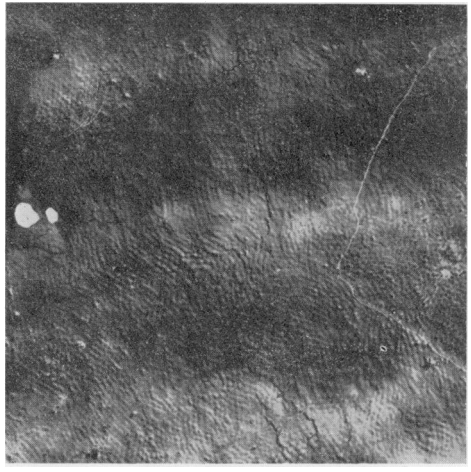


FIGURE 1.—Enamel rod-ends showing chainlike arrangement. (Mesial surface of extracted lower left third molar. 100 ×.)

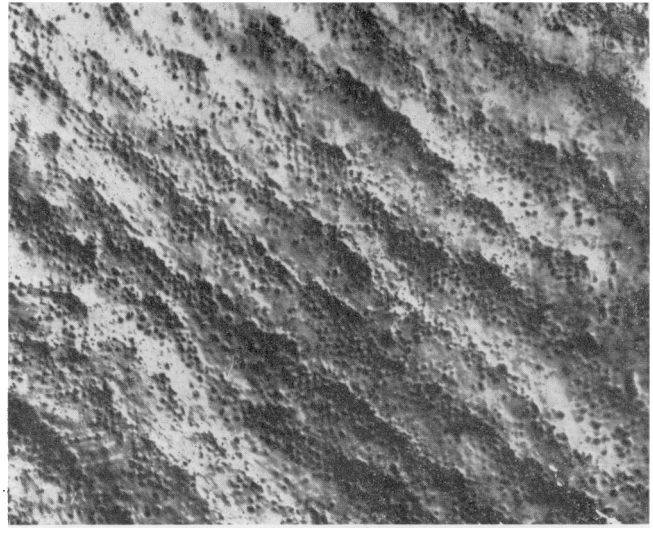


FIGURE 2.—Perikymata following regular course, but showing individual irregularities. (Mesial surface of extracted lower left first bicuspid. 150 ×.)

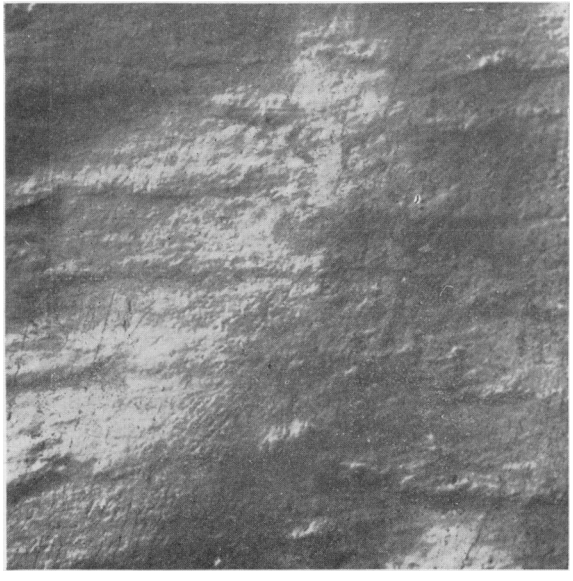


FIGURE 3.—Wide flat-bottomed perikymata following regular course. (Buccal surface of extracted upper left first biscuspid. 150 ×.)

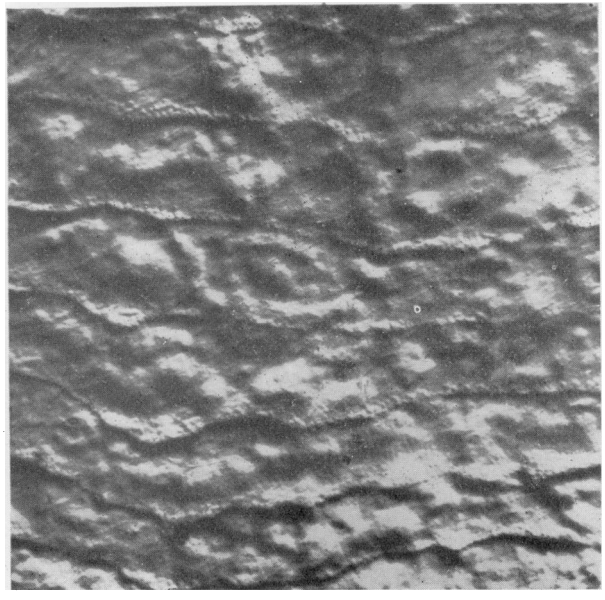


FIGURE 4.—Narrow, sharp perikymata following regular course, (Labial surface of upper left central, *in situ*. 150 ×.)

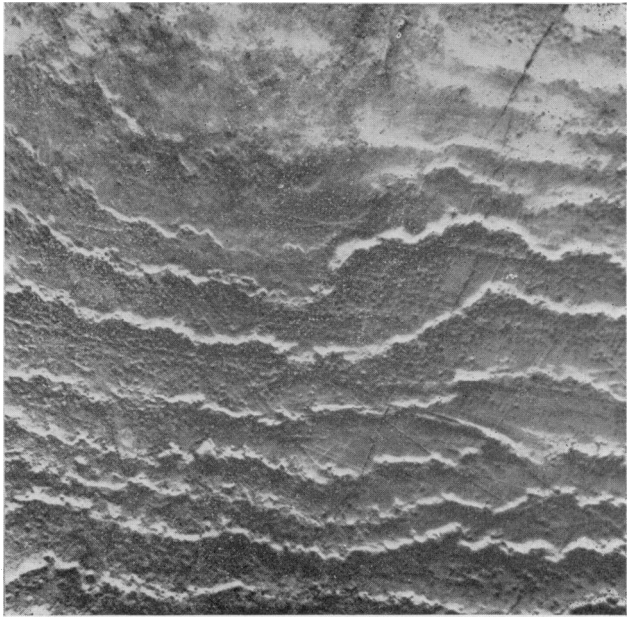


FIGURE 5.—Perikymata showing interruptions and aberrations of course. (Buccal surface of extracted upper left second molar. 150 ×.)

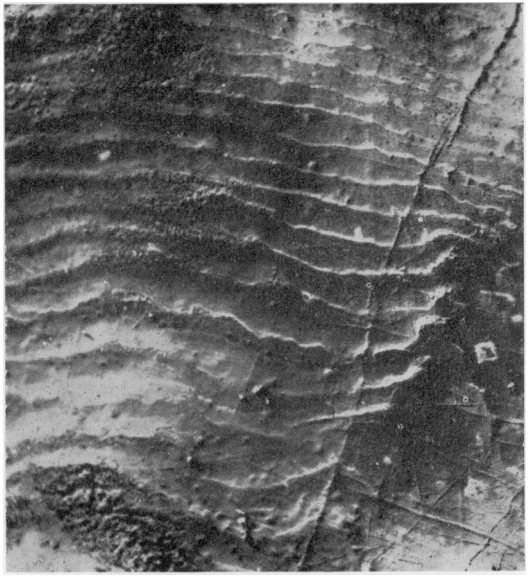


FIGURE 6.—Perikymata showing marked aberrations of course. (Mesial surface of extracted lower left first bicuspid. 150 ×.)

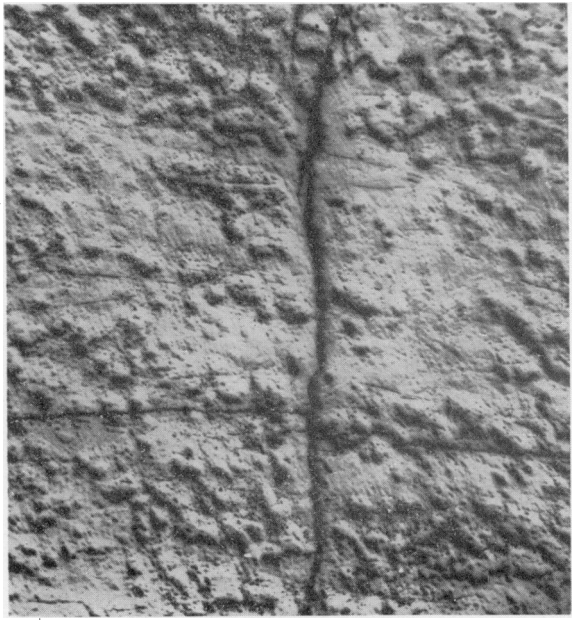


FIGURE 7.—Crack in enamel surface. (Labial surface of extracted upper left central. 150 ×).

FIGURE 8.—Scratches in enamel surface. (Labial surface of extracted lower right lateral. 150 ×).

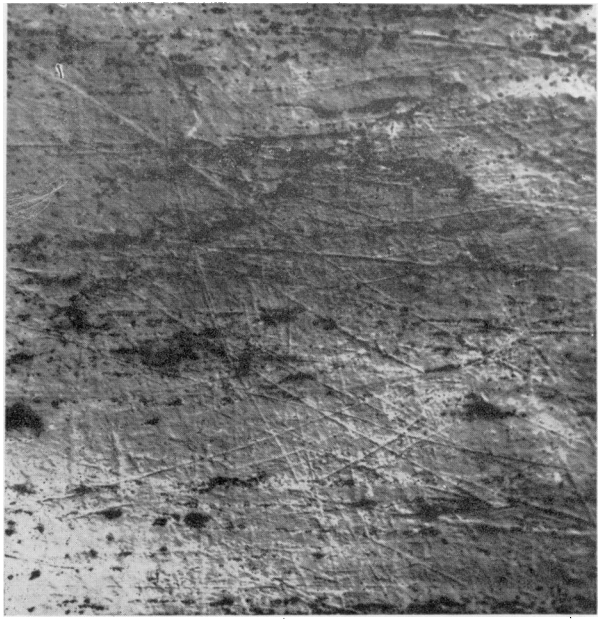


FIGURE 9.—Microscopic roughness in apparently flawless surface. (Labial surface of upper right central, *in situ*. 150 ×.)

FIGURE 10.—Microscopic roughness in small opaque area. (Labial surface of extracted upper left lateral. 100 ×.)

FIGURE 11.—Microscopic roughness in area of mild decalcification. (Mesial surface of extracted lower left second molar. 150 ×.)

FIGURE 12.—Severe abrasion at contact point. (Mesial surface of extracted lower right second molar. 150 ×.)

approaching 1,000 ×. The concavity of the ends varies greatly and determines the visibility of the rods. When it is deep they are prominent at low magnifications (figs. 1, 2, 5, 7); when it is shallow the replica may seem almost, though usually not completely, rod-free (fig. 8).

2. *Interprismatic material.*—Wherever rod-ends are visible they are separated by from 1μ to 3μ of interprismatic material. This thickness varies considerably even in a single area and on different sides of a single rod-end. The sweeping, chainlike appearance of many rows of rod-ends is due to this variation in width (figs. 1, 7).

3. *Perikymata.*—One or more surfaces of nearly all teeth show these transverse waves which vary greatly in depth, in contour, and in distance apart. Usually they are from 15μ to 100μ apart (figs. 2, 3, 4, 5, 6, 10). They are often close together in the gingival portion of the surface, and farther apart near the incisal or occlusal edge. Most perikymata appear to be from 3μ to 10μ deep, but this depth may vary along an individual wave (figs. 2, 4, 5). Sometimes the groove is flat on the bottom (fig. 3), sometimes it is rounded (fig. 10), but in most cases it is a fairly sharp furrow (figs. 2, 4, 5, 6). Often the perikymata sweep across the surface in uniform, diphasic curves (figs. 3, 4). Many, however, show marked aberrations from this regular course. Occasionally they dip sharply for short distances and return to the same horizontal baseline (figs. 5, 6). Sometimes they stop completely in a rough area (fig. 11), an opaque (fig. 10), an abraded (fig. 12), or even an unaffected area (figs. 2, 5), and then resume their previous course a short distance farther along.

4. *Cracks.*—Cracks are evident on the surface of most extracted teeth and on many teeth *in situ*. They vary in length, width, depth, and number on a surface. Typical examples are shown in figures 6 and 7. Some of the cracklike details may be identical with what are commonly designated in ground sections as lamellae (fig. 7); on the replicas no satisfactory differentiation between the two has yet been possible.

5. *Scratches.*—Practically all tooth surfaces show many scratches They vary from several micra to several millimeters in length and generally are shallow and narrow. Various types are seen in figures 3, 4, 5, 6, 7, 8, 9, and 11.

6. *Microscopic roughness.*—This is a minor type of surface irregularity which appears in replicas taken over white spots, decalcified areas, and over many regions which appear flawless on visual inspection of the tooth. Almost every replica has shown some area of microscopic roughness. It is characterized by a granular background which appears to be produced by many exceedingly small pits close together, and by numerous larger depressions, some pitlike, others

elongated, and none more than a few micra deep. Perikymata are generally absent or far less pronounced than in adjacent regions. The rod detail occasionally noted in the background is often pronounced and at other times very faint. Microscopic roughness associated with an apparently flawless surface is shown in figures 3 and 9. In the former a rod pattern is faintly visible. The replica of figure 10 was taken over a small white spot which could be seen only by transilluminating the tooth. The opaque region and its associated micro-roughness appear in the upper left corner of the picture. Figure 11 shows the more marked roughness of an area of very mild decalcification. Small unevenly distributed areas of micro-roughness are seen in figures 5 and 6.

7. *Abrasion*—Most proximal surfaces which have been in contact with those of adjacent teeth show some degree of abrasion. Often the worn contact point is immediately evident on visual inspection, but frequently the wear is so slight that it can be seen only on microscopic examination of the replica. Abrasion is often seen on buccal and labial surfaces, especially on the occlusal and incisal thirds of lower teeth. Replicas from abraded areas tend to be flatter than those from surrounding regions. The perikymata are worn down and rod detail is usually absent. The entire region may be indented by short, shallow, closely spaced grooves and pits whose depth and distribution usually permit a differentiation between abrasion and other types of roughness. Figure 12 is an example of a replica taken over a severely abraded contact point.

8. *Smooth areas.*—Many replicas show regions which are devoid of microscopically visible detail, or of detail other than light scratches (fig. 11). Smooth areas extensive enough to cover an entire replica are, however, rarely encountered.

Pathologically affected teeth show more or less characteristic details in addition to the structures listed above. Replicas of the various stages in carious disintegration, small pit cavities, microscopic and macroscopic hypoplastic pits, evidences of fluorosis, and other surface irregularities will be described in subsequent publications.

Summary

The types of detail most commonly seen on examination of metal-shadowed replicas of apparently intact tooth surfaces are described and illustrated by a series of photomicrographs. These reveal marked differences between surfaces and on individual surfaces, even though the surfaces look intact and flawless on visual inspection.

References

(*1*) Scott, D. B., and Wyckoff, R. W. G.: Shadowed Replicas of Tooth Surfaces. Pub. Health Rep., **61**: 697–700 (May 17, 1946).
(*2*) Bender, D. V.: U. S. Patent No. 2,151,495 (See Chem. Abstr. **33**: 5132 (1939)

CHEMOPROPHYLAXIS OF EXPERIMENTAL INFLUENZA INFECTIONS IN EGGS[1]

By R. H. Green, A. F. Rasmussen, Jr., and J. E. Smadel

Nitroakridin 3582 or, 2,3-dimethoxy-6-nitro-9 (-diethyl-amino-oxy-propyl) aminoacridine-dihydrochloride, has been shown to have a beneficial effect in experimental infections with several rickettsial agents (*1*, *2*). Furthermore, other acridine compounds are now known to inhibit the growth of bacteriophage (*3*). Preliminary experiments in which embryonated eggs infected with influenza B virus were treated with nitroakridin 3582 have given sufficiently encouraging results to warrant the present report.

MATERIALS AND METHODS

Stock virus for the experiments consisted of chorioallantoic fluids from embryonated eggs infected with Lee strain influenza virus which were pooled and stored in the frozen state until standardized by titration in eggs. Samples of the thawed material were then diluted so that inocula for each experiment contained the desired number of minimal infecting doses (MID), as calculated by the 50 percent end-point method. A stock solution of nitroakridin with a concentration of 20 mg./cc. was prepared in 0.9 percent NaCl solution buffered at pH 7.6, sterilized in the autoclave at 10 pounds pressure for 10 minutes, and diluted with an equal volume of buffered saline before injection into eggs. Usually equal volumes of the desired dilution of virus made with buffered salt solution were mixed with nitroakridin solution and immediately injected into the chorioallantoic sacs of 11-day embryonated eggs. In some experiments, the dilutions of virus were made with normal chorioallantoic fluid and then mixed with the drug and injected; while in others the drug and virus, both in buffered saline, were injected separately into the chorioallantoic sac. Except in experiments 12 and 13b, each egg received an inoculum totaling 0.1 cc. which contained 0.5 mg. of the drug and from 1 to 10,000 MID of virus. In experiments 12 and 13b the nitroakridin was injected 1 hour before the virus; and in experiment 12 three doses were used, i. e., 0.5, 0.25, and 0.1 mg. The final pH of mixtures of drug and virus diluted in buffered saline was 5.6, and that of mixtures of drug and virus diluted in chorioallantoic fluid was 6.5; both of these values are above the pH range at which influenza virus is inactivated (*4*). Control groups of eggs received corresponding amounts of the drug or of the virus. Inoculated eggs were incubated at 35° C. for 2 to 5 days and those embryos dying before the termination of the experiment were discarded. At the end of the incubation period,

[1] From the Division of Virus and Rickettsial Diseases, Army Medical School, Army Medical Center.

the eggs were chilled at 4° C. for several hours. The chorioallantoic fluids were then harvested and tested individually for their content of virus by the red cell agglutination technique, using 0.5 cc. amounts of serial twofold dilutions of allantoic fluid with 0.25 cc. amounts of a 1-percent suspension of washed human "O" type cells. No attempt was made to determine amounts of virus below the level demonstrable by red cell agglutinatior. All fluids failing to agglutinate red cells were arbitrarily regarded as negative.

RESULTS

The results of eight experiments are summarized in table 1. It is

TABLE 1.—*Effect of nitroakridin 3582 on the propagation of B (Lee) influenza virus in embryonated eggs*

Experiment No.	Number of eggs inoculated	Approximate MID's virus	Nitroakridin 3582 in mgs.	Incubation (days at 35° C.)	Number of positive [1] eggs over total tested	Number of eggs positive at indicated titer										
						2	4	8	16	32	64	128	256	512	1,024	2,048
4	9	10,000	0.5	3	3/4	---	---	---	---	---	1	1	---	1	---	---
	9	10,000	0	3	4/4	---	---	---	---	---	---	---	1	3	---	---
	9	100	.5	3	2/3	---	---	---	---	---	---	1	---	1	---	---
	9	100	0	3	4/4	---	---	---	---	---	---	---	---	---	4	---
	9	1	.5	3	0/4	---	---	---	---	---	---	---	---	---	---	---
	9	1	0	3	3/4	---	---	---	---	1	---	---	---	---	2	---
11	21	100	.5	2	17/21	---	---	---	---	1	2	2	3	7	2	---
	10	100	0	2	9/10	---	---	---	---	---	---	---	1	---	8	---
12	20	100	.5	3	18/18	---	---	---	---	1	---	2	5	6	5	---
	20	100	.25	3	18/19	---	---	---	---	---	---	1	2	6	5	4
	20	100	.1	3	17/19	---	---	---	---	---	1	1	2	3	6	4
	10	100	0	3	10/10	---	---	---	---	---	---	---	1	2	3	4
5	18	10	.5	3–5	0/12	---	---	---	---	---	---	---	---	---	---	---
	36	10	0	3–5	18/18	---	---	---	---	---	---	---	---	---	13	5
10	21	10	.5	2	0/21	---	---	---	---	---	---	---	---	---	---	---
	10	10	0	2	8/10	---	---	---	---	---	3	1	1	1	2	---
13a	15	10	.5	3	0/14	---	---	---	---	---	---	---	---	---	---	---
13b	15	10	.5	3	0/11	---	---	---	---	---	---	---	---	---	---	---
	15	10	0	3	14/15	---	---	---	---	---	---	---	---	---	3	11
8–9	50	1	.5	4	3/45	---	---	---	2	---	---	---	---	1	---	---
	20	1	0	4	11/20	---	---	---	---	---	---	---	---	---	11	---

[1] Positive: having allantoic fluid with enough virus to be demonstrated by red cell agglutination.

Nitroakridin and indicated amounts of virus diluted in 0.9-percent NaCl buffered at pH 7.6 were mixed and injected together in all experiments except Nos. 11, 12, and 13b. In experiment 11 dilutions were made in normal allantoic fluid and in experiments 12 and 13b the nitroakridin was injected 1 hour before the virus.

evident that no growth of virus occurred in most embryos injected with 1 to 10 MID of virus together with 0.5 mg. of nitroakridin 3582. The allantoic fluids of only 3 of the 107 eggs so treated agglutinated red cells. Furthermore, the virus titers of the three positive fluids from these treated eggs were lower than those of infected control eggs in the same experiments. The addition of nitroakridin in concentrations of 0.4 mg./cc. to known positive allantoic fluids had no effect on the red cell agglutination titers. Moreover, the drug had no appreciable virucidal effect when the virus was exposed to it for short

periods of time at pH 6.5. In one experiment, infected fluid diluted in normal chorioallantoic fluid to contain 2,000 MID per cubic centimeter was mixed with an equal volume of nitroakridin containing 10 mg./cc. After standing at room temperature for 15 minutes, about 5 minutes longer than the time ordinarily required to inoculate a group of eggs in a chemotherapy experiment, serial tenfold dilutions of the virus-drug mixture and of the control virus-allantoic fluid mixture were prepared and inoculated into embryonated eggs. There was no evidence of inactivation of the virus by the drug in this experiment.

In experiments in which 100 or more MID of virus were used, the drug had a less striking effect. Fluids from most of the treated eggs in such groups contained demonstrable virus, table 1. However, here again the agglutinating titers of positive fluids were generally lower than those of control infected eggs in the same experiment.

SUMMARY

Nitroakridin 3582 has an inhibitory effect on the growth of influenza B virus in embryonated eggs. This effect is most apparent when small virus inocula are employed.

REFERENCES

(*1*) Fussganger, R., reviewed in "Pharmaceuticals and Insecticides I. C. Farbenindustrie, A. G. Hochst/Main," Horack, H. M.; Leaper, P. J.; Smadel, J. E.; White, L. M.; and Volwiler, E. H.: Report 241, Office of Technical Services, Department of Commerce, 1946, Washington.

(*2*) Smadel, J. E.; Snyder, J. C.; Hamilton, H. L.; Fox, J. P.; and Jackson, E. B.: Federation Proceedings, pt. II, **5**: 254 (1946).

(*3*) Fitzgerald, R. J., and Babbit, D.: Studies in bacterial viruses. I. The effect of certain compounds on the lysis of *Escherichia coli* by bacteriophage. J. Immunol., **52**: 121–135 (1946).

(*4*) Eaton, Monroe D.: Experimental immunization of mice with the virus of epidemic influenza. I. Quantitative studies of the antigenicity of active and inactive virus. J. Immunol., **39**: 43–55 (1940).

SEPARATION OF THE COMPLEMENT-FIXING AGENT FROM SUSPENSIONS OF YOLK SAC OF CHICK EMBRYO INFECTED WITH THE KARP STRAIN OF TSUTSUGAMUSHI DISEASE (SCRUB TYPHUS) [1]

By IDA A. BENGTSON, *Senior Bacteriologist, United States Public Health Service*

It has been shown that a complement-fixing agent is present in yolk sacs infected with the Karp strain of tsutsugamushi disease (scrub typhus) (*1*). This is of practical importance as furnishing a means for diagnosis in cases of suspected scrub typhus fever. As was pointed out, the antigenic portion of the ether-treated 10-percent suspension of yolk sac used was predominantly in the emulsion of tissue layer,

[1] From the Division of Infectious Diseases, National Institute of Health. [Assigned date of publication, Mar. 23, 1945, but withheld for security reasons.]

rather than in the aqueous layer, as is true of epidemic and endemic typhus. Several methods were attempted to obtain a separation of the antigenic agent from the considerable amount of tissue present in the emulsion layer. However, the rather turbid suspension was found fairly satisfactory for use in the complement-fixation test as it was not anticomplementary and the presence of the extraneous tissue did not interfere with obtaining readings of the test.

By a slight modification of the method of applying the ether treatment it has been possible to obtain as much or more of the antigen in the aqueous portion as in the tissue layer. If it is desired to recover more of the antigenic factor than is present in the aqueous layer, the tissue layer may be subjected to processes of differential centrifugation and the final sediment from this added to the aqueous layer. In both cases further purification may be effected by isoelectric precipitation of the remaining tissue. By this means a product which is almost water clear may be obtained.

The usual method of applying ether treatment to the preparation of epidemic and endemic typhus antigens has been to add an equal volume of diethyl ether to a 10-percent suspension of infected yolk sac treated with 0.1 percent formalin or 0.01 percent merthiolate, then to shake in a separatory funnel and allow to stand until there is a separation into three layers, the ether layer, the tissue layer, and the aqueous layer. The time necessary for this varies. It may require 15 to 30 minutes or overnight standing.

The modification employed in the preparation of the scrub typhus antigens involves the use of 20-percent suspensions of the infected yolk sacs. These are preferably heavily infected yolk sacs from embryos which have succumbed as a result of the infection. The suspension of the yolk sac is held in the refrigerator not more than 24 hours. The reaction of the suspension is adjusted to pH 7.0. It is mixed with an equal volume of diethyl ether shaken vigorously and immediately spun in the horizontal centrifuge at 2,000 r. p. m. for 15 minutes. After this treatment there will be present the upper layer of ether which is orange colored, a rather shallow layer of tissue, below this, and an aqueous layer comprising about nine-tenths of the total volume of the original material and a small amount of precipitate at the bottom of the container.

The ether is removed by pipetting. The middle rather clear layer (fraction A) of the remainder is removed by pipetting or siphoning, leaving the upper tissue layer and the precipitate in the bottom of the container (fraction B). This is suspended in a volume of saline equivalent to that of fraction A for purposes of complement-fixation

testing to determine the relative amounts of antigen present in the two fractions. Titrations of several lots of the original yolk-sac suspensions and of fractions A and B against a 1:16 dilution of guinea pig immune serum show somewhat more of the antigenic factor in fraction A than in fraction B, and more in the original yolk sac than in either of the fractions (table 1).

TABLE 1.—*Complement-fixation tests on whole yolk-sac suspensions and on fractions A and B*

Strain		Undiluted	Dilutions of fractions					
			1:2	1:4	1:8	1:16	1:32	1:64
K84	Fraction A	4	4	4	4	3		
	Fraction B	4	4	4	4	2		
K85	Yolk-sac suspension	4	4	4	4	4	Not tested	
	Fraction A	4	4	4	4	4	4—	2
	Fraction B	4	4	4	4	4	Not tested	
K86	Yolk-sac suspension	4	4	4	4	4	3	1—
	Fraction A	4	4	4	4	4	1	0
	Fraction B	4	4	4	3	0	0	0
K88	Yolk-sac suspension	4	4	4	4	4	4	4
	Fraction A	4	4	4	4	4	4	0
	Fraction B	4	4	4	4	4	1	0
K89	Yolk-sac suspension	4	4	4	4	4	4	4
	Fraction A	4	4	4	4	4—	2	0
	Fraction B	4	4	4	4	4	1	0

Fraction A.—Fraction A is reddish in color and though it appears only slightly turbid it may contain a considerable amount of precipitable substance, probably finely divided tissue which is not visible to the naked eye or even with a hand lens. Treatment for the removal of this precipitable substance will be considered later.

Fraction B.—To the tissue fraction remaining in each of the containers after the preliminary centrifugation is added a small amount of salt solution containing 0.01 percent merthiolate or 0.1 percent formalin. This is subjected to vigorous mixing by repeated suction and the blowing of air bubbles into the suspension by means of a 5- or 10-cc. pipette with a rubber bulb attached. The various precipitates are combined and sufficient saline added so that the volume is twice the original volume of fraction A. This suspension is spun in the horizontal centrifuge for 15 minutes at 2,000 r. p. m. An alternative method consists in adding a volume of salt solution to the precipitate, equal to that of fraction A, and spinning this in the horizontal centrifuge for 15 minutes at 2,000 r. p. m. The supernatant fluid is removed, the mixing repeated, and salt solution equal to fraction A again added. After again centrifuging for 15 minutes at 2,000 r. p. m. the two supernatant fluids are combined. The precipitate is discarded and the supernatant fluid spun in the angle centrifuge at 4,000 r. p. m. for 2 hours.

The precipitate from the 2-hour spinning of the supernatant fluid of fraction B in the angle centrifuge is then added to fraction A. This mixture is spun in the horizontal centrifuge for 2 minutes at 2,000 r. p. m. The resultant supernatant fluid appears somewhat turbid and is given further treatment as described below. The precipitate from this light centrifugation is discarded.

Further purification is effected by means of isoelectric precipitation of suspended material employing a modification of the method of de Léon (*2*). A preliminary titration is made with 5-cc. amounts of the mixture of A and precipitate B. Normal acetic acid or hydrochloric acid is added in hundredths and thousandths using a 0.1-cc. pipette graduated in thousandths. The tubes are incubated in the 37° C. water bath for 5 to 10 minutes. The end point is that pH at which floccules appear. The tube is spun for 1 to 2 minutes in the horizontal centrifuge at 2,000 r. p. m. The resultant supernatant fluid is transparent and almost water clear but somewhat brownish in color. The reaction of the total volume is adjusted in accordance with the results of the titration, and the process of removing the suspended tissue repeated as with the small sample. The hydrogen ion concentration is then reduced to pH 7.0 by the addition of normal sodium hydroxide.

A number of antigens have been prepared following the procedure outlined, or with minor modifications. Illustrations of the results of tests for complement-fixing activity of the various fractions are shown in tables 2, 3, and 4. The tests on all the fractions are shown in table 2 and on the significant fraction in tables 3 and 4. A diagrammatic outline of the procedure used is shown in table 5.

TABLE 2.—*Fractionation of 20-percent suspension of infected yolk sac (Karp strain)*

	Dilutions of Antigen					Antigen controls	
	Undiluted	1:2	1:4	1:8	1:16	Undiluted	1:2
1. K85 20-percent infected yolk sac	4	4	4	4	4	0	0
2. K85A aqueous layer (fraction A) after ether treatment	4	4	4	4	4	0	0
3. K85B tissue layer (fraction B after ether treatment) suspended, in volume of saline equal to A	4	4	4	4	4	1	0
4. K85B supernate 1 (after spinning in horizontal centrifuge)	4	4	4	4–	2	0	0
5. K85B supernate 2 (after spinning in horizontal centrifuge)	0	0	0	0	0	0	0
6. K85B precipitate of No. 3 after spinning in horizontal centrifuge and suspended in volume of saline euqal to A	4–	1–	0	0	0	4	1
7. K85A to which has been added precipitate from 4 and 5 after spinning in angle centrifuge for 2 hours	4	4	4	4	4	0	0
8. Supernate of No. 7 after spinning for 2 minutes at 2,000 r. p. m	4	4	4	4	4	0	0
9. Precipitate of No. 7 after spinning for 2 minutes at 2,000 r. p. m. suspended in volume of saline equal to No. 7	0	0	0	0	0	0	0
10. Supernate of No. [8 after adjusting reaction to isoelectric point for precipitating tissue and spinning in horizontal centrifuge for 2-3 minutes	4	4	4	4	4	0	0
11. Precipitate from No. 8 suspended in volume of saline equal to 8	4	0	0	0	0	0	0

TABLE 3.—*Fractionation of antigen K84 (Karp strain)*

	Dilutions of antigen					Antigen controls	
	Undiluted	1:2	1:4	1:8	1:16	Undiluted	1:2
1. Aqueous layer A	4	4	4	4	3	1	0
2. Tissue layer B in volume of saline equal to A	4	4	4	4	2	1	0
3. Aqueous layer A[1] plus precipitated rickettsiae from supernate of No. 2	4	4	4	4	3	1	0
4. Supernate of No. 3[2] when pH was adjusted to the isoelectric point for precipitating suspended tissue and then adjusted to pH 7.0	4	4	4	4	4–	0	0

[1] Total solids per cubic centimeter 0.0146 gm. after subtracting NaCl. Total N per cubic centimeter 0.00209 gm.

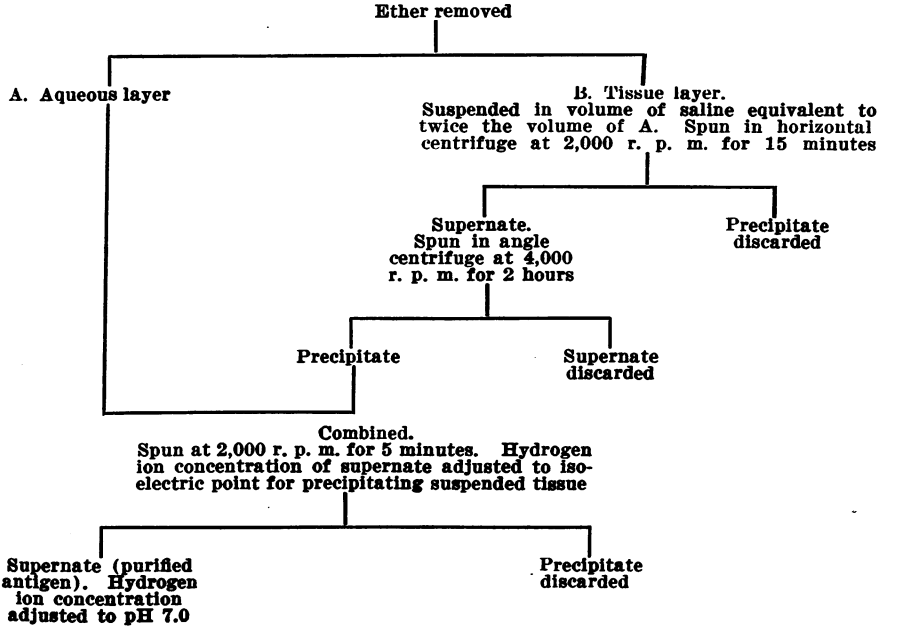
[2] Total solids per cubic centimeter 0.0100 gm. after subtracting NaCl. Total N per cubic centimeter 0.00147 gm.

(Chemical determination by Senior Biochemist Mary E. Maver, National Cancer Institute.)

TABLE 4.—*Fractionation of antigen K86 (Karp strain)*

	Dilutions of antigen							Antigen controls	
	Undiluted	1:2	1:4	1:8	1:16	1:32	1:64	Undiluted	1:2
1. Original 20 percent yolk-sac suspension	4	4	4	4	4	3	1–	1	0
2. Aqueous layer A	4	4	4	4	4	1	0	tr	0
3. Tissue layer B in volume of saline equal to A	4	4	4	3	0	0	0	0	0
4. Aqueous layer A plus precipitated rickettsiae from supernate of No. 2	4	4	4	4	4	2	1–	0	0
5. Supernate of No. 4 when pH was adjusted to the isoelectric point for precipitating suspended tissue and then adjusted to pH 7.0	4	4	4	4	4–	1	0	0	0

TABLE 5.—*20-percent infected yolk-sac suspension plus an equal volume of diethyl ether spun at 2,000 r. p. m. for 15 minutes*



The amount of antigen recovered varies. Since the intervals between the amounts employed in the titrations are twofold, or 100 percent, the exact amount of recovery is difficult to determine. Titers of 1:8 and 1:16 have been obtained with some of the purified antigens. In tests to determine the complement-fixing activity of serums, dilutions of 1:2 and 1:4 of such antigens may therefore be employed, since four times the highest dilution in which complete fixation occurs is employed as the antigenic dose (*3*).

The total solids and nitrogen content of the two last phases of antigen K84 were determined. Before the isoelectric precipitation of suspended material, the total solids amounted to 0.0146 gm. per cubic centimeter after subtracting NaCl, and the nitrogen content per cubic centimeter was 0.00209 gm. After the final removal of suspended material total solids were 0.0100 gm. after subtracting NaCl, and nitrogen 0.00147 gm. per cubic centimeter.

SUMMARY [2]

By methods of differential centrifugation the complement-fixing antigenic fraction of suspensions of tsutsugamushi (scrub typhus) infected yolk sac has been freed of the greater part of the extraneous tissue present. Further purification has been effected by adjusting the reaction to the isoelectric point for precipitating suspended tissue. The resultant water-clear brownish fluid contains the greater part of the antigenic fraction, as no great reduction in the complement-fixation titer occurred.

REFERENCES

(*1*) Bengtson, Ida A.: Complement fixation in tsutsugamushi disease (scrub typhus). Pub. Health Rep., **61**:895–900 (June 14, 1946).
(*2*) de Léon, A. P.: Método para purificar la vacuna contra el tifo. Bol del Inst. de Higiene, Departamento de Salub., Mexico, **2**: 368 (1936).
(*3*) Bengtson, Ida A.: Complement fixation in the rickettsial diseases: Technique of the test. Pub. Health Rep., **59**: 402–405 (1944).

[2] AUTHOR'S NOTE.—(Since the date of assignment for publication of this article (Mar. 23, 1945) further work on the testing of serums by complement fixation indicates that more conclusive results are obtained when fraction A is employed as antigen without attempts at further purification. A 33⅓-percent suspension of infected yolk sac after grinding in a Waring Blendor and standing overnight, is treated with equal parts of anhydrous ether in a centrifuge bottle, shaken, and immediately centrifuged. The aqueous layer is removed and employed as antigen. (Pub. Health Rep., **16**, 1483–1488 (1945)).

DEATHS DURING WEEK ENDED AUG. 31, 1946

[From the Weekly Mortality Index, issued by the National Office of Vital Statistics]

	Week ended Aug. 31, 1946	Corresponding week, 1945
Data for 93 large cities of the United States:		
Total deaths	7,918	8,549
Average for 3 prior years	8,032	
Total deaths, first 35 weeks of year	321,066	316,985
Deaths under 1 year of age	730	638
Average for 3 prior years	621	
Deaths under 1 year of age, first 35 weeks of year	22,309	21,211
Data from industrial insurance companies:		
Policies in force	67,282,680	67,351,591
Number of death claims	10,600	13,990
Death claims per 1,000 policies in force, annual rate	8.2	10.8
Death claims per 1,000 policies, first 35 weeks of year, annual rate	9.8	10.4

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

REPORTS FROM STATES FOR WEEK ENDED SEPTEMBER 7, 1946

Summary

For the 3rd consecutive week the incidence of poliomyelitis for the country as a whole declined slightly. A total of 1,726 cases was reported, as compared with 1,780 last week, 1,498 for the same week in 1944, and a 5-year (1941–45) median of 891. Increases were recorded in the New England, Middle Atlantic, West North Central, South Atlantic, and West South Central areas. Of 41 States reporting 5 or more cases, 19 reported an increase (457 to 649), 16 a decrease (1,229 to 991) and 6 reported the same numbers (totaling 71) for each week. The 25 States showing changes and reporting 15 or more cases are as follows (last week's figures in parentheses): *Increases*—New York 101 (89), Pennsylvania 20 (14), Ohio 52 (43), Indiana 47 (27), Iowa 30 (24), Missouri 120 (63), South Dakota 45 (22), Kansas 50 (48), Florida 16 (10), Mississippi 21 (20), Arkansas 33 (23), Oklahoma 33 (14), Texas 25 (23), New Mexico 15 (11); *decreases*—Massachusetts 16 (18), New Jersey 15 (21), Illinois 199 (201), Michigan 55 (87), Wisconsin 130 (184), Minnesota 199 (208), North Dakota 66 (74), Nebraska 40 (51), Tennessee 16 (18), Colorado 72 (77), California 146 (218).

The total for the year to date is 14,154, as compared with a 5-year median of 6,792 and 10,972 for the corresponding period in 1944, in which year was recorded the previously largest number for the corresponding period of any year since 1916, when 17,375 cases were reported for the first 8 months of the year.

A total of 221 cases of diphtheria was reported, as compared with 193 last week, 239 for the next earlier week, 410 for the corresponding week last year, and a 5-year median of 321. The total to date is 10,555, as compared with 9,304 for the corresponding period last year and a 5-year median of 8,192.

For the second consecutive week no case of smallpox was reported in the United States. To date 279 cases have been reported, as compared with 275 for the same period last year.

Deaths recorded for the week in 93 large cities of the United States totaled 7,912, as compared with 7,918 last week, 8,120 and 7,673, respectively, for the corresponding weeks of 1945 and 1944, and a 3-year (1943–45) average of 7,807. The cumulative figure is 328,978, as compared with 325,105 for the corresponding period last year.

Telegraphic morbidity reports from State health officers for the week ended Sept. 7, 1946, and comparison with corresponding week of 1945 and 5-year median

In these tables a zero indicates a definite report, while leaders imply that, although none was reported, cases may have occurred.

Division and State	Diphtheria			Influenza			Measles			Meningitis, meningococcus		
	Week ended—		Median 1941–45	Week ended—		Median 1941–45	Week ended—		Median 1941–45	Week ended—		Median 1941–45
	Sept. 7, 1946	Sept. 8, 1945		Sept. 7, 1946	Sept. 8, 1945		Sept. 7, 1946	Sept. 8, 1945		Sept. 7, 1946	Sept. 8, 1945	
NEW ENGLAND												
Maine	4	0	0	-----	-----	-----	5	3	4	1	1	1
New Hampshire	0	0	0	-----	-----	-----	2	-----	-----	0	0	0
Vermont	1	2	1	-----	-----	-----	12	1	4	0	0	0
Massachusetts	8	3	2	-----	-----	-----	42	28	34	0	0	2
Rhode Island	0	0	0	1	23	-----	17	-----	4	0	2	1
Connecticut	1	0	0	-----	-----	-----	10	2	10	2	3	3
MIDDLE ATLANTIC												
New York	8	13	6	[1] 4	[1] 2	[1] 1	86	10	36	3	6	7
New Jersey	5	4	3	-----	-----	2	22	14	20	1	2	4
Pennsylvania	5	2	4	1	1	1	49	31	31	4	4	4
EAST NORTH CENTRAL												
Ohio	13	6	6	-----	2	5	31	7	12	2	6	2
Indiana	4	5	5	-----	2	1	2	6	6	1	3	1
Illinois	9	4	7	1	9	3	9	54	33	4	5	3
Michigan [2]	6	9	3	-----	-----	-----	22	18	18	1	2	2
Wisconsin	1	2	0	2	9	10	24	20	54	1	2	2
WEST NORTH CENTRAL												
Minnesota	5	8	6	-----	-----	-----	2	6	6	0	1	1
Iowa	4	0	2	-----	-----	-----	12	-----	3	1	0	1
Missouri	5	2	3	1	-----	-----	7	6	6	4	1	1
North Dakota	0	5	1	-----	-----	-----	-----	-----	-----	0	0	0
South Dakota	1	6	4	-----	-----	-----	3	2	2	2	1	1
Nebraska	1	1	1	6	5	3	3	3	3	1	0	0
Kansas	8	5	3	2	-----	2	6	6	3	0	1	1
SOUTH ATLANTIC												
Delaware	0	0	0	-----	-----	-----	-----	1	1	0	0	0
Maryland [2]	4	12	1	3	1	1	1	7	9	1	1	2
District of Columbia	0	0	0	-----	-----	-----	-----	-----	4	0	0	1
Virginia	7	11	12	90	119	119	18	3	10	2	1	2
West Virginia	4	9	8	1	-----	2	2	-----	3	2	0	1
North Carolina	7	41	34	-----	-----	-----	5	1	10	1	2	1
South Carolina	2	33	25	49	176	142	-----	5	11	0	1	1
Georgia	14	25	23	9	3	11	2	1	2	0	1	1
Florida	8	5	5	2	-----	-----	5	1	4	1	1	0
EAST SOUTH CENTRAL												
Kentucky	5	35	5	-----	-----	-----	-----	9	6	2	3	3
Tennessee	3	14	14	9	7	3	1	-----	4	0	1	2
Alabama	8	14	30	22	14	9	3	-----	2	1	3	2
Mississippi [2]	8	27	10	-----	-----	-----	-----	-----	-----	0	2	2
WEST SOUTH CENTRAL												
Arkansas	5	10	10	9	4	4	3	5	5	1	0	0
Louisiana	4	8	5	2	139	5	5	2	2	0	1	1
Oklahoma	1	6	6	2	7	7	-----	3	3	0	1	1
Texas	16	50	32	186	433	356	19	38	25	1	5	2
MOUNTAIN												
Montana	0	0	0	-----	5	1	16	-----	2	0	2	0
Idaho	1	2	0	6	4	-----	2	22	-----	0	0	0
Wyoming	0	0	0	-----	-----	-----	6	2	4	0	0	0
Colorado	3	0	8	7	3	4	9	3	5	0	2	2
New Mexico	3	2	2	-----	-----	-----	8	2	2	0	0	0
Arizona	7	2	1	12	11	21	11	2	2	0	0	0
Utah [2]	0	0	0	-----	-----	-----	6	37	9	1	1	0
Nevada	0	0	0	-----	-----	-----	-----	-----	-----	0	0	0
PACIFIC												
Washington	3	6	3	-----	-----	-----	8	27	11	1	0	1
Oregon	1	2	1	3	-----	2	9	18	18	0	0	1
California	18	19	10	2	10	10	38	59	59	6	5	5
Total	221	410	321	432	989	707	543	465	527	48	73	73
36 weeks	10,555	9,304	8,192	193,473	73,299	83,394	640,628	103,024	540,027	4,616	6,402	6,402

[1] New York City only.

[2] Period ended earlier than Saturday.

Telegraphic morbidity reports from State health officers for the week ended Sept. 7, 1946, and comparison with corresponding week of 1945 and 5-year median—Con.

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever [2]		
	Week ended—		Median 1941–45	Week ended—		Median 1941–45	Week ended—		Median 1941–45	Week ended—		Median 1941–45
	Sept. 7, 1946	Sept. 8, 1945		Sept. 7, 1946	Sept. 8, 1945		Sept. 7, 1946	Sept. 8, 1945		Sept. 7, 1946	Sept. 8, 1945	
NEW ENGLAND												
Maine	1	10	2	8	23	7	0	0	0	0	0	0
New Hampshire	7	1	1	0	5	2	0	0	0	0	0	0
Vermont	2	8	3	1	0	2	0	0	0	0	0	2
Massachusetts	16	30	23	31	41	48	0	0	0	1	0	2
Rhode Island	7	1	1	1	0	2	0	0	0	0	0	0
Connecticut	8	9	9	0	4	8	0	0	0	1	0	0
MIDDLE ATLANTIC												
New York	101	114	71	59	92	59	0	0	0	14	8	12
New Jersey	15	60	32	12	10	13	0	0	0	2	2	3
Pennsylvania	20	62	62	32	38	38	0	0	0	6	12	12
EAST NORTH CENTRAL												
Ohio	52	33	33	7	63	61	0	0	0	7	7	7
Indiana	47	28	16	18	12	15	0	0	0	3	2	4
Illinois	199	131	45	39	50	44	0	1	0	2	4	5
Michigan [3]	55	11	11	18	36	32	0	0	0	4	1	3
Wisconsin	130	19	14	29	47	38	0	1	0	0	0	1
WEST NORTH CENTRAL												
Minnesota	199	17	17	11	11	18	0	0	0	0	0	0
Iowa	30	9	9	6	19	16	0	0	0	1	2	2
Missouri	120	31	14	10	18	18	0	0	0	1	3	7
North Dakota	66	5	4	4	6	2	0	0	0	0	0	0
South Dakota	45	1	1	1	0	4	0	0	0	0	0	0
Nebraska	40	7	8	9	10	6	0	0	0	1	0	0
Kansas	50	13	7	5	18	18	0	0	0	0	2	2
SOUTH ATLANTIC												
Delaware	2	3	1	2	2	2	0	0	0	1	1	1
Maryland [2]	9	5	5	14	15	11	0	0	0	0	5	2
District of Columbia	3	4	4	4	3	3	0	0	0	0	0	0
Virginia	4	30	15	14	68	23	0	0	0	6	10	10
West Virginia	5	9	3	22	53	32	0	0	0	1	1	5
North Carolina	8	11	11	20	30	36	0	0	0	0	3	3
South Carolina	0	6	4	1	9	9	0	0	0	3	7	7
Georgia	8	3	3	5	8	12	0	0	0	3	10	5
Florida	16	0	0	2	3	3	0	0	0	1	9	1
EAST SOUTH CENTRAL												
Kentucky	3	4	8	27	14	14	0	0	0	1	10	11
Tennessee	16	30	13	19	30	28	0	0	0	7	36	18
Alabama	6	4	4	8	19	19	0	0	0	2	2	2
Mississippi [2]	21	1	4	3	9	9	0	0	0	2	4	8
WEST SOUTH CENTRAL												
Arkansas	33	5	1	3	6	4	0	0	0	0	7	7
Louisiana	16	7	5	3	13	4	0	0	0	5	2	15
Oklahoma	33	10	1	4	11	11	0	0	0	2	6	6
Texas	25	30	11	23	46	20	0	0	0	6	10	21
MOUNTAIN												
Montana	5	7	1	8	2	4	0	0	0	0	2	0
Idaho	5	1	0	3	3	3	0	0	0	0	4	1
Wyoming	5	2	2	2	3	1	0	0	0	2	0	0
Colorado	72	23	6	9	6	14	0	0	0	4	0	2
New Mexico	15	1	1	5	3	2	0	0	0	0	3	2
Arizona	7	1	1	3	0	1	0	0	0	1	1	2
Utah [2]	13	23	4	0	6	3	0	0	0	0	1	0
Nevada	0	1	0	0	0	0	0	0	0	0	0	0
PACIFIC												
Washington	28	33	7	9	20	17	0	0	0	1	1	1
Oregon	12	7	7	11	7	7	0	0	0	1	2	2
California	146	30	12	39	87	42	0	0	0	9	5	4
Total	1,726	891	891	564	979	804	0	2	2	101	185	194
36 weeks	[4]14,154	7,047	6,792	88,476	137,174	100,121	279	275	618	2,886	3,296	3,849

[2] Period ended earlier than Saturday.
[3] Including paratyphoid fever reported separately, as follows: Massachusetts (salmonella infection) 1; New York 1; New Jersey 2; Ohio 1; Michigan 3; Georgia 1; Tennessee 1; Louisiana 1; Texas 1; California 4.
[4] Corrected report: Poliomyelitis, Georgia, week ended August 24, 14 cases (instead of 15).

Telegraphic morbidity reports from State health officers for the week ended Sept. 7, 1946, and comparison with corresponding week of 1945 and 5-year median—Con.

Division and State	Whooping cough			Week ended Sept. 7, 1946							
	Week ended—		Median 1941–45	Dysentery			Encephalitis, infectious	Rocky Mt. spotted fever	Tularemia	Typhus fever, endemic	Undulant fever
	Sept. 7, 1946	Sept. 8, 1945		Amebic	Bacillary	Unspecified					
NEW ENGLAND											
Maine	3	20	16								
New Hampshire	5										
Vermont	10	24	24								2
Massachusetts	113	146	81		1						
Rhode Island	18	20	20								
Connecticut	29	43	43								1
MIDDLE ATLANTIC											
New York	126	296	270	2	3						3
New Jersey	139	144	116					1			1
Pennsylvania	148	122	128								3
EAST NORTH CENTRAL											
Ohio	79	221	160	1			1	3			2
Indiana	32	25	26	1			5	2	1		7
Illinois	139	133	171	4	1		2	1	1		6
Michigan [3]	125	93	190								5
Wisconsin	185	63	184								3
WEST NORTH CENTRAL											
Minnesota	9	28	48	3					1		3
Iowa	31	6	19	2			1				3
Missouri	16	12	14				2		1		5
North Dakota	6	2	6				2				
South Dakota	5	9	9								
Nebraska	4		12				1				2
Kansas	23	28	28				2		1		12
SOUTH ATLANTIC											
Delaware	7							1			
Maryland [3]	43	32	47					1			1
District of Columbia	3	7	9					1			
Virginia	35	51	51			47		7	1		2
West Virginia	57	10	11								
North Carolina	54	43	80					1	2	2	
South Carolina	15	73	67							2	
Georgia	4	32	20	4	6	1			2	17	2
Florida	25	5	5	1						13	2
EAST SOUTH CENTRAL											
Kentucky	16	44	40		5				1		
Tennessee	16	22	34		2				3	2	3
Alabama		3	8				2			11	1
Mississippi [3]										1	1
WEST SOUTH CENTRAL											
Arkansas	12	8	14	6	3		1		3	1	5
Louisiana	12	8	4							5	1
Oklahoma	19	13	8				1	2			
Texas	119	134	127	11	162	22				29	11
MOUNTAIN											
Montana	3		7								
Idaho	2	4	3						1		3
Wyoming	4	1	6				1		1		
Colorado	18	57	57								1
New Mexico	9	1	6		1	4					
Arizona	2	4	3			18					
Utah [3]	8	11	15								
Nevada											
PACIFIC											
Washington	30	26	25								1
Oregon	4	8	17	1							
California	36	105	105	3	2					1	3
Total	1,798	2,137	2,491	39	186	92	21	20	19	84	95
Same week, 1945	2,137			42	797	571	19	18	11	132	77
Average, 1943–45	2,094			44	580	449	21	[5] 12	12	[5] 134	
36 weeks: 1946	70,100			2,034	11,942	4,834	446	[6] 498	666	2,380	3,540
1945	91,006			1,316	18,020	7,554	355	404	550	3,182	3,330
Average, 1943–45	99,742		[5] 130,991	1,340	15,073	6,400	439	[5] 406	529	[5] 2,628	

[3] Period ended earlier than Saturday. [5] 5-year median, 1941–45.

[6] Delayed report: Rocky Mountain spotted fever, Maryland, 2 cases, included in cumulative total only.

WEEKLY REPORTS FROM CITIES

City reports for week ended Aug. 31, 1946

This table lists the reports from 88 cities of more than 10,000 population distributed throughout the United States, and represents a cross section of the current urban incidence of the diseases included in the table.

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
NEW ENGLAND												
Maine:												
Portland	0	0		0		0	0	0	0	0	0	1
New Hampshire:												
Concord	0	0		0		0	0	0	0	0	0	0
Vermont:												
Barre	0	0		0		0	0	0	0	0	0	0
Massachusetts:												
Boston	7	0		0	8	0	0	9	7	0	0	26
Fall River	0	0		0		0	0	0	0	0	0	3
Springfield	0	0		0	3	0	0	1	1	0	1	13
Worcester	0	0		0	3	0	4	4	1	0	0	37
Rhode Island:												
Providence	0	0	1	0	11	0	0	0	0	0	0	9
Connecticut:												
Bridgeport	0	0		0		0	0	0	0	0	0	
Hartford	1	0		0		0	0	0	1	0	0	3
New Haven	0	0		0	1	0	1	0	0	0	0	2
MIDDLE ATLANTIC												
New York:												
Buffalo	3	0		0		0	1	1	2	0	0	6
New York	7	0	15	0	21	2	34	46	17	0	16	44
Rochester	0	0		0		0	1	2	3	0	1	
Syracuse	0	0		0		0	2	4	1	0	0	1
New Jersey:												
Camden	0	0		0		0	1	0	0	0	0	4
Newark	0	0		0	2	0	1	2	3	0	0	25
Trenton	0	0		0	3	0	1	0	0	0	1	7
Pennsylvania:												
Philadelphia	3	0		0	14	0	15	3	6	0	2	25
Pittsburgh	0	0		0	5	0	5	6	4	0	0	2
Reading	0	0		0		0	0	0	1	0	0	10
EAST NORTH CENTRAL												
Ohio:												
Cincinnati	2	0		0		0	10	0	3	0	0	4
Cleveland	0	0		0	19	2	8	22	11	0	0	22
Columbus	2	0		0	1	0	4	1	6	0	0	1
Indiana:												
Fort Wayne	0	0		0		0	0	0	0	0	0	
Indianapolis	2	1		0		0	1	10	4	0	0	18
South Bend	0	0		0	1	0	0	2	1	0	0	
Terre Haute	0	0		0		0	0	0	0	0	0	2
Illinois:												
Chicago	2	0		0	4	1	8	58	15	0	0	80
Michigan:												
Detroit	1	0		0		0	5	31	3	0	0	88
Flint	0	0		0		0	0	2	1	0	2	5
Grand Rapids	0	0		0	1	0	0	2	1	0	0	20
Wisconsin:												
Kenosha	0	0		0		0	0	11	0	0	0	
Milwaukee	0	0		0	5	0	4	13	3	0	0	135
Racine	0	0		0	2	0	0	5	4	0	0	4
Superior	4	0		0		0	0	3	0	0	0	7
WEST NORTH CENTRAL												
Minnesota:												
Duluth	4	0		0		0	0	13	0	0	0	
Minneapolis	0	0		0	1	0	4	29	1	0	0	
St. Paul	1	0		0	1	0	3	22	2	0	0	1
Missouri:												
Kansas City	0	0		0		1	5	9	0	0	0	
St. Joseph	0	0		0		1	0	1	0	0	0	
St. Louis	1	1		0	1	1	6	32	0	0	1	12

City reports for week ended Aug. 31, 1946—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
WEST NORTH CENTRAL—continued												
North Dakota:												
Fargo	0	0	------	0	-------	0	0	17	0	0	0	1
Nebraska:												
Omaha	1	0	------	0	-------	1	1	20	0	0	0	------
Kansas:												
Topeka	0	0	------	0	-------	0	0	1	0	0	0	7
Wichita	0	0	------	0	-------	0	4	4	0	0	0	5
SOUTH ATLANTIC												
Delaware:												
Wilmington	0	0	----	0	1	1	1	1	1	0	0	1
Maryland:												
Baltimore	3	1	------	0	5	1	5	2	2	0	0	35
Cumberland	0	0	------	0	-------	0	0	0	0	0	0	1
Frederick	0	0	------	0	-------	0	0	0	0	0	0	------
District of Columbia:												
Washington	0	0	------	0	2	4	4	4	2	0	3	20
Virginia:												
Lynchburg	0	0	------	0	-------	0	3	0	1	0	0	------
Richmond	0	0	20	0	4	0	0	2	6	0	0	2
Roanoke	2	0	------	0	-------	0	0	0	0	0	0	------
West Virginia:												
Wheeling	0	0	------	0	-------	0	2	1	0	0	0	2
North Carolina:												
Raleigh	0	0	------	0	-------	0	0	0	0	0	0	3
Wilmington	0	0	------	0	-------	0	0	0	1	0	0	------
Winston-Salem	0	0	------	0	1	0	0	0	1	0	0	6
South Carolina:												
Charleston	0	0	------	0	1	0	3	0	0	0	0	------
Georgia:												
Atlanta	1	0	4	0	-------	0	0	0	1	0	0	4
Brunswick	0	0	------	0	-------	0	0	1	0	0	0	------
Savannah	0	0	------	0	1	0	0	0	0	0	1	------
Florida:												
Tampa	1	0	------	0	-------	0	0	1	0	0	0	------
EAST SOUTH CENTRAL												
Tennessee:												
Memphis	1	0	1	0	5	0	5	5	1	0	0	2
Nashville	0	0	------	0	-------	0	3	1	0	0	0	1
Alabama:												
Birmingham	0	0	3	0	-------	0	2	12	0	0	0	------
Mobile	2	0	1	0	1	0	3	1	0	0	0	------
WEST SOUTH CENTRAL												
Arkansas:												
Little Rock	0	0	------	0	-------	0	1	0	0	0	0	------
Louisiana:												
New Orleans	2	0	------	0	1	0	2	2	0	0	1	------
Shreveport	0	0	------	0	-------	0	6	1	0	0	1	------
Texas:												
Dallas	0	0	------	0	-------	0	0	3	1	0	0	3
Galveston	0	0	------	0	-------	0	1	0	0	0	0	------
Houston	0	0	------	0	-------	0	4	0	6	0	1	1
San Antonio		0	------	0	-------	0	2	0	2	0	1	1
MOUNTAIN												
Montana:												
Billings	0	0	------	0	-------	0	0	0	0	0	0	------
Great Falls	0	0	------	0	3	0	0	1	0	0	0	------
Helena	0	0	------	0	-------	0	0	1	0	0	0	------
Missoula	0	0	------	0	-------	0	0	1	0	0	0	------
Idaho:												
Boise	0	0	------	0	-------	0	0	0	0	0	0	2
Colorado:												
Denver	0	0	------	0	3	0	4	17	4	0	0	7
Pueblo	0	0	------	0	2	0	0	4	0	0	0	------
Utah:												
Salt Lake City	0	0	------	0	-------	0	0	2	4	0	0	2

City reports for week ended Aug. 31, 1946—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
PACIFIC												
Washington:												
Seattle	6	0	------	0	1	0	2	7	4	0	1	6
Spokane	0	0	------	0	2	0	1	4	0	0	0	------
Tacoma	1	0	------	0	------	0	0	0	1	0	0	------
California:												
Los Angeles	3	0	------	0	3	0	3	96	11	0	2	6
Sacramento	2	0	------	0	1	0	0	1	0	0	0	------
San Francisco	2	0	------	0	5	2	8	3	3	0	2	4
Total	67	3	45	0	149	17	194	560	154	0	37	739
Corresponding week, 1945	46	------	27	8	168	------	217	------	180	0	24	730
Average, 1941–45	45	------	25	[1] 7	[2] 163	------	[1] 217	------	208	0	33	921

[1] 3-year average, 1943–45.
[2] 5-year median, 1941–45.

Dysentery, amebic.—Cases: Buffalo 1; New York 11; Indianapolis 1; Chicago 3; Los Angeles 2.
Dysentery, bacillary.—Cases: New York 2; Philadelphia 1; Chicago 1; Charleston, S. C. 2; Los Angeles 2.
Dysentery, unspecified.—Cases: San Antonio 4.
Rocky Mountain spotted fever.—Cases: Lynchburg 1.
Typhus fever, endemic.—Cases: Tampa 3; Nashville 2; Mobile 1; New Orleans 2; Shreveport 1; Galveston 1; Houston 1; San Antonio 2.

Rates (annual basis) per 100,000 population, by geographic groups, for the 88 cities in the preceding table (estimated population, 1943, 34,245,600)

	Diphtheria case rates	Encephalitis, infectious, case rates	Influenza		Measles case rates	Meningitis, meningococcus, case rates	Pneumonia death rates	Poliomyelitis case rates	Scarlet fever case rates	Smallpox case rates	Typhoid and paratyphoid fever case rates	Whooping cough case rates
			Case rates	Death rates								
New England	20.9	0.0	2.6	0.0	68	0.0	13.1	36.6	26	0.0	2.6	246
Middle Atlantic	6.0	0.0	6.9	0.0	21	0.9	28.2	29.6	17	0.0	9.3	57
East North Central	8.0	0.6	0.0	0.0	20	1.8	24.5	98.1	32	0.0	1.2	237
West North Central	13.9	2.0	0.0	0.0	6	8.0	45.8	294.4	6	0.0	2.0	52
South Atlantic	11.7	1.7	40.2	0.0	25	10.0	30.1	20.1	25	0.0	6.7	124
East South Central	17.7	0.0	29.5	0.0	35	0.0	76.7	112.1	6	0.0	0.0	18
West South Central	5.7	0.0	0.0	0.0	3	0.0	45.9	17.2	26	0.0	11.5	14
Mountain	0.0	0.0	0.0	0.0	64	0.0	31.8	206.5	64	0.0	0.0	87
Pacific	22.1	0.0	0.0	0.0	19	3.2	22.1	175.5	30	0.0	7.9	25
Total	10.2	0.5	6.9	0.0	23	2.6	29.6	85.5	24	0.0	5.6	113

TERRITORIES AND POSSESSIONS

Panama Canal Zone

Notifiable diseases—July 1946.—During the month of July 1946, certain notifiable diseases were reported in the Panama Canal Zone and terminal cities as follows:

Disease	Panama		Colon		Canal Zone		Outside the zone and terminal cities		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Chickenpox	3		3		1		2		9	
Diphtheria	9						6		[1] 15	
Dysentery:										
Amebic			1				7		8	
Bacillary	1				2		2		5	
Leprosy								1		1
Malaria [2]	8	1	3		43		35	3	89	4
Measles	158	5	7		44		46		255	5
Mumps					6		1		7	
Paratyphoid fever	2				1		1		4	
Pneumonia		16		4	46	1		9	[3] 46	30
Poliomyelitis							2		2	
Tuberculosis		14		3	4	1		6	[3] 4	24
Typhoid fever	1						1		2	
Whooping cough					2				[3] 2	

[1] Exclusive of carriers.
[2] 10 recurrent cases.
[3] In the Canal Zone only.

Puerto Rico

Notifiable diseases—4 weeks ended August 10, 1946.—During the 4 weeks ended August 10, 1946, cases of certain notifiable diseases were reported in Puerto Rico as follows:

Disease	Cases	Disease	Cases
Chickenpox	7	Syphilis	128
Diphtheria	53	Tetanus	6
Dysentery, unspecified	12	Tetanus, infantile	2
Gonorrhea	161	Tuberculosis (all forms)	359
Influenza	73	Typhoid and paratyphoid fever	13
Malaria	281	Typhus fever (murine)	14
Measles	9	Whooping cough	45
Poliomyelitis	26		

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended August 17, 1946.—During the week ended August 17, 1946, cases of certain communicable diseases were reported by the Dominion Bureau of Statistics of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Chickenpox		9		15	72	2	9	20	18	145
Diphtheria		1		42	2	3	2			50
Dysentery:										
Amebic								6		6
Bacillary									1	1
German measles								2	7	9
Influenza					1					1
Measles	1	12		66	38	26	98	40	6	287
Meningitis, meningococcus				1	2	1				4
Mumps		1	1	10	81	17	50	12	34	206
Poliomyelitis	5		5	175	39	5	2	7		238
Scarlet fever	1	6	6	26	10	4	2	5	7	67
Tuberculosis (all forms)		6	13	90	46	24	25	8	36	248
Typhoid and paratyphoid fever				18	1			1	2	22
Undulant fever				7	1					8
Venereal diseases:										
Gonorrhea		19	9	78	169		55	65	68	463
Syphilis		11	3	62	70		21	12	37	216
Other forms									1	1
Whooping cough		18		40	37	2		8	2	107

CUBA

Habana—Communicable diseases—4 weeks ended August 17, 1946.—During the 4 weeks ended August 17, 1946, certain communicable diseases were reported in Habana, Cuba, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Chickenpox	1		Poliomyelitis	7	
Diphtheria	3		Tuberculosis	15	3
Malaria	9		Typhoid fever	22	9
Measles	3				

Provinces—Notifiable disease—4 weeks ended August 10, 1946.—During the 4 weeks ended August 10, 1946, cases of certain notifiable diseases were reported in the Provinces of Cuba, as follows:

Disease	Pinar del Rio	Habana [1]	Matanzas	Santa Clara	Camaguey	Oriente	Total
Cancer	2	12	12	16	1	11	54
Chickenpox		1	1			2	4
Diphtheria	2	5		1			8
Hookworm disease				1			1
Leprosy		3				5	8
Malaria	5	6		2	5	28	46
Measles		10			2	1	13
Poliomyelitis	6	15	2	5			28
Tuberculosis (respiratory)	3	46	15	50	28	42	184
Typhoid fever	34	68	11	123	53	63	352
Typhus fever (murine)						1	1
Yaws (frambesia)						1	1

[1] Includes the city of Habana.

EGYPT

Vital statistics—First quarter 1945.—The following table shows the numbers of births and deaths registered for the first quarter of 1945 in all localities of Egypt having a health bureau:

Number of live births	83,693	Deaths per 1,000 population	27.1
Births per 1,000 population	58.2	Deaths under 1 year of age	10,491
Number of stillbirths	1,523	Deaths under 1 year of age per 1,000 live births	125
Deaths, all ages	39,006		

IRISH FREE STATE

Vital statistics—First quarter 1946.—The following table shows the numbers of marriages, births, and deaths in Irish Free State for the first quarter of 1946. The figures are provisional:

Number of marriages	4,480	Death from—Continued.	
Number of births	16,855	Diphtheria	46
Births per 1,000 population	22.5	Dysentery	1
Number of deaths	13,026	Influenza	408
Deaths per 1,000 population	17.4	Measles	15
Deaths under 1 year of age per 1,000 live births	81	Scarlet fever	2
Deaths from—		Tuberculosis (all forms)	874
Cancer	985	Typhoid fever	11
Diarrhea and enteritis (under 2 years of age)	239	Violence	222
		Whooping cough	34

Note.—Estimated population July 1, 1946, 2,992,000.

WORLD DISTRIBUTION OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

From medical officers of the Public Health Service, American consuls, International Office of Public Health, Pan American Sanitary Bureau, health section of the League of Nations, UNRRA, 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]

Note.—Since many of the figures in the following tables are from weekly reports, the accumulated totals are for approximate dates.

Place		January–June 1946	July 1946	August 1946—week ended—				
				3	10	17	24	31
ASIA								
Burma	C	820	395	23				
Bassein	C	23	5	1				
Moulmein	C	44	10	7		7		
Rangoon	C	6	16		1			
Ceylon	C	41	34					
China:								
Anhwei Province	C	31	522					
Chekiang Province	C	189	700					
Formosa, Island of	C	183						
Fukien Province	C	27	472					
Foochow	C	19	422					
Honan Province	C	40	440					
Hopeh Province	C		10		[1] 80			
Hunan Province	C	1	475					
Hupeh Province	C	143	28					
Ichang Province	C	145	2					
Kiangsi Province	C		61		[1] 305			
Kiangsu Province	C	[2] 1,935	3,785				[3] 881	
Shanghai	C	[2] 987	2,468		[1] 409			
Kwangsi Province	C	496	161					
Kwangtung Province	C	2,269	451		[1] 94			
Canton	C	1,681	250					
Hong Kong	C	330	107	17	17	11	10	

[1] For the period Aug. 1–10, 1946.
[2] Includes imported cases.
[3] For the period Aug. 1–20, 1946.

CHOLERA—Continued

Place		January–June 1946	July 1946	August 1946—week ended— 3	10	17	24	31
ASIA—continued								
China—Continued.								
Kweichow Province	C	8						
Shangtung Province	C				[1] 7			
Szechwan Province	C	40	25					
Yunnan Province	C		7					
India	C	52,237						
Calcutta	C	1,567	80	13	24			
Chittagong	C	8						
Madras	C	3						
India (French)	C	1						
Indochina (French):								
Cambodia	C	162	109					
Cochinchina	C	819						
Bien Hoa	C	24						
Chaudok	C	21						
Mytho	C	142						
Saigon-Cholon	C	35		1				1
Vinh-long	C	7						
Japan	C	209	155	128				
Malay States	C	27	184	15	4	2		2
Manchuria	C		3,085					
Mukden	C		27					
Siam (Thailand)	C	2,364	687	16				
Bangkok	C	387	10	6	5		2	4
Straits Settlements: **Singapore**	C	[4] 1						

[4] Imported.

PLAGUE

[C[indicates cases; P, present]

AFRICA								
Algeria	C	2						
Bechuanaland	C	10						
Belgian Congo	C	4	[1] 3			[2] 7	[2] 6	[2] 3
British East Africa:								
Kenya	C	24				2		
Uganda	C	12						
Egypt	C	145	30	13	8	6	3	5
Alexandria	C	91	18	2	7	4	1	2
Ismailiya	C	20	2				2	3
Matariya	C		2	10				
Port Said	C	4	6		1	2		
Suez	C	30	2					
Libya:								
Tripolitania—Plague-infected rats		1						
Madagascar	C	133	4		2			
Union of South Africa	C	1	•					
ASIA								
Burma	C	765	218	27				
Bassein	C	17	4					
Rangoon	C	126	13	1	1	2	2	
China:								
Chekiang Province	C	216	109					
Formosa	C	5						
Fukien Province	C	3,190	491					
Amoy	C	250	45					
Foochow	C	1,069	203					
Kiangsi Province	C	113	9					
Kwangtung Province	C	397	4					
Yunnan Province	C	32	38					
India	C	12,155						
Indochina (French): Cochinchina	C	3	1		2			
Java	C	30	1			1		
Manchuria	C	[2] 52						
Mukden	C	[2] 39						
Palestine	C	16						
Siam (Thailand)	C	18	1					

[1] Includes 2 suspected cases.
[2] Pneumonic.

PLAGUE—Continued

Place		January–June 1946	July 1946	August 1946—week ended— 3	10	17	24	31
EUROPE								
Great Britain: Malta	C	6						
Portugal: Azores	C	[3] 15						
NORTH AMERICA								
Canada: Nova Scotia	C		[4] 1					
SOUTH AMERICA								
Bolivia:								
Santa Cruz Department	C	12						
Tarija Department—Plague-infected rats			P					
Ecuador:								
Chimborazo Province	C	2						
Loja Province	C	6						
Peru:								
Lambayeque Department	C	11						
Lima Department	C	19						
Piura Department	C	14	1					
OCEANIA								
Hawaii Territory: Plague-infected rats		[5] 5						

[3] Includes 2 pneumonic cases.
[4] Imported suspected case.
[5] Plague infection was also proved positive in Hawaii Territory on Feb. 5, 1946, in a pool of 29 rats, and on Apr. 13, 1946, in a pool of 54 fleas and 15 lice recovered from 7 rats and 22 mice. Under date of July 3, 1946, plague infection was reported in a pool of 50 fleas recovered from 7 rats and 46 mice, and in a pool of 51 fleas recovered from 10 rats. Under date of July 17, 1946, plague infection was reported in a pool of 48 fleas recovered from 22 rats, and in a pool of 56 fleas recovered from 33 rats.

SMALLPOX

[C indicates cases; P, present]

AFRICA								
Algeria	C	170						
Basutoland	C	27						
Belgian Congo	C	[1] 1,103	[1] 133					
British East Africa:								
Kenya	C	535	91	8	38			
Nyasaland	C	233	26	12		14	10	23
Tanganyika	C	3,978	128	[2] 115				
Uganda	C	480	29	2	5			
Cameroon (French)	C	63	4					
Dahomey	C	1,119	111		[2] 28			
Egypt	C	367						
Eritrea	C	[1] 2						
French Equatorial Africa	C	154						
French Guinea	C	768	27		[2] 24			
French West Africa: Dakar District	C	39						
Gambia	C	7						
Gold Coast	C	751	26	1			13	
Ivory Coast	C	968	77		[2] 39			
Libya	C	68	48					21
Mauritania	C	1						
Morocco (French)	C	1,819	18					
Morocco (Int. Zone)	C	175						
Morocco (Spanish)	C	5						
Mozambique	C	4						
Nigeria	C	5,019						
Niger Territory	C	400	27		[3] 4			

[1] Includes alastrim.
[2] Includes delayed reports.
[3] For the period Aug. 1–10, 1946.

SMALLPOX—Continued

[C indicates cases; P, present]

Place		January–June 1946	July 1946	August 1946—week ended— 3	10	17	24	31
AFRICA—continued								
Rhodesia:								
Northern	C	262	17					
Southern	C	1	1					1
Senegal	C	94						
Sierra Leone	C	361						
Somaliland (Italian)	C	1						
Sudan (Anglo-Egyptian)	C	38	5	4		2	1	1
Sudan (French)	C	1,863	19		[3] 1			
Togo (French)	C	144	14		[3] 22			
Tunisia	C	33						
Union of South Africa	C	127				P	P	
ASIA								
Arabia	C	1						
Burma	C	1,513	73					
Ceylon	C	346						
China	C	602	66	29	20	9	19	
India	C	52,894						
India (French)	C	3						
Indochina (French)	C	1,290	307					
Iran	C	24						
Iraq	C	5						
Japan	C	17,541	114	9				
Malay States	C	336	148	11	10	14		9
Palestine	C	[4] 2						
Rhodes, Island of	C	[5] 1						
Siam (Thailand)	C	14,653	838	66				
Straits Settlements	C	[4] 23	8			9	1	3
Syria and Lebanon	C	8						
Turkey (See Turkey in Europe).								
EUROPE								
Czechoslovakia	C	24						
France	C	14	1					
Germany	C	1						
Gibraltar	C	3						
Great Britain:								
England and Wales	C	[6] 53						
Malta (Island of)	C	6						
Scotland	C	2						
Greece	C	114						
Italy	C	462						
Portugal	C	34	4					
Spain	C	[1] 4						
Turkey	C	16						
NORTH AMERICA								
Canada	C	2						
Guatemala	C	55						
Honduras	C	3	1					
Mexico	C	322	11					
SOUTH AMERICA								
Argentina	C	62	5					
Bolivia	C	452						
Brazil	C	[1] 16	[1] 6		1			
Colombia	C	556	31					
Ecuador	C	41	1					
Paraguay	C	252						
Peru	C	204						
Uruguay	C	18						
Venezuela	C	[1] 679	[1] 49	[1] 22				[1] 17
OCEANIA								
Hawaii Territory	C	[7] 1						

[1] Includes alastrim.
[3] For the period Aug. 1–10, 1946.
[4] Includes 1 imported case.
[5] Imported.
[6] Includes imported cases.
[7] Off-shipping.

TYPHUS FEVER*

[C indicates cases; P, present]

Place		January–June 1946	July 1946	August 1946—week ended— 3	10	17	24	31
AFRICA								
Algeria	C	557	46					
Basutoland	C	6						
Belgian Congo [1]	C	2,101	116	9				
British East Africa: Kenya [1]	C	21						
Egypt	C	1,298	20	10		2		
Eritrea	C	364	101	5	21	17		
French West Africa: Dakar District	C	3						
Libya	C	69	5		1	3	1	
Morocco (French)	C	3,388	165				[2] 60	
Morocco (Int. Zone)	C	52						
Morocco (Spanish)	C	1	8					
Nigeria	C	26						
Rhodesia, Northern	C	1						
Sierra Leone [1]	C	3						
Tunisia [1]	C	183						
Union of South Africa [1]	C	157				P	P	
ASIA								
Arabia [3]	C	1						
Burma [3]	C		1					
China	C	45	10	2			1	
India	C	284						
Indochina (French)	C	9						
Iran	C	137						
Iraq	C	133	23	4	5	8		
Japan	C	29,939	507	63				
Malay States	C	3						
Palestine [3]	C	41						
Straits Settlements	C	1						
Syria and Lebanon	C	78						
Trans-Jordan	C	19	2					
Turkey (See Turkey in Europe).								
EUROPE								
Albania	C	53						
Austria	C	30	4					
Belgium	C	3						
Bulgaria	C	923	23				3	
Czechoslovakia [1]	C	762	4					
France [1]	C	12	2					
Germany	C	1,854	3	3			2	
Great Britain:								
England and Wales	C	1						
Malta [3]	C	12						
Greece [1]	C	266	48	15	19	12	25	
Hungary	C	702	15		7	17		
Italy	C	6	2					
Netherlands	C	15						
Poland	C	2,999	59			26		
Portugal	C	3	1					
Rumania	C	7,167			60			
Spain	C	6	4					
Sweden [3]	C	1						
Turkey	C	1,073	30	5	7		16	
Yugoslavia	C	2,219						
NORTH AMERICA								
Costa Rica [3]	C	48	5		5	2		
Cuba [3]	C	13	8		1			
Guatemala	C	433						
Jamaica [3]	C	19	5					
Mexico	C	755	201					
Panama (Republic)	C	2						
Puerto Rico [3]	C	45	18	3	1			
Virgin Islands [3]	C	2						

See footnotes at end of table.

TYPHUS FEVER*—Continued

Place		January–June 1946	July 1946	August 1946—week ended—				
				3	10	17	24	31
SOUTH AMERICA								
Argentina	C	2	2					
Bolivia	C	130						
Chile	C	181	38					
Colombia	C	205						
Ecuador [1]	C	542	105					
Paraguay	C	1						
Peru	C	334						
Venezuela [1]	C	70	3					
OCEANIA								
Australia [3]	C	97	2					
Hawaii Territory [3]	C	24	1		1	3		

* Reports from some areas are probably murine type, while others probably include both murine and louse-borne types.
[1] Include cases of murine type.
[2] For the period Aug. 1–20, 1946.
[3] Murine type.

YELLOW FEVER

[C indicates cases; D, deaths]

AFRICA								
Ivory Coast: Bobo Dioulasso	C		[1] 1					
Nigeria:								
Ibadan	C	1						
Ilesha	C							[1] 2
Kafanchan	C		[1] 2					
Ogbomosho	C	39						
Oshogbo.[2]								
Sapele	C							[1] 5
Sierra Leone: Pujehan	C	1						
SOUTH AMERICA								
Bolivia: Santa Cruz Department	D	[3] 40						
Brazil: Para State	D	1						
Colombia:								
Caqueta Territory	D	1						
Magdalena Department	D	1						
Santander Department	D	1	1					
Venezuela:								
Tachira State	C	4						
Trujillo State	C	4						
Zulia State	C	4						

[1] Suspected.
[2] During the week ended Sept. 7, 1946, 1 case of suspected yellow fever was reported in Oshogbo, Nigeria.
[3] 14 of these deaths have been confirmed.

×