

PUBLIC HEALTH REPORTS

VOL. 49

AUGUST 10, 1934

NO. 32

EFFECT ON THE EYE OF THE YELLOW LIGHT OF THE SODIUM VAPOR LAMP

By JAMES E. IVES, *Senior Physicist, Office of Industrial Hygiene and Sanitation, United States Public Health Service*

I. INTRODUCTION

Because of its very high luminous efficiency, the recently developed sodium vapor lamp gives promise of future importance, particularly for such uses as highway illumination. A condition precedent to general adoption of these lights, however, is the certainty that no ill effects will be produced on human eyesight through continued exposure to the approximately monochromatic yellow light produced by them.

Luckiesh and Moss¹ have investigated vision under sodium vapor light. They found that visual acuity is definitely and appreciably greater under sodium light than under tungsten light. They believe that this is due to the minimization of chromatic aberration. They also found that the pupils of the eyes were somewhat larger under sodium light than under tungsten light of the same intensity. Speed of retinal impression and nervous muscular tension resulting from reading were about the same for the two illuminants. They state, however, that the effect of sodium light on eyesight over a long period of time under working conditions must be determined before we can form an opinion as to its value as a practical illuminant.

The present study was suggested to the United States Public Health Service in December 1933 by officials of the Port of New York Authority, who had become interested in the economic advantages of sodium vapor lamps. It was subsequently undertaken as a Civil Works Administration project in New York under the supervision of the Port of New York Authority and the United States Public Health Service.

The investigation was under the supervision of Dr. R. R. Sayers, surgeon, and Dr. James E. Ives, senior physicist, of the United States

¹ Journal of the Optical Society of America, vol. 24, pp. 5-13, 1934.

Public Health Service, and of Dr. Edward Levy, medical director of the Port of New York Authority.

Dr. Martin Cohen, Chief of the New York Post-Graduate Medical School and Hospital Eye Service, acted as ophthalmic consultant, generously giving his services. Dr. Anthony A. Scimeca, associate ophthalmologist, New York Post-Graduate Medical School and Hospital, made the eye examinations and Dr. Allan E. Parker, physicist, made the measurements of illumination. The entire work was coordinated and supervised by Mr. Charles Carswell, operating assistant, of the Port of New York Authority.

Grateful acknowledgment is made of the assistance rendered by Mr. W. A. D. Evans and Dr. L. J. Buttolph, of the General Electric Vapor Lamp Co. and by Mr. S. G. Hibben and Mr. A. B. McKenna, of the Westinghouse Lamp Co., as well as by the companies themselves, which furnished the sodium vapor lamps, and by the officials of the Civil Works Administration and of the Works Division, Department of Public Welfare, New York City, who cooperated in the investigation.

II. OUTLINE OF TEST

Two groups of subjects were employed. One group performed clerical tasks in a room lighted only by sodium-vapor lamps; the other group performed similar tasks in a room lighted only by tungsten lamps. The second group served as a control group to afford comparisons of the effects of the two kinds of light. The subjects worked for 4 hours, from 9 a.m. to 1 p.m., on Mondays to Fridays, and 3 hours, 9 a.m. to noon, on Saturdays. No work was done on Sundays or holidays. Examinations were made of the subjects' eyes prior to the starting of the investigation, and additional examinations, comprising four series in all, were made as the investigation proceeded. All examinations were made with standard clinical equipment and by standard methods.

At the outset it was proposed to have 24 subjects, to provide two groups of 12 each, with the thought that if some of them left during the investigation there would be 10 subjects for each group over the entire period. Actually, 23 subjects were secured; 12 were assigned to work under the sodium vapor lights and 11 under the tungsten lights. All of the subjects assigned to the sodium vapor light continued on the project for the full period; of the subjects assigned to tungsten light, 1 left on March 17 and another left on April 4, while 9 continued for the full period.

Rooms for conducting the investigation were made available by the Port of New York Authority in its general offices on the fifteenth floor of its building at 111 Eighth Avenue, New York City.

The tasks performed involved intensive clerical work and consisted of the tabulation of statistics, the additions of columns of figures, and the determination of averages. Records were kept by the supervisors of the amount of work performed by each subject during the day. The tests were started on February 5, 1934, and completed April 30, 1934.

III. ILLUMINATION AND ILLUMINATION MEASUREMENTS

The color quality of the light from the gas-filled tungsten Mazda lamp is well known, and it allows of fairly good color discrimination. The light emitted by the sodium vapor lamps, however, is nearly monochromatic, being yellow in color and of the wave length of the well-known D lines of the spectrum. When the unit is viewed through a hand spectroscope it is seen that the light is mainly in the D lines, but faint lines in the red, blue, and green are also observed. These lines are in part due to a small amount of neon which is used in the lamp to start the discharge. The light from the sodium lamp, being yellow and nearly monochromatic, does not allow of color discrimination.

The rooms in which the tests were carried on had no windows, and were therefore illuminated entirely by the artificial light being studied. The room containing the sodium vapor lamps was about 13 feet wide, 27 feet long, and 12 feet high. The room in which the tests on the tungsten lamps were carried on was much larger, but the tests were conducted at one end of it so that the conditions were much the same as in the smaller room. The walls and ceiling of the smaller room were light buff in color (except for one wall which was covered with aluminum paint) and had a reflecting power of about 0.70. The walls and ceiling of the larger room were white and had a reflecting power of about 0.78.

There were two lighting units in each room, 10 feet apart. The lighting was semi-indirect, both the sodium and tungsten lamps being housed in opal glass bowls, about 26 inches in diameter and 9 inches deep. The bowls for the tungsten lamps were of one piece of glass, but the bowls for the sodium lamps were made in four panels of opal glass, supported by a metal frame. The units were hung in each case directly above the tables on which the work was being done, the distance from the table to the bottom of each unit being about 6 feet 6 inches. At one of the sodium units this distance was later reduced to 5 feet 10 inches, owing to a change in the lamp.

In order to have sufficient illumination for the clerical work performed in these tests it was desired to maintain the illumination on the working plane between 9.5- and 10.5-foot candles. Some difficulty was initially experienced in maintaining this level of illumination with the sodium vapor lamps. However, by making slight changes in the lamps it was attained after the first two weeks.

In the original sodium vapor lamp installation, each unit was equipped with a sodium vapor lamp rated at approximately 4,000 lumens. These lamps each consisted of an evacuated glass tube, $2\frac{1}{2}$ inches in diameter and about 4 inches long, enclosing the electrical elements and containing a small amount of neon gas and a quantity of sodium. The lamps are of the hot-cathode type; the electrical elements comprise a cathode, heated by a low voltage current, and two anodes. The circuit between the anodes and the cathode is first established by the neon gas, which produces the red color characteristic of that gas. As the lamp becomes hot the sodium vaporizes, and the light changes gradually from red to a brilliant golden yellow. Each lamp was installed with the base up. The vaporizing temperature of the sodium, approximately 450° F., is maintained by enclosing the tube in a glass flask consisting of two walls with the space between evacuated for heat insulation. The flask is sealed around the base of the tube with an asbestos gasket.

With an illumination of about 10-foot candles on the working plane, each tungsten bowl had an average surface brightness of about 0.26 candles per square inch, near its edge, and of 0.61 at its base. For the sodium bowls the corresponding values were 0.57 and 0.96. The ratios of the brightness of the edge of the bowl to the brightness of the ceiling were about 7 to 1 for the sodium unit and 4 to 1 for the tungsten unit.

Since the tables at which the subjects were seated were placed directly under the lighting units, and since the brightness of the surfaces of the bowls was very low, the illumination under which the subjects worked was unusually free from glare.

Measurements of the illumination on the working plane were made every hour during the working period with a Weston illuminometer, which consists of a photronic cell and a moving coil galvanometer. The measurements were made at three positions on the working plane in each room, viz, directly under each lighting unit and half way between them. The readings of the Weston illuminometer were compared with those of a Macbeth illuminometer, twice a week, at each of the three positions, to correct for any error in the Weston illuminometer readings due to the angle of incidence of the light, its color, its infrared content, or any other cause. After steady working conditions had been established, these correction factors were found to be fairly constant, the various determinations differing from each other by less than 4 percent. The average values of the factors used to convert the Weston illuminometer readings to Macbeth illuminometer readings were, for the tungsten units, 0.85 directly under the units and 0.89 at the midpoint. For the sodium units, the corresponding values were 1.02 and 1.08, respectively. It will be noted that the correction factor for the tungsten units is considerably less than unity,

and for the sodium units slightly greater than unity. A test with a Wood's infrared filter (Wratten and Wainwright, No. 88) showed that about 10 percent of the reading on the Weston illuminometer under the tungsten units was due to infrared radiation. Under the sodium units the amount due to infrared radiation was so small (2 percent or less) that it could not be measured in this way.

The readings of illumination under the sodium lamps with the Macbeth illuminometer were made with an amber-colored glass filter placed in front of the working standard lamp. Its transmission as determined by the Electrical Testing Laboratories for the color temperature of the working standard lamp was 0.534.

The average illumination at each of the points where it was measured on the working plane for each week during the period of the test is given in table 1. It will be noted that the illumination in both rooms was comparable, and after the first 2 weeks was fairly constant. The average illumination at the three positions at which it was measured, omitting the first 2 weeks, was 10.3-foot candles in the sodium room, and 9.9-foot candles in the tungsten room.

TABLE 1.—*Weekly average of illumination in foot-candles under the sodium and tungsten units*

Week ending—	Sodium units				Tungsten units			
	Under east unit	Midpoint	Under west unit	Average	Under north unit	Midpoint	Under south unit	Average
Feb. 10.....	9.8	8.3	8.0	8.7	8.6	8.4	9.3	8.8
Feb. 17.....	9.3	8.1	7.6	8.3	8.0	7.7	8.7	8.2
Feb. 24.....	12.2	11.4	11.4	11.6	9.9	9.4	10.6	9.9
Mar. 3.....	9.8	9.8	10.6	10.1	10.2	9.7	10.6	10.2
Mar. 10.....	9.8	9.4	10.6	10.0	9.6	9.0	10.1	9.6
Mar. 17.....	10.5	9.7	10.6	10.3	9.7	9.1	10.4	9.7
Mar. 24.....	10.2	9.7	10.7	10.2	9.7	9.1	10.3	9.7
Mar. 31.....	10.3	9.5	10.6	10.1	10.4	9.6	10.8	10.2
Apr. 7.....	10.0	9.3	10.6	9.9	10.3	9.4	10.3	10.0
Apr. 14.....	9.7	9.2	10.7	9.8	10.2	9.4	10.4	10.0
Apr. 21.....	10.2	9.4	10.3	10.0	10.1	9.4	10.7	10.1
Apr. 28.....	13.1	11.0	10.9	11.7	9.9	9.2	10.5	9.9

IV. EYE EXAMINATIONS

Since the investigation was a clinical one, all apparatus used was of standard pattern, such as is found in any fully equipped eye clinic or ophthalmologist's office. Special apparatus to measure snap acuity² or other means to measure small changes which could not ordinarily be observed clinically were purposely avoided. The tests and respective instruments used to make these examinations were as follows:

A. Visual acuity was first taken with the Genophthalmic visual test apparatus made by the General Optical Co. This test chart has

² Public Health Bulletin No. 181. Studies in illumination. II. Relationship of ocular efficiency and ocular fatigue among letter separators in the Chicago post office. Government Printing Office, Washington, D.C., 1929, pages 35-43.

a light of controlled intensity producing an illumination of the screen ranging from 1 to 100 foot-candles. The maximum illumination was used at all times, and the chart was placed behind the subject, who read it from a mirror placed 10 feet away, making the reading distance 20 feet.

B. The eyes of the subjects were then examined by direct daylight in order to note the presence or absence of any external disease.

C. The pupillary reaction was then noted by the use of a hand flashlight in a darkened room.

D. A fundus examination was made with a May type ophthalmoscope. The first fundus examination of all the men was made in a dark room, but the subsequent examinations were made in the rooms in which the men were working, in the sodium and tungsten rooms, respectively. The men in the room lighted with the sodium vapor lamps were examined without changing the light. The light did not in any way affect the efficiency of the examination. In the tungsten room, however, the lights had to be turned off during the ophthalmoscopic examination.

E. Each man was then subjected to a form field test with the aid of a Wellsworth De Zang perimeter, measurements being made along axes 30 degrees apart. This test was conducted in a room having a northern exposure, and daylight was used exclusively. After the form field had been taken, the color fields for blue, red, and green were taken. In the first series of tests the color fields were taken on a different day from the form fields to avoid fatigue. However, in the next series, inasmuch as the men were accustomed to the routine, all the fields were taken at one sitting.

F. At the end of each series the men were tested for color blindness by the Holmgren method with the aid of woolen skeins.

The complete ophthalmic findings are recorded in table 2, in which each subject is identified by a number. The results obtained may be summarized as follows:

Visual acuity.—The visual acuity of the men ranged from only object perception in one eye of one of the men to $\frac{20}{20}+$ in others.

Of the 23 subjects, 7 wore corrective lenses of one sort or another. These subjects were instructed to continue the test in the same way as they started with respect to the use of corrective lenses. The same instructions were given to those who were beginning presbyopics and who started the test without glasses. The men were divided into two groups after their visions were tested, and an attempt was made to have about the same distribution of vision in the sodium and tungsten rooms. During the investigation no progressive change in visual acuity of any of the subjects was noted in either group.

External ocular disease.—There was no external ocular disease in any of the subjects at the start. During the course of the investigation, one man developed a unilateral catarrhal conjunctivitis, which cleared up promptly with the application of cold compresses and argyrol. There was no defect of any of the external ocular muscles in any of the subjects, except a slight horizontal nystagmus in one of them.

Pupillary reaction.—The pupillary reactions were normal in all but one of the subjects. This subject exhibited sluggish pupillary reactions which could be explained either on the basis of age, or possibly as a manifestation of early cerebrospinal lues. Here, too, no change was noted during the test.

Other pathology.—One subject having only object perception in one eye exhibited in that eye a secondary cataractous membrane due to an injury in early childhood. Two others exhibited the usual fundus changes seen in highly myopic eyes, one of which also showed a few vitreous opacities. No changes were noted during the study in any of these subjects in their respective defects.

Form fields.—The form fields, at the start, were normal in all subjects but one. In this subject, identified as no. 5 in table 2, the form field of the left eye showed a definite concentric contraction. However, a diminution of about 10 degrees was noted in the temporal field of most of the subjects as the investigation progressed. In some, the diminution amounted to as much as 20 degrees. This was probably due to the disuse of the temporal field during the act of continuous convergence necessitated by intensive clerical work. To verify this interpretation, 4 subjects, 2 from the sodium room and 2 from the tungsten room were asked to abstain from any work requiring convergence for 48 hours. The form fields taken after this convergence rest period were found to have returned to normal.

Color fields.—In one subject, identified as no. 22 in table 2, who exhibited the residual effects of infantile paralysis contracted in early childhood, the color fields were all concentrically smaller. There were no significant changes in any of the fields for any of the subjects in any of the series taken.

Color perception.—No subject was color blind, although a few were slow in picking out the colors. Two subjects showed feeble color perception; one by picking out a brown with green, and the other, a blue with green. These errors were consistent in all series taken.

V. PERSONAL REACTIONS OF THE SUBJECTS TO THE SODIUM LIGHT

To determine the personal reactions of the subjects working under the sodium lamps to this light, the 13 men, including the supervisors, were requested, in the final week of the investigation, to write out their individual opinions and reactions to the light.

While recognizing the disadvantages due to the entire lack of color contrast under the sodium light, all the subjects without exception, who had worked under the light, liked it. Eight of them stated that the light was soft, or softer than a tungsten light; 6 of them, that their eyes experienced less strain than under a tungsten light; 5, that it was easier to work under it; 3, that it was less tiring; 3, that sodium light was restful. Two stated that they could read figures more easily, and one that it was more soothing to the eyes. One subject stated that after working several hours under sodium light, bright sunlight hurt his eyes less than after a corresponding period of time under white light. Another subject, however, stated that after working for a length of time under sodium light he found that when he worked or read under an ordinary tungsten lamp his eyes tired more easily than they did previously.

VI. SUMMARY AND CONCLUSIONS

To determine whether the yellow light from sodium vapor lamps produced any ill effects upon the eyes of persons performing clerical work under this light, as compared with tungsten light, 2 groups of men of approximately the same age distribution and having approximately the same range of eye conditions, 12 men in one group and 11 in the other, performed intensive clerical work during a period of 12 weeks, 1 group working entirely under sodium light and the other group entirely under tungsten light. One of the older men in each group acted as a supervisor. The working period was 4 hours in the morning on all days of the week, except on Saturday, when it was 3 hours. The total working time for each man was 368 hours.

Four series of eye examinations were made of each subject during the course of the study. Each series included examinations of visual acuity, external pathology, pupillary reaction, fundus examination, form field tests, color field tests, and tests for color blindness.

Measurements of the illumination were made very hour on the working plane, both under the sodium light and the tungsten light. During the greater part of the time the illumination on the working plane was maintained between 9.5 and 10.5 foot-candles. The illumination was semi-indirect and unusually free from glare.

Accurate comparisons of the amount of work produced by the two groups could not be made. However, as far as could be ascertained the rates of production of the two groups were the same.

TABLE 2.—Summary of ocular findings

Explanatory note: In this table the visual acuity is given as the denominator of the usual fraction; e.g. 25+ means $\frac{20}{25}+$. Also, O.D. means the right eye, and O.S. the left; and F 10ft. means that the subject could distinguish fingers at a distance of 10 feet

SUBJECTS IN SODIUM ROOM

Subject number	Age	Visual acuity				Pathology (permanent defects)	Condition of fundus (dates of examination, 2/6, 3/3, 3/21, 4/14)	Pupillary reactions ¹ (dates of examination, 2/6, 3/3, 3/21, 4/14)	Form field		Color fields, blue, red, and green. Right and left eyes		Holmgren color test					
		Glasses, with or without	Eye	Dates of examination					Dates of examination	Condition	Dates of examination	Condition	Dates of test					
				2/5	3/2								3/20	4/10	2/27	3/20	4/3	4/26
1	40	Without	O.D.	25	25-	30+	25+	None	Normal	Prompt	2/5, 3/10, 3/31, 4/24	Normal	3/10, 3/31, 4/24	Normal	Excellent ²	Excellent	Excellent	Excellent
		do	O.S.	20	25+	25	25+											
2	24	do	O.D.	20+	20+	20+	20+	do	do	do	2/7, 3/6, 3/26, 4/16	do	3/6, 3/26, 4/16	do	do	do	do	Do.
		do	O.S.	20+	20+	20+	20+											
3	27	do	O.D.	20-	20	20	20	do	do	do	2/8, 3/3, 3/27, 4/16	do	2/13, 3/3, 3/27, 4/16	do	do	do	do	Do.
		do	O.S.	20-	25+	20	20											
4	25	do	O.D.	20	20	20	20+	do	do	do	2/7, 3/8, 3/23, 4/20	do	3/8, 3/23, 4/20	do	do	do	do	Do.
		do	O.S.	20	20	20	20+											
5	58	do	O.D.	30	30	25	25-	do	do	Sluggish ⁴	2/7, 3/7, 3/26, 4/19	O.D. normal O.S. smaller	2/12, 3/7, 3/26, 4/19	do	do	do	do	Do.
		do	O.S.	20	20	25+	25+											
6	27	do	O.D.	20	20	20	20	do	do	Prompt	2/8, 3/5, 3/23, 4/19	Normal	3/5, 3/23, 4/19	do	do	do	do	Do.
		do	O.S.	20	20	20	20											
7	22	do	O.D.	20	30	25+	25	do	do	do	2/3, 3/9, 3/24, 4/19	do	2/20, 3/9, 3/24, 4/19	do	do	do	Good ³	Do.
		do	O.S.	25	25	25	25											
8	28	do	O.D.	F 10ft.	F 10ft.	F 10ft.	F 10ft.	Myopia	do	do	2/7, 3/7, 3/26, 4/23	do	2/19, 3/7, 3/26, 4/23	do	do	do	do	Do.
		do	O.S.	F 6ft.	F 8ft.	F 8ft.	F 12ft.											
9	26	With	O.D.	25	20	20	25+	Secondary cataractous membrane in left eye. ⁵	O.D. normal O.S. not seen	do	2/8, 3/6, 3/23, 4/20	Right eye normal	3/6, 3/23, 4/20	do	Feeble. Picked blue with green.	Feeble. Picked blue with green.	Feeble. Picked blue with green.	Feeble. Picked brown with red.
		do	O.S.	30	30	30	30											
10	23	Without	O.D.	30	25	30	30	Mixed astigmatism	Normal	do	2/7, 3/9, 3/27, 4/21	Normal	3/9, 3/27, 4/21	do	Excellent	Excellent	Excellent	Excellent
		do	O.S.	40	40	40	40											
11	30	With	O.D.	30	25	25+	25	None	do	do	2/7, 3/10, 3/28, 4/23	do	2/19, 3/10, 3/28, 4/23	do	do	Good	Good	Good
		do	O.S.	25	25	25	25											
12	20	Without	O.D.	F 6ft.	F 6ft.	F 5ft.	F 6ft.	Myopia with a few vitreous opacities in left eye. ⁶	Posterior staphyloma	do	2/8, 3/5, 3/27, 4/21	do	3/5, 3/27, 4/21	do	do	Excellent	Excellent	Excellent
		do	O.S.	F 6ft.	F 6ft.	F 6ft.	F 6ft.											

SUBJECTS IN TUNGSTEN ROOM

13	40	Without	O.D.	F 8ft.	F 8ft.	F 10ft.	F 8ft.	Myopic astigmatism	Normal	Prompt	2/10, 3/12, 3/28, 4/21	Normal	2/10, 3/12, 3/28, 4/21	Normal	Excellent	Excellent	Excellent	Excellent
		do	O.S.	F 10ft.	F 8ft.	F 30+	F 10ft.											
14	36	With	O.D.	25	25	25	25	None	do	do	2/8, 3/12, 3/29, 4/23	do	3/12, 3/29, 4/23	do	do	do	do	Do.
		do	O.S.	20	20	20	25+											
15	27	do	O.D.	20	20	20	25+	Hyperopia	do	do	2/9, 3/14, 3/30, 4/24	do	3/14, 3/30, 4/24	do	do	do	do	Do.
		do	O.S.	25	20	20	20											
16	23	do	O.D.	20	20	20	20	None	do	do	2/5, 3/13, 3/30, 4/23	do	3/13, 3/30, 4/23	do	Feeble. Picked brown with green.	Feeble. Picked brown with green.	Feeble. Picked brown with green.	Feeble. Picked brown with green.
		do	O.S.	20	25+	20	20											
17	40	do	O.D.	F 15ft.	F 10ft.			Myopic astigmatism	do	do	2/9, 3/14	do	2/24, 3/14	do	Excellent	do	do	do
		do	O.S.	F 15ft.	F 10ft.													
18	22	Without	O.D.	20	20	20	20	None	do	do	2/5, 3/13, 3/29, 4/21	do	2/23, 3/13, 3/29, 4/21	do	Good	Good	Good	Good
		do	O.S.	20	20	20	20											
19	27	do	O.D.	30	30	50	50	Horizontal nystagmus	do	do	2/9, 3/17, 3/21, 4/24	do	3/17, 3/21, 4/24	do	do	do	do	Do.
		do	O.S.	25	30	30	30											
20	22	do	O.D.	20	20	20		None	do	do	2/9, 3/15, 3/29	do	3/15, 3/29	do	Excellent	Excellent	Excellent	do
		do	O.S.	20	20	20												
21	27	do	O.D.	30	30+	25	25	do	do	do	2/9, 3/16, 3/31, 4/24	do	2/23, 3/16, 3/31, 4/24	do	do	do	do	Excellent
		do	O.S.	50	50	50	20											
22	26	do	O.D.	20	20	20	20	do	do	do	2/9, 3/16, 3/31, 4/24	do	2/21, 3/16, 3/31, 4/24	Contracted ¹⁰	do	do	do	Do.
		do	O.S.	20	20	20	25+											
23	24	do	O.D.	20	25+	20	20	do	do	do	2/9, 3/17, 3/30, 4/24	do	2/17, 3/17, 3/30, 4/24	Normal	do	Good	Good	Good
		do	O.S.	20	20	20	20											

¹ Includes the direct and the consensual pupillary reactions to light.
² This subject was a supervisor who worked for 6 weeks in the sodium room and then for 6 weeks in the tungsten room.
³ "Excellent" denotes a prompt and correct selection of colors; "Good" denotes a slower and less certain selection.
⁴ Sluggish pupils and contracted form field probably due to old luetic infection.
⁵ Left eye, injured in childhood, has good light perception and projection.

⁶ No changes noted in the vitreous opacities during the tests.
⁷ This subject was a supervisor who worked for 6 weeks in the tungsten room and then in the sodium room.
⁸ Left Mar. 17.
⁹ Left Apr. 4.
¹⁰ Contracted color fields probably due to infantile paralysis of which subject now has residue.

Each subject was asked to make a statement in writing as to his personal opinion about the sodium vapor light, whether he liked it or disliked it, and why. All of the subjects working under the sodium light, while they recognized the complete lack of color contrast, liked the light, characterizing it as soft, easy on the eyes, etc.

The conclusions based upon the results of the study are as follows:

1. Sodium light had no permanent effect upon the eye, either beneficial or detrimental, which could be detected by the clinical tests used, in a group of subjects performing intensive clerical work under this light for about 4 hours a day during a period of 12 weeks.

2. A temporary contraction of the form field of about 10 degrees on the temporal side was observed, under both the tungsten and sodium lights, for most of the subjects, as the investigation progressed, when the examination was made during the working hours of the subjects. This contraction of the form field, however, disappeared when the subjects refrained from any work requiring convergence for 48 hours.

3. No significant difference in the amount of work performed by the sodium and tungsten groups was observed.

THE PREVENTION OF POST-OPERATIVE WOUND INFECTIONS

By EDWIN H. CARNES, M.D., F.A.C.S., *Passed Assistant Surgeon, United States Public Health Service, United States Marine Hospital, Mobile, Ala.*

Wound infections following surgical operations in clean cases should not occur. Unfortunately such infections have been found to be prevalent. Leigh (1) (2) sent questionnaires to 75 prominent surgeons in widely separated sections of the country. Only 9 surgeons reported freedom from infection, and 1 surgeon reported as high as 10 to 15 percent of infections. In most cases the infections were without known cause, and in many instances lack of strict operating-room control was apparent. Lack of such control is a weak point in many large hospitals. At the United States Marine Hospital in Mobile, Ala., a small, closed staff and nursing personnel, with a semimilitary organization, probably permits a stricter enforcement of preventive measures than is possible in most civilian hospitals.

By close adherence to every detail of a definite routine we have succeeded in preventing post-operative wound infections since we began using the new operating suite in this hospital in December 1932. In the prevention of infections, consideration is given (1) to proper sterilization of instruments, gloves, suture material, linen, sponges, etc.; (2) to preparation of the patient, including draping; (3) to preparation of staff; (4) to operative technique; and (5) to care of operating room.

PREPARATION OF INSTRUMENTS, GLOVES, AND SIMILAR ARTICLES

Instruments are sterilized by boiling 20 minutes; knives, scissors, and needles are sterilized in an oil sterilizer for 30 minutes at 300° F. Gloves are autoclaved for from 15 to 20 minutes. Gloves used in handling infective material are not used again in clean cases. The "lap packs" and drums containing sheets, gowns, and similar articles, are autoclaved at 20 pounds for 45 minutes; smaller packages of sponges, towels, etc., at 20 pounds for from 30 to 35 minutes. Diack sterilizer controls are always used, being inserted in the middle of the packs. From time to time contaminated gauze is deeply placed in a pack and put through the autoclave under routine conditions, and an effort is made in the laboratory to recover organisms from the gauze. Water is sterilized in standard sterilizer tanks at 260° F. for 30 minutes. The spigots of the sterile water tanks are protected from contamination by sterile gauze covers when not in use.

Boilable, heat-sterilized catgut is used, the tubes being sterilized by boiling them with the instruments. The fallacy of chemical sterilization of catgut has been demonstrated by Clock (3), who proved effectively that "heat sterilization, properly controlled, is the only safe and positive method for sterilizing catgut sutures." Catgut as a factor in infection and technique for checking its sterility when suspected, has been thoroughly studied by Meleney and Chatfield (4) (5). Heat-sterilized, nonboilable catgut, when properly handled, is as safe as the boilable variety, but it is probably easier to insure sterility with the boilable type.

PREPARATION OF PATIENTS

A few hours preceding the operation, the patient is prepared at the site of operation by shaving and thorough cleaning with soap and water, preparation being carried out over a large area adjacent to the actual area of incision. No dressing is applied except when the operation is to involve tendon suture, in which case a sterile dressing is applied to the operative field and left on until the patient is on the table, as advised by Koch (6).

Particular attention is paid to the preparation of the skin immediately prior to operation. The skin area is thoroughly cleansed with benzene; if the incision is abdominal, the umbilicus is always cleansed out with great care. Following benzene, ether is used, which removes any remaining benzene and dries rapidly. Tincture of iodine (U.S.P.) is next applied, then alcohol (95 percent), except in the immediate area of the incision, where the full strength tincture is allowed to remain. The alcohol is used principally to dilute and partially

remove the strong tincture already applied to the skin, preventing annoying burns.

Methods of draping, of course, vary according to the site and type of operation. For abdominal operations, which constitute the bulk of our major surgery, the field is first surrounded by four sterile towels; a sterile sheet is then laid from just above the field, to and over the "head screen", and over this and the towels a "lap" sheet is laid, its opening being held directly over the field. Finally, a sterile sheet is placed over the lower part of the patient and allowed to hang well down at the foot of the table.

After the incision has been made, large "lap" pads or towels are clipped to the wound edges with Lane towel clamps; the towels are clipped to each other at the ends of the incision by towel hooks. The Lane clamps and towel hooks are inserted in such a manner that they lie wholly under the skin towels or pads, hence are not in the way during the operation.

PREPARATION OF STAFF

We feel that the preparation of the staff for the operating room does not receive the attention it deserves in a good many hospitals. It would probably be beneficial to check this part of the preoperative technique before blaming the sutures or the patient's skin for "stitch abscess" and other wound infections.

Street clothes and shoes are "barred" in the operating room during an operation. Freshly laundered operating suits are furnished the surgeon and his staff, which are put on after removal of the clothing. White shoes, preferably rubber-soled tennis shoes, are worn instead of street shoes, and are kept thoroughly clean by the operating-room orderly. Thus the tracking of street dust and bacteria into the operating room is prevented. To realize the amount of filth that may be brought in, one need only observe the white tiled floor where a surgeon has scrubbed for a few minutes while wearing his street shoes. Well-fitting caps of conventional design are donned with the mask before scrubbing.

The efficiency of the surgical mask is an important factor in preventing infection. Walker (7) investigated 3 successive deaths from hemolytic streptococcus infection and demonstrated that these were air borne from the breath of streptococcus carriers, who not only failed to mask the nose but covered the mouth with masks which were far from germ proof. He describes a mask in which a sheet of rubber is incorporated, covering both mouth and nose, and has demonstrated its effectiveness by bacteriological controls. The objection to this mask is the discomfort and heat produced by the rubber layer. The mask that we find most practical and comfortable is the usual mask large enough to cover nose and mouth with

ample margin, but gathered or pleated at each end, which makes it fit snugly over the nose and under the chin. It does not tend to slip up or down and is particularly valuable when the wearer uses spectacles, as the expired air does not fog the glasses. The "set" on the nose can be rendered still more firm by the incorporation of a strip of flexible metal in the upper edge, and bending this over the nose at the desired level.

The subject of "scrubbing" seems a trite one, but it is surprising how frequently one sees this important part of the preoperative technique carelessly done. It is our plan first to wash the hands thoroughly, after the nails have been cleaned and trimmed, if necessary, before opening the sterile container to pick up a scrub brush. After the hands have been rendered "socially" clean by the preliminary laving, we take a brush from the sterile container and proceed to render them "surgically" clean by proper scrubbing. Liquid soap is used, and several lathers are worked up and removed during the process. The working up of a luxuriant lather and holding on to it for 10 minutes is a practice that we avoid.

About 10 minutes' scrubbing has been found more effective from the standpoint of removal of bacteria than longer periods. Smears from the hands have been made on 3¼-inch agar plates at the end of 10, 15, and 20 minutes and incubated for 72 hours. At the end of 10 minutes of scrubbing, cultures from the hands showed an average of only 1 bacterial colony; at the end of 15 minutes an average of 6 colonies, bacterial and yeast; and at the end of 20 minutes an average of 24 colonies. The colonies obtained from the hands at the end of 10 minutes showed *Staphylococcus aureus*; those at the end of 15 minutes, *Staphylococcus aureus*, yeast, and *B. coli*; at the end of 20 minutes, *Staphylococcus aureus*, *albus*, and yeast. We can account for these findings only by the assumption that prolonged scrubbing brings bacteria from the depths of the skin crevices and pores to the surface.

After hands, fingers, nails, and arms have been scrubbed properly, they are rinsed in ethyl alcohol, 95 percent, and dried with a sterile towel. The operating gown is unfolded by the instrument nurse and held on the outer side by its yoke in front of the surgeon who thrusts his arms well into the sleeves. By raising his arms and gently shaking the gown, his hands are made to emerge from the sleeves. An unsterile nurse standing behind the surgeon pulls the gown snugly into place and ties the strings as the surgeon picks up the waist strings well away from the front, and holds them out for the nurse to grasp from behind.

After the hands have been powdered with sterile talc, dry gloves are donned with the further assistance of the instrument nurse. They are held on the outer surface by the nurse by means of a cuff

turned back, and are spread slightly to allow easy introduction of the surgeon's hand. As the nurse holds the glove firmly, he thrusts his hand into it hard enough to stretch the unfolding cuff of the glove several inches above the wrist. Elastic bands are then applied over the gloves at the wrist, so that the sleeve ends cannot escape from under the gloves during the operation. Sleeves with cuffs of knitted fabric have the advantage of fitting snugly at the wrist. If a glove is pricked during an operation, it is immediately changed or another is put on over it.

OPERATIVE TECHNIQUE

As regards operative technique, the field is draped as previously described in detail so as to avoid skin exposure during the operation. The knife used for the skin incision is discarded and a second one is used for further work. Traumatism of the soft tissues is minimized as much as possible. In clamping and tying bleeders, picking up of a large amount of adjacent tissue is avoided. If it is necessary to ligate a bleeder in the muscle layer, it is less traumatizing to pass a ligature on a needle than to clamp and tie the muscle tissue. In handling or removing infected tissues from the abdomen, the abdominal wall is protected against contact by pads and retraction.

In closing the abdominal wall, care is taken to approximate accurately and properly the various layers, and to see that no oozing points are left to form a hematoma and invite infection. Absorbable sutures are used of as small size as is consistent with strength required for the purpose for which used. Large, clumsy knots are avoided. In closing the skin, nonabsorbable material is used, as silk or dermal, preferably the latter. The "superficial and deep continuous suture" described by Sarnoff (8) appears to be the preferable skin closure, as it effects complete hemostasis and minimizes the possibility of post-operative subcutaneous oozing and hematoma formation. The use of tissue forceps without teeth in skin closure lessens the liability of carrying infection from the skin surface to the subcutaneous tissue.

CARE OF OPERATING ROOM

The operating rooms are kept scrupulously clean at all times. They are, of course, used for no purpose other than operations. There are two operating rooms reserved for general surgery; eye, ear, nose and throat, and cystoscopic and plaster work are done in their respective rooms. Of the two general rooms, one is restricted to the handling of clean cases only; the other is used for cases known to be infected prior to operation.

On the afternoons preceding operating days, the operating room floor is mopped with hot water and soap powder, and all tables, stools, drum stand, lights, and other fixtures are washed with soap and hot

water. Sometimes household ammonia is added to the hot water, occasionally lye to that used in cleaning the floor. The floor and lower third of the walls are tiled, adding greatly to ease in maintaining strict cleanliness. Similarly, at the end of an operating session the room is again gone over. To demonstrate the advantage of scrupulous cleanliness in the operating room and of barring admission to those not properly clothed and shod, we have exposed $3\frac{1}{4}$ inch agar plates in the operating room during operation when a team of six people is working and moving about, and compared them after 72 hours' incubation with plates exposed in the corridors and wards. All plates were exposed for 15 minutes. An average of 8 colonies was obtained from the operating room plates, consisting only of *Staphylococcus* and yeast, whereas the plates exposed elsewhere in the hospital showed an average of 39 colonies, consisting of *Staphylococcus albus* and *aureus*, *Streptococcus* (nonhemolytic), and various yeasts.

It may appear that the various steps in preparation have been described in tiring detail, but we feel that meticulous attention to every point is essential if we are to use all means available to prevent infections.

REFERENCES

- (1) Leigh, Southgate: The importance of strict operating room control. *Bulletin of American College of Surgeons* (1927), vol. XI, no. 3, pp. 29-31.
- (2) ——— Proceedings of Hospital Standardization Conference. *Surg. Gyn. and Obs.* (1930), vol. L, p. 369.
- (3) Clock, R. O.: The fallacy of chemical sterilization of surgical catgut sutures. *Surg. Gyn. and Obs.* (1933), vol. LVI, pp. 149-161.
- (4) Meloney, Frank L., and Chatfield, Mabel: How can we insure the sterility of catgut? *Surg. Gyn. and Obs.* (1930), vol. L, pp. 271-277.
- (5) ——— The sterility of catgut in relation to hospital infections, with an effective test for the sterility of catgut. *Surg. Gyn. and Obs.* (1931), vol. LII, pp. 430-441.
- (6) Koch, Sumner L. and Mason, M. L.: Division of the nerves and tendons of the hand. *Surg. Gyn. and Obs.* (1933), vol. LVI, pp. 1-39.
- (7) Walker, Irving J.: How can we determine the efficiency of the surgical mask? *Surg. Gyn. and Obs.* (1930), vol. L, pp. 266-270.
- (8) Sarnoff, Jacob.: Superficial and deep continuous suture. Supplementary report. *Surg. Gyn. and Obs.* (1931), vol. LIII, pp. 539-544.

COURT DECISION ON PUBLIC HEALTH

Occupational diseases act construed.—(Illinois Supreme Court; *Burns v. Industrial Commission et al.*, 191 N.E. 225; decided June 15, 1934.) Section 2 of the Illinois occupational diseases act provided as follows:

Every employer in this State engaged in the carrying on of any process of manufacture or labor in which sugar of lead, white lead, lead chromate, litharge,

red lead, arsenate of lead, or paris green are employed, used, or handled, or the manufacture of brass or the smelting of lead or zinc which processes and employments are hereby declared to be especially dangerous to the health of the employees (*or*)¹ engaged in any process of manufacture or labor in which poisonous chemicals, minerals or other substances are used or handled by the employees therein in harmful quantities or under harmful conditions, shall provide for and place at the disposal of the employees engaged in any such process or manufacture and shall maintain in good condition and without cost to the employees, proper working clothing to be kept and used exclusively for such employees while at work, and all employees therein shall be required at all times while they are at work to use and wear such clothing; and in all processes of manufacture or labor referred to in this section which are unnecessarily productive of noxious or poisonous dusts, adequate and approved respirators shall be furnished and maintained by the employer in good condition and without cost to the employees, and such employees shall use such respirators at all times while engaged in any work necessarily productive of noxious or poisonous dusts.

In a proceeding under the workmen's compensation act one of the matters considered by the supreme court was the construction to be given the above-quoted section. With reference to such construction the court spoke as follows:

The primary purpose of statutory construction is to arrive at the legislative intent. [Case cited.] In order to arrive at this intent, the several provisions of the statute are to be construed together in the light of the general purpose and object of the act and so as to give effect to the main intent and plan thereof as therein expressed. [Case cited.] If this intention can be collected from the statute, words may be modified, altered, or supplied so as to obviate any repugnancy or inconsistency with such legislative intention. [Cases cited.]

In enacting section 2 of the occupational diseases act, the legislature evidently intended to establish either two or three classes of occupations to which it would apply. If the word "or" is read into section 2 of the act between the words "employees" and "engaged", as we have above indicated in parenthesis and italics, then three distinct classes are created, as follows: (1) Those who are engaged in an industry using lead derivatives or paris green; (2) the manufacture of brass or the smelting of lead or zinc; and (3) any process of manufacture in which poisonous chemicals, minerals, or other substances are used or handled in harmful quantities or under harmful conditions. If we omit the word "or", we find that, after the statute creates the first two classes, it contains a jumble of words which could not have been written into it for any legislative purpose whatever. We have thus our choice between, on the one hand, assuming that the word "or" was inadvertently omitted, or, on the other hand, assuming that the legislature intended to write approximately 31 words into the act without any purpose in view at all. Our problem, thus stated, is, Did the legislature inadvertently omit one word which would clarify the entire section if supplied, or did it intentionally include 31 words which are entirely useless without the conjunction? Recurring to our primary rule as above stated, that it is our purpose to discover the legislative intent, we feel it more reasonable to assume that the word "or" was inadvertently omitted and should be supplied. Thus correctly construed the entire section is intelligible, whereas any other construction would render approximately one-third of it meaningless.

¹ This word is not in the law as enacted by the legislature.

PUBLIC HEALTH SERVICE PUBLICATIONS

A List of Publications Issued During the Period January-June 1934

There is printed herewith a list of publications of the United States Public Health Service issued during the period January-June 1934.

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

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

Periodicals

Public Health Reports (weekly), January-June, vol. 49, nos. 1-26, pages 1 to 781.
Venereal Disease Information (monthly), January-June, vol. XV, nos. 1-6, pages 1 to 232.

Reprints from the Public Health Reports

1606. The influenza epidemic of 1928-29 in 14 surveyed localities in the United States. An analysis, according to age, sex, and color, of the records of morbidity and mortality obtained in the surveys. By Selwyn D. Collins. January 5, 1934. 42 pages.
1607. The use of pure-strain animals in studies on resistance to transplantable tumors. By H. B. Andervont. January 12, 1934. 6 pages.
1608. The physiological response of the peritoneal tissue to dusts introduced as foreign bodies. By John W. Miller and R. R. Sayers. January 19, 1934. 10 pages.
1609. Sulphur dioxide for the fumigation of ships. Methods of use and prospects of improvement. By C. L. Williams. January 19, 1934. 12 pages.
1610. Milk-sanitation ratings of cities. Cities for which milk-sanitation ratings of 90 percent or more have been reported by the State milk sanitation authorities during the period January 1, 1932, to December 1, 1933. January 26, 1934. 5 pages.
1611. Amoebic dysentery. Problems presented by the outbreak in 1933. By G. W. McCoy. February 2, 1934. 4 pages.
1612. Gas hazards in sewers and sewage-treatment plants. By R. R. Sayers. February 2, 1934. 11 pages.
1613. City health officers, 1933. Directory of those in cities of 10,000 or more population. February 2, 1934. 17 pages.
1614. The sensitivity, in vitro, of bacteria to the beta and gamma rays of radium. By R. R. Spencer. February 9, 1934. 10 pages.

1615. Liquid sulphur dioxide as a fumigant for ships. By C. L. Williams. February 9, 1934. 17 pages.
1616. Effect of flea passage on epidemic typhus virus. By R. E. Dyer. February 16, 1934. 2 pages.
1617. Studies on the standardization of vibriion septique antitoxin. By Ida A. Bengtson. February 23, 1934. 12 pages.
1618. Frequency of health examinations in 9,000 families, based on nation-wide periodic canvasses, 1928-31. By Selwyn D. Collins. March 9, 1934. 26 pages.
1619. Control of amoebic dysentery. By G. W. McCoy. March 16, 1934. 2 pages.
1620. Viability of *Endamoeba histolytica* and *Endamoeba coli*. Effect of drying. By Bertha Kaplan Spector and Florence Buky. March 23, 1934. 7 pages.
1621. Most probable numbers for evaluation of coli-aerogenes tests by fermentation tube method. By J. K. Hoskins. March 23, 1934. 13 pages.
1622. Psittacosis in the United States. Incidence, scientific aspects, and administrative control measures. By V. M. Hoge. April 6, 1934. 12 pages.
1623. Health services of tomorrow. By Thomas Parran, Jr. April 13, 1934. 10 pages.
1624. The standardization of gas gangrene (*perfringens*) antitoxin. By Ida A. Bengtson. April 27, 1934. 5 pages.
1625. Public Health Service publications. A list of publications issued during the period July-December 1933. April 20, 1934. 4 pages.
1626. Silicosis. By R. R. Sayers. May 18, 1934. 8 pages.
1627. Frequency of eye refractions in 9,000 families, based on nation-wide periodic canvasses, 1928-31. By Selwyn D. Collins. June 1, 1934. 18 pages.
1628. Silicosis among granite quarriers. By J. J. Bloomfield and Waldemar C. Dreessen. June 8, 1934. 5 pages.
1629. Court decision holding U.S. Public Health Service milk ordinance valid. June 8, 1934. 4 pages.
1630. Effect of inhaled marble dust as observed in Vermont marble finishers. By Waldemar C. Dreessen. June 22, 1934. 8 pages.
1631. The pellagra-preventive value of green onions, lettuce leaves, pork shoulder, and peanut meal. By G. A. Wheeler and D. J. Hunt. June 22, 1934. 5 pages.
1632. Table showing the pellagra-preventive value of various foods. By W. H. Sebrell. June 29, 1934. 3 pages.

Supplements to the Public Health Reports

109. The notifiable diseases. Prevalence during 1932 in States. 1933. 13 pages.
110. Court decisions on public health. Review of decisions published in the Public Health Reports during 1930-32. Prepared by William Fowler. 1934. 17 pages.

Reprints from Venereal Disease Information

43. The time element in the penetration of the genital mucosa of the rabbit by the *Treponema pallidum*. By J. F. Mahoney. Vol. XV, No. 1. 5 pages.
44. Incidence of syphilitic aortitis in seamen and landsmen. By R. D. Lillie and J. G. Pasternack. Vol. XV, No. 2. 12 pages.

45. Cooperative clinical studies in the treatment of syphilis. Latent syphilis. By Joseph Earle Moore and Harold N. Cole, Paul A. O'Leary, John H. Stokes, Udo J. Wile, Taliaferro Clark, Thomas Parran, Jr., and Lida J. Usilton. Vol. XIII, Nos. 8-12, 1932, and Vol. XIV, No. 1, 1933. 56 pages.
46. Cooperative clinical studies in the treatment of syphilis. Syphilis in pregnancy. By Harold N. Cole and Joseph Earle Moore, Paul A. O'Leary, John H. Stokes, Udo J. Wile, Taliaferro Clark, Thomas Parran, Jr., R. A. Vonderlehr, and Lida J. Usilton. Vol. XV, No. 3. 25 pages.
47. Cooperative clinical studies in the treatment of syphilis. Standard treatment procedure in early syphilis. A résumé of modern principles. By John H. Stokes and Harold N. Cole, Joseph Earle Moore, Paul A. O'Leary, Udo J. Wile, Thomas Parran, Jr., R. A. Vonderlehr, and Lida J. Usilton. Vol. XV, No. 4. 13 pages.

Annual Report

Annual report of the Surgeon General of the United States Public Health Service for the fiscal year 1933. 128 pages.

Unnumbered Publications

- Index to Public Health Reports, vol. 48, part 2 (July-December 1933). 1934. 21 pages.
- The United States Public Health Service. (A descriptive pamphlet.) 1934. 4 pages.
- *National Negro Health Week program. This pamphlet is published annually, usually about the middle of March, for community leaders in an effort to suggest ways and means by which interested individuals and organizations may be organized for a concerted and effective attack upon the community's disease problems. Twentieth annual observance. 1934. 8 pages. Out of print.
- *National Negro Health Week leaflet. 1934. 2 pages. Out of print.

DEATHS DURING WEEK ENDED JULY 21, 1934

[From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce]

	Week ended July 21, 1934	Correspond- ing week, 1933
Data from 86 large cities of the United States:		
Total deaths.....	7,341	6,809
Deaths per 1,000 population, annual basis.....	10.2	9.5
Deaths under 1 year of age.....	544	515
Deaths under 1 year of age per 1,000 estimated live births.....	51	42
Deaths per 1,000 population, annual basis, first 29 weeks of year.....	11.9	11.3
Data from industrial insurance companies:		
Policies in force.....	67,664,105	67,722,700
Number of death claims.....	11,468	11,151
Death claims per 1,000 policies in force, annual rate.....	8.8	8.6
Death claims per 1,000 policies, first 29 weeks of year, annual rate.....	10.4	10.3

¹ Data for 81 cities.

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 July 28, 1934, and July 29, 1933

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended July 28, 1934, and July 29, 1933

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended July 28, 1934	Week ended July 29, 1933	Week ended July 28, 1934	Week ended July 29, 1933	Week ended July 28, 1934	Week ended July 29, 1933	Week ended July 28, 1934	Week ended July 29, 1933
New England States:								
Maine.....				4	12	2	1	0
New Hampshire.....					7	23	0	0
Vermont.....					2	8	0	0
Massachusetts.....	15	19			94	120	1	2
Rhode Island.....	1						0	0
Connecticut.....		4		2	32	22	0	0
Middle Atlantic States:								
New York.....	26	39	1	1	189	261	1	7
New Jersey.....	10	12	5	3	51	77	0	0
Pennsylvania.....	38	26			366	228	7	5
East North Central States:								
Ohio.....	29	11	12	30	226	19	3	1
Indiana.....	12	10	1	19	29	10	0	1
Illinois.....	22	11	7	19	171	50	1	3
Michigan.....	3	20	1	3	61	87	0	0
Wisconsin.....	9	3	5	10	327	38	2	0
West North Central States:								
Minnesota.....	3	7	2	1	31	24	0	0
Iowa.....	4	2			29	4	0	2
Missouri.....	16	19	8		30	21	0	1
North Dakota.....	7	2			24	20	1	3
South Dakota.....					8		0	1
Nebraska.....	1	3			4		1	0
Kansas.....	20	7	2		35	12	1	0
South Atlantic States:								
Delaware.....					1		0	1
Maryland ¹	3	3	1	9	30	11	0	0
District of Columbia.....	2	2		1	5	4	3	0
Virginia ²	10	7			107	18	0	0
West Virginia.....	12	10	8	1	40	3	0	0
North Carolina ³	7	20		3	74	51	1	0
South Carolina ⁴	2	8	38	72	15	33	0	0
Georgia ⁴	9	19				21	0	0
Florida ⁴	10	1	3	1	36	15	0	0

See footnotes at end of table.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended July 28, 1934, and July 29, 1933—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended July 28, 1934	Week ended July 29, 1933	Week ended July 28, 1934	Week ended July 29, 1933	Week ended July 28, 1934	Week ended July 29, 1933	Week ended July 28, 1934	Week ended July 29, 1933
East South Central States:								
Kentucky.....	6	6			25		1	3
Tennessee.....	6	8		4	19	25	1	0
Alabama.....	9	11	6	1	81	10	0	1
Mississippi.....	8	10					1	0
West South Central States:								
Arkansas.....	2	4	1	1		27	0	0
Louisiana.....	8	8	3	9	6	20	0	1
Oklahoma.....	2	9		8	2	18	0	0
Texas.....	33	57	26	63	60	69	0	3
Mountain States:								
Montana.....	1	1			11	8	0	0
Idaho.....				3	2	1	0	0
Wyoming.....	1	1			12	9	0	0
Colorado.....	3	4			60	5	0	0
New Mexico.....	8	1			17	3	0	1
Arizona.....			2			2	0	0
Utah.....	1	2			3	23	0	0
Pacific States:								
Washington.....	2				31	25	1	0
Oregon.....		1	12	9	15	28	0	0
California.....	40	37	10	18	55	109	0	1
Total	396	426	155	298	2,445	1,624	27	40

Division and State	Polioomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended July 28, 1934	Week ended July 29, 1933	Week ended July 28, 1934	Week ended July 29, 1933	Week ended July 28, 1934	Week ended July 29, 1933	Week ended July 28, 1934	Week ended July 29, 1933
New England States:								
Maine.....	1	0	11	6	0	0	3	2
New Hampshire.....	1	0	1	10	0	0	0	0
Vermont.....	1	0	2	3	0	0	1	1
Massachusetts.....	3	24	67	85	0	0	3	4
Rhode Island.....	0	0		6	0	0	0	0
Connecticut.....	0	2	9	14	0	0	2	2
Middle Atlantic States:								
New York.....	9	45	112	90	0	0	19	22
New Jersey.....	2	4	27	34	0	0	13	11
Pennsylvania.....	2	8	106	122	0	0	21	29
East North Central States:								
Ohio.....	7	3	110	124	0	0	28	31
Indiana.....	2	0	14	10	0	0	21	19
Illinois.....	7	7	80	89	0	2	61	25
Michigan.....	4	3	52	76	0	1	12	7
Wisconsin.....	1	0	42	20	22	2	7	2
West North Central States:								
Minnesota.....	1	10	19	9	3	2	1	0
Iowa.....	1	0	17	10	1	4	2	1
Missouri.....	1	1	27	15	1	0	66	23
North Dakota.....	0	5	9		1	1	0	0
South Dakota.....	3	0	1	2	1	0	2	2
Nebraska.....	2	0	4	2	0	1	2	0
Kansas.....	2	1	16	12	1	0	29	6
South Atlantic States:								
Delaware.....	0	0			0	0	0	1
Maryland.....	1	0	12	29	0	0	15	15
District of Columbia.....	0	0	2	3	0	0	3	4
Virginia.....	0	1	19	20	0	0	39	55
West Virginia.....	3	2	19	7	0	0	23	25
North Carolina.....	1	0	15	24	0	0	33	33
South Carolina.....	1	0	4	3	0	0	31	36
Georgia.....	1	0	3	3	0	0	69	56
Florida.....	0	2		1	0	0	2	7

See footnotes at end of table.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended July 28, 1934, and July 29, 1933—Continued

Division and State	Pollomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended July 28, 1934	Week ended July 29, 1933	Week ended July 28, 1934	Week ended July 29, 1933	Week ended July 28, 1934	Week ended July 29, 1933	Week ended July 28, 1934	Week ended July 29, 1933
East South Central States:								
Kentucky.....	10	1	18	6	0	0	39	116
Tennessee.....	1	7	7	12	0	0	74	86
Alabama ¹	2	0	7	12	0	0	47	43
Mississippi ²	0	0	5	5	0	0	26	8
West South Central States:								
Arkansas.....	0	0	-----	6	0	0	37	23
Louisiana ¹	0	1	4	6	0	0	34	28
Oklahoma ¹	0	0	10	8	0	0	33	39
Texas ¹	5	1	29	21	0	18	86	103
Mountain States:								
Montana.....	2	0	1	1	1	0	0	5
Idaho.....	13	0	4	2	0	1	0	4
Wyoming ³	1	1	3	4	0	0	0	1
Colorado.....	1	0	18	6	0	0	9	1
New Mexico.....	3	0	5	-----	0	0	6	1
Arizona.....	1	0	-----	2	0	0	1	3
Utah ⁴	1	0	9	1	0	0	2	0
Pacific States:								
Washington.....	34	0	17	8	8	1	11	3
Oregon.....	1	0	16	4	5	3	6	7
California.....	120	4	76	61	0	5	11	9
Total.....	257	133	1,029	994	44	41	931	893

¹ New York City only.

² Week ended earlier than Saturday.

³ Rocky Mountain spotted fever, week ended July 28, 1934, 13 cases, as follows: Maryland, 3; Virginia, 4; North Carolina, 5; Wyoming, 1.

⁴ Typhus fever, week ended July 28, 1934, 42 cases, as follows: North Carolina, 1; South Carolina, 1; Georgia, 2; Florida, 1; Alabama, 11; Louisiana, 1; Texas, 25.

⁵ 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	Menin- gococ- cus menin- gitis	Diph- theria	Influ- enza	Ma- laria	Meas- les	Pel- lagra	Polio- mye- litis	Scarlet fever	Small- pox	Ty- phoid fever
<i>May 1934</i>										
Colorado.....	2	29	-----	-----	4,307	-----	0	102	13	5
<i>June 1934</i>										
Alabama.....	1	50	48	383	1,393	82	5	26	1	61
California.....	4	121	110	11	2,990	5	1,193	590	16	53
Colorado.....	3	37	-----	-----	2,122	-----	2	63	13	12
Mississippi.....	2	24	382	9,087	1,238	633	6	11	1	57
Montana.....	1	10	15	-----	103	-----	4	21	1	5
Oklahoma ¹	3	6	91	138	236	15	1	25	12	54
North Carolina.....	-----	175	490	1,078	520	172	2	5	0	58
Tennessee.....	8	20	35	472	961	30	2	39	4	67
Virginia.....	11	39	79	16	3,705	34	4	69	1	54
Washington.....	6	5	25	-----	811	-----	5	149	20	11
Wisconsin.....	12	32	45	-----	7,272	-----	3	1,066	40	13

¹ Exclusive of Oklahoma City and Tulsa.

May 1934		Cases	Hook worm disease:	Cases	Rocky Mountain spotted fever—Continued.	Cases
Colorado:			Mississippi	237	Montana	12
Chicken pox	349		South Carolina	60	Virginia	8
Dysentery	1		Impetigo contagiosa:		Washington	3
Impetigo contagiosa	25		Colorado	5		
Lethargic encephalitis	3		Montana	12	Scabies:	
Mumps	529		Tennessee	2	Montana	1
Rocky Mountain spotted fever	3		Jaundice epidemic:		Septic sore throat:	
Undulant fever	1		Montana	3	California	17
Vincent's infection	1		Lethargic encephalitis:		Colorado	3
Whooping cough	518		Alabama	2	Montana	3
			California	2	Oklahoma ¹	25
			Oklahoma ¹	1	Tennessee	3
			South Carolina	3	Virginia	13
			Virginia	2		
			Washington	2	Tetanus:	
			Wisconsin	1	Alabama	4
					California	5
					Oklahoma ¹	1
					Tennessee	4
			Mumps:			
			Alabama	41	Trachoma:	
			California	1,002	California	7
			Colorado	178	Mississippi	5
			Mississippi	295	Montana	37
			Montana	2	Tennessee	30
			Oklahoma ¹	53	Virginia	2
			South Carolina	98		
			Tennessee	106	Trichinosis:	
			Virginia	120	California	1
			Washington	473	Tularaemia:	
			Wisconsin	203	California	4
			Ophthalmia neonatorum:		Montana	3
			Alabama	2	Tennessee	1
			California	2	Virginia	3
			Montana	1		
			South Carolina	3	Typhus fever:	
			Virginia	1	Alabama	18
			Washington	1		
			Paratyphoid fever:		Undulant fever:	
			California	4	Alabama	2
			South Carolina	5	California	8
			Tennessee	1	Colorado	2
			Virginia	2	Montana	2
			Washington	1	South Carolina	2
					Virginia	4
					Wisconsin	4
			Plague:		Vincent's infection:	
			California	1	Colorado	1
			Puerperal septicemia:		Montana	7
			Mississippi	17	Tennessee	7
			Washington	1		
			Rabies in animals:		Whooping cough:	
			Alabama	100	Alabama	241
			California	84	California	1,173
			Mississippi	7	Colorado	302
			South Carolina	37	Mississippi	1,842
			Washington	3	Montana	94
			Rabies in man:		Oklahoma ¹	176
			South Carolina	1	South Carolina	408
			Rocky Mountain spotted fever:		Tennessee	207
			California	1	Virginia	836
			Colorado	1	Washington	426
					Wisconsin	1,321

¹ Exclusive of Oklahoma City and Tulsa.

WEEKLY REPORTS FROM CITIES

City reports for week ended July 21, 1934

[This table summarizes the reports received regularly from a selected list of 121 cities for the purpose of showing a cross section of the current urban incidence of the communicable diseases listed in the table. Weekly reports are received from about 700 cities, from which the data are tabulated and filed for reference.]

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Small-pox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Maine:											
Portland	0	0	0	0	0	5	0	0	0	4	17
New Hampshire:											
Concord	0	0	0	0	0	1	0	0	0	0	11
Nashua	0	0	2	0	0	0	0	0	0	0	
Vermont:											
Barre	0	0	0	0	0	0	0	0	0	0	1
Burlington	0	0	2	0	2	0	0	0	1	1	11
Massachusetts:											
Boston	0	0	27	19	9	0	11	1	1	42	191
Fall River	0	0	2	1	0	0	0	2	0	0	
Springfield	0	0	1	0	0	0	0	0	0	0	36
Worcester	0	0	0	3	6	0	3	0	18	18	50

City reports for week ended July 21, 1934—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Small-pox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Rhode Island:											
Providence.....	0		0	15	1	1	0	2	2	47	53
Connecticut:											
Bridgeport.....	0		0	1	1	2	0	2	0	7	30
Hartford.....	0		0	9	1	1	0	0	0	1	34
New Haven.....	0		0	0	0	1	0	0	6	1	30
New York:											
Buffalo.....	2		0	2	6	10	0	5	0	33	97
New York.....	12	3	1	86	63	20	0	74	13	167	1,271
Rochester.....	0		0	0	2	6	0	0	2	1	50
Syracuse.....	0		0	21	1	4	0	0	0	57	37
New Jersey:											
Camden.....	2		0	1	0	1	0	0	0	7	24
Newark.....	0		0	10	1	2	0	3	0	51	70
Trenton.....	0		0	1	1	2	0	5	0	0	23
Pennsylvania:											
Philadelphia.....	1		0	10	12	14	0	18	2	149	359
Pittsburgh.....	5		0	67	10	13	0	12	6	29	143
Reading.....	1		0	2	1	2	0	0	0	20	18
Scranton.....	1		0	7	0	1	0	0	0	13	
Ohio:											
Cincinnati.....	3		0	2	3	6	0	10	0	12	103
Cleveland.....	4	2	0	76	5	15	0	12	0	68	187
Columbus.....	3		0	1	1	6	0	2	0	33	78
Toledo.....	0		0	12	0	7	0	5	0	69	56
Indiana:											
Fort Wayne.....	4		0	0	1	2	0	1	0	0	21
Indianapolis.....	0		0	0	5	1	0	3	1	11	
South Bend.....	0		0	8	1	0	0	1	0	0	13
Terre Haute.....	0		0	0	1	0	0	1	0	0	19
Illinois:											
Chicago.....	7	1	0	157	26	50	0	35	2	85	645
Springfield.....	0		0	2	1	0	0	0	5	13	24
Michigan:											
Detroit.....	3	1	0	18	6	18	0	18	1	102	215
Flint.....	3		0	0	0	9	0	0	0	23	16
Grand Rapids.....	0		0	2	2	6	0	1	0	4	38
Wisconsin:											
Kenosha.....	0		0	9	0	2	0	0	0	4	7
Milwaukee.....	2		0	135	3	33	0	2	0	85	83
Racine.....	1		0	0	0	5	0	0	1	9	7
Superior.....	0		0	0	0	0	0	0	0	0	9
Minnesota:											
Duluth.....	0		0	0	0	0	0	0	0	0	23
Minneapolis.....	1		0	3	2	4	0	2	0	3	72
St. Paul.....	0		0	1	3	6	0	0	0	27	55
Iowa:											
Davenport.....	0		0	2		0	0		0	0	
Des Moines.....	0		0	3		4	0		0	0	26
Sioux City.....	0		0	3		0	0		0	8	
Waterloo.....	0		0	1		0	0		0	6	
Missouri:											
Kansas City.....	1		0	1	9	3	0	5	1	3	175
St. Joseph.....	0		0	0	4	1	0	0	0	0	22
St. Louis.....	6		0	0	6	4	0	15	5	38	230
North Dakota:											
Fargo.....	0		0	1	0	0	0	0	0	15	8
Grand Forks.....	0		0	0	0	1	0	0	0	0	
South Dakota:											
Aberdeen.....	0		0	1	0	0	0	0	0	1	
Sioux Falls.....	0		0	0	0	0	0	0	0	0	7
Nebraska:											
Omaha.....	0		0	0	9	1	0	2	0	5	80
Kansas:											
Topeka.....	0		0	3	0	0	0	0	4	33	24
Wichita.....	0		0	0	7	1	0	2	0	0	34
Delaware:											
Wilmington.....	0		0	1	1	0	0	1	3	2	34
Maryland:											
Baltimore.....	2		0	10	8	10	0	7	3	64	172
Cumberland.....	1		0	0	0	0	0	0	0	0	9
Frederick.....	0		0	0	0	0	0	0	0	0	6
District of Columbia:											
Washington.....	2	2	2	5	10	4	0	14	0	20	145

City reports for week ended July 21, 1934—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Small-pox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Virginia:											
Lynchburg	0		0	19	2	0	0	0	1	15	17
Richmond	2		0	13	2	0	0	4	1	4	52
Roanoke	0		0	0	1	1	0	0	0	2	14
West Virginia:											
Charleston	0		0	2	0	0	0	0	1	7	11
Huntington	0		0	0	0	0	0	0	3	0	0
Wheeling	0		0	5	0	3	0	1	0	1	17
North Carolina:											
Raleigh											
Wilmington	0		0	0	0	0	0	1	1	7	12
Winston-Salem	1		0	0	1	1	0	2	1	13	12
South Carolina:											
Charleston	0	1	0	0	2	0	0	5	0	0	36
Columbia	0		0	0	3	0	0	0	0	0	17
Greenville	0		0	0	0	0	0	0	0	3	
Georgia:											
Atlanta	1		0	0	3	0	0	2	1	4	86
Brunswick	0		0	0	0	0	0	1	0	0	5
Savannah	1		0	0	1	0	0	1	1	0	44
Florida:											
Miami	0		0	1	1	1	0	1	1	1	30
Tampa	1	1	0	6	1	0	0	2	1	1	18
Kentucky:											
Ashland	0			0		0	0		0	0	
Lexington	0		0	0	3	0	0	2	1	2	18
Louisville	1		0	17	3	2	0	3	2	5	90
Tennessee:											
Memphis	2		0	0	5	0	0	4	7	12	69
Nashville	0		1	0	2	0	0	2	1	2	50
Alabama:											
Birmingham	4		0	4	2	2	0	3	3	5	56
Mobile	1		1	0	0	0	0	0	0	0	24
Montgomery	0			0		0			0	0	
Arkansas:											
Fort Smith											
Little Rock	0		0	0	2	0	0	0	2	0	2
Louisiana:											
New Orleans	5		0	5	10	1	0	12	2	0	145
Shreveport	0		0	0	2	0	0	3	1	1	
Oklahoma:											
Oklahoma City	2			0	4	1	0	0	2	0	52
Tulsa	0			0		0	0	0		0	13
Texas:											
Dallas	10		1	1	3	4	0	0	5	7	62
Fort Worth	1		0	0	1	1	0	2	0	5	35
Galveston	0		0	0	1	0	0	0	3	0	16
Houston	2		0	0	5	1	0		0	0	68
San Antonio	0		2	1	2	1	0	7	1	0	66
Montana:											
Billings	0		0	0	0	0	0	0	1	2	11
Great Falls	0		0	0	0	0	0	0	0	0	10
Helena	0		0	0	0	0	0	0	0	0	3
Missoula	0		0	0	0	0	0	0	0	0	4
Idaho:											
Boise	0		0	0	0	0	0	0	0	5	10
Colorado:											
Denver	5	21	0	48	0	3	0	4	0	17	65
Pueblo	0		0	2	0	0	0	0	1	9	12
New Mexico:											
Albuquerque	0		0	6	0	0	0	0	2	3	17
Utah:											
Salt Lake City	0		0	2	2	1	0	3	0	69	29
Nevada:											
Reno	0		0	0	0	0	0	0	0	0	3
Washington:											
Seattle	0		1	4	0	4	0	2	2	17	74
Spokane	0		0	2	0	1	0	0	0	18	23
Tacoma	1		0	8	0	2	1	0	0	1	25
Oregon:											
Portland	1		0	3	0	8	0	4	1	10	66
Salem	0		0	0	0	0	0	0	0	1	
California:											
Los Angeles	12	5	0	9	5	24	0	18	1	29	263
Sacramento	1		0	3	2	1	0	1	0	1	31
San Francisco	0		0	53	9	7	0	8	0	2	125

1 Nonresident.

City reports for week ended July 21, 1934—Continued

State and city	Meningococcus meningitis		Polio- mye- litis cases	State and city	Meningococcus meningitis		Polio- mye- litis cases
	Cases	Deaths			Cases	Deaths	
Massachusetts:				Maryland:			
Boston.....	2	0	1	Frederick.....	0	0	1
Fall River.....	0	0	1	District of Columbia:			
Rhode Island:				Washington.....	0	0	2
Providence.....	0	0	1	Alabama:			
New York:				Montgomery.....	0	0	1
New York.....	1	2	7	Texas:			
Pennsylvania:				Dallas.....	0	0	1
Philadelphia.....	1	0	1	Montana:			
Pittsburgh.....	4	5	0	Helena.....	0	0	2
Ohio:				Idaho:			
Cleveland.....	0	0	2	Boise.....	1	0	0
Indiana:				New Mexico:			
Terre Haute.....	0	0	1	Albuquerque.....	0	1	0
Illinois:				Washington:			
Chicago.....	7	0	3	Spokane.....	0	0	7
Michigan:				California:			
Detroit.....	0	1	1	Los Angeles.....	1	0	63
Missouri:				Sacramento.....	0	0	4
Kansas City.....	0	1	1	San Francisco.....	0	0	3
St. Joseph.....	1	0	0				
St. Louis.....	1	0	0				

Dengue.—Miami, 80 cases.

Lethargic encephalitis.—Cases: Pittsburgh, 1; St. Paul, 1; Wilmington, Del., 2.

Pellagra.—Cases: Winston-Salem, 1; Charleston, S. C., 3; Atlanta, 1; Savannah, 3; New Orleans, 1; San Antonio, 1; San Francisco, 1.

Typhus fever.—Cases: New York City, 1; Savannah, 1; Miami, 1; Tampa, 1; Houston, 1.

FOREIGN AND INSULAR

CANADA

Provinces—Communicable diseases—2 weeks ended July 14, 1934.—
 During the 2 weeks ended July 14, 1934, cases of certain communicable diseases were reported by the Department of Pensions and National Health of Canada, for 8 Provinces, as follows:

Disease	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan ¹	Alberta	British Columbia	Total
Cerebrospinal meningitis					1	1		1	3
Chicken pox	6		93	330	49	18	32	26	554
Diphtheria			32	10	9	2		3	56
Dysentery			2						2
Erysipelas			4	2	2				8
Influenza	8		5		13			6	32
Lethargic encephalitis			1	1				1	3
Measles	5	3	461	103	234	5		4	815
Mumps				57	2	2		24	85
Paratyphoid fever				1				1	2
Pneumonia	5			3		3		12	23
Poliomyelitis			6	3					9
Scarlet fever	22	5	111	109	42	22	8	69	388
Trachoma				1		4		36	41
Tuberculosis	4	29	164	60	6	3	6	36	308
Typhoid fever		1	29	8	3	8	1	14	64
Undulant fever	1			4					5
Whooping cough	18	2	208	300	7	58	11	32	636

¹ For the week ended July 14, 1934, only.

NOTE.—Prince Edward Island did not report for the 2 weeks ended July 14, 1934.

*Ontario Province—Communicable diseases—5 weeks ended June 30, 1934.—*The Department of Health of the Province of Ontario, Canada, reports cases of certain communicable diseases for the 5 weeks ended June 30, 1934, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Cerebrospinal meningitis	3	2	Poliomyelitis	4	1
Chicken pox	1,193		Puerperal septicemia	1	2
Conjunctivitis	1		Scarlet fever	475	2
Diphtheria	22	1	Septic sore throat	14	2
Dysentery (amoebic)	1		Syphilis	156	
Erysipelas	13	1	Tetanus		2
German measles	10		Trachoma	7	
Gonorrhoea	201		Trench mouth	1	
Influenza	15	2	Tuberculosis	259	53
Jaundice	4		Tularaemia	1	
Measles	249		Typhoid fever	22	2
Mumps	881		Undulant fever	7	
Paratyphoid fever	6	1	Whooping cough	987	3
Pneumonia		149			

Quebec Province—Communicable diseases—2 weeks ended July 14, 1934.—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the 2 weeks ended July 14, 1934, as follows:

Disease	Cases	Disease	Cases
Chicken pox.....	93	Measles.....	400
Diphtheria.....	32	Pollomyelitis.....	6
Dysentery.....	2	Puerperal septicemia.....	3
Erysipelas.....	4	Scarlet fever.....	111
German measles.....	61	Tuberculosis.....	164
Influenza.....	5	Typhoid fever.....	29
Lethargic encephalitis.....	1	Whooping cough.....	208

PANAMA CANAL ZONE

Communicable diseases—April–June 1934.—During the months of April, May, and June 1934, certain communicable diseases, including imported cases, were reported in the Panama Canal Zone and terminal cities, as follows:

Disease	April		May		June	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
Chicken pox.....	41	.....	22	.....	16	.....
Diphtheria.....	23	2	8	1	10	2
Dysentery (amoebic).....	13	.....	16	2	20	1
Dysentery (bacillary).....	1	1	.....	.....	.....	.....
Leprosy.....	2	.....	.....	.....	1	.....
Malaria.....	67	.....	160	3	298	6
Measles.....	2	.....	2	.....	.....	.....
Meningococcus meningitis.....	1	1	.....	1	.....	.....
Mumps.....	1	.....	.....	.....	1	.....
Pneumonia.....	.....	23	.....	18	.....	25
Tuberculosis.....	.....	24	.....	26	.....	22
Typhoid fever.....	2	.....	.....	.....	8	1
Whooping cough.....	25	.....	39	.....	19	.....

PUERTO RICO

Notifiable diseases—4 weeks ended July 14, 1934.—During the 4 weeks ended July 14, 1934, cases of certain notifiable diseases were reported in the municipalities of Puerto Rico, as follows:

Disease	Cases	Disease	Cases
Chicken pox.....	50	Paratyphoid fever.....	3
Diphtheria.....	42	Pellagra.....	2
Dysentery.....	40	Pink eye.....	4
Erysipelas.....	1	Puerperal fever.....	2
Filariasis.....	1	Ring worm.....	3
Framboesia.....	1	Syphilis.....	38
Influenza.....	48	Tetanus.....	10
Leprosy.....	1	Tetanus (infantile).....	2
Malaria.....	1,342	Trachoma.....	1
Measles.....	46	Tuberculosis.....	508
Mumps.....	60	Typhoid fever.....	28
Ophthalmia neonatorum.....	10	Whooping cough.....	153

VIRGIN ISLANDS

Notifiable diseases—April–June 1934.—During the months of April, May, and June 1934, cases of certain notifiable diseases were reported in the Virgin Islands, as follows:

Disease	April	May	June	Disease	April	May	June
Filariasis.....	4	3	8	Pellagra.....	2		2
Gonorrhoea.....	1	2	3	Syphilis.....	14	16	10
Hookworm.....	2	3		Tetanus.....		1	1
Leprosy.....			1	Tuberculosis.....	3	2	4
Malaria.....	46	27	8	Typhoid fever.....	3	1	5

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

(NOTE.—A table giving current information of the world prevalence of quarantinable diseases appeared in the PUBLIC HEALTH REPORTS for July 27, 1934, pp. 890-903. A similar cumulative table will appear in the PUBLIC HEALTH REPORTS to be issued Aug. 31, 1934, and thereafter, at least for the time being, in the issue published on the last Friday of each month.)

Plague

Egypt—Alexandria.—During the week ended March 31, 1934, 1 plague-infected rat was reported in Alexandria, Egypt.

Typhus fever

Irish Free State—Cork County—Castletown.—During the week ended July 14, 1934, 5 cases of typhus fever were reported in Castletown, Cork County, Irish Free State.

Yellow fever

Niger Territory—Zinder.—During the week ended July 28, 1934, 1 death from yellow fever was reported in Zinder, Niger Territory.

Sudan (Anglo-Egyptian)—Wau.—During the week ended July 21, 1934, 1 case of yellow fever with 1 death was reported in Wau, Sudan (Anglo-Egyptian).

×