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AN OCCUPATIONAL DERMATITIS DUE TO HEAT DECOMPOSITION OF DYES[1]

By LOUIS SCHWARTZ, *Senior Surgeon, United States Public Health Service,* and C. D. HOCKER, Ph. D., *Plant Materials Engineer, Bell Telephone Laboratories*

In January 1932, a telephone-cable splicer in New York developed a case of dermatitis on his wrists and forearms. The rash cleared up promptly; and since no such skin irritation had occurred to splicers in all the history of cable splicing, embracing a period of approximately 40 years, its cause was not ascribed to the workman's occupation. By the end of August 1932, 6 splicers out of a total of some 150 in New York had experienced temporary affections of a rash of the same appearance. By that time the belief was entertained that the rash was probably occupational, although there had been no report of its occurrence among telephone-cable splicers doing the same kind of work in other cities of the United States. However, three or four of the affected workmen in New York were observed to contract recurring cases. Their rash came back on return to splicing work after prior affections had cleared up during the period of a few days when the men were not engaged in their regular occupations.

In 1933, five splicers out of a total of about 75 in Chicago experienced cases of rash apparently of the same nature as those observed in New York. Also, just as in the case of the New York workmen, the dermatitis of the Chicago splicers cleared up promptly when the men were taken off the job.

Descriptions of the rash occurring in the two cities indicated that it was the same form of skin irritation—a *dermatitis venenata* caused by an external irritant.

During 1933, additional cases appeared in New York. By the end of 1933 the number of cases which had been reported in both New York and Chicago totaled 35, occurring among 21 workmen. No cases had been reported from any other city in the United States; also, no cases of the dermatitis had been reported from any location since the end of 1933.

Even though there was reason to believe that this dermatitis did not appear to have any serious effect on the splicers, and its occur-

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rence might be almost entirely avoided by shifting supersensitive workmen to other employment, it was considered important to find the cause of the trouble and take the steps necessary to avoid it.

THE OPERATIONS OF CABLE SPLICING

Cables can be spliced only after they are placed in position in the location where they are to do service. Consequently, splicers may do their work in underground manholes, inside of buildings, or outdoors where cables are installed by suspension. The work is done entirely by men working in pairs—a splicer and a helper.

Two sections of a cable to be spliced together are placed so that their ends overlap (about 1½ to 2½ feet, depending on the size of the cable). The main operations of splicing are as follows:

I.—Cutting off the moisture-excluding lead sheath from the ends of the overlapped cable.

IIA.—*The mechanical operations* of splicing the wires of one cable section to those of the other. These involve the following:

1. Impregnating the paper-insulated conductors by pouring over them a hot wax or wax-oil mixture as described in detail in IIB, below.

2. Separating the assembly of insulated wires into definite groups, according to a plan for splicing selected wires of one cable section to the right wires of the other. To facilitate the selection of the right wires, the conductors in a cable are arranged in groups, about half of them having their paper-insulating coverings dyed. Three colors are used—red, green, and blue.

3. Removing the paper insulation from the ends of two wires (one from each cable) and twisting the bared ends together; repeating this operation until all the wires of one section are joined to the right wires in the other.

4. Putting an insulating covering over each individual wire joint as soon as it is made. This consists of sliding a paraffin-impregnated cotton sleeve over each wire joint, the sleeve having previously been slipped over the free end of one wire before starting to make the twisted joint.

4. Compacting all of the spliced wires into a cylindrical bundle by means of a spiral wrapping of paraffin-impregnated strip muslin.

IIB. *The "boiling out" operations.*—The purpose of these operations is to get rid of the moisture in the insulated conductors, and to impregnate these conductors to minimize absorption of moisture during the period of time that the lead sheath is removed.

Boiling out consists of pouring hot melted paraffin (or paraffin-oil mixture) over the insulated conductors. The paraffin, heated to nearly 400° F., is ladled over the conductors, the wax that runs off being caught in a drip pan and saved for subsequent repeated use.

Cables that are being spliced are boiled out as soon as their lead sheaths have been removed and the bundles of wires inside loosened. After the wires have all been spliced, a cable is again boiled out at the time that the compacting muslin wrapping is applied. Between this initial and final treatment the cable may be boiled out once, twice, or even several times if it is a large cable which has to be left unsheathed for a considerable period of time to complete joining the conductors. Thus, an 1,800-pair cable may be open as long as 3 days and be boiled out a dozen times, particularly if the atmosphere is humid.

III. *Restoring a moisture-excluding lead covering.*—This is done by sliding a lead sleeve over the bundle of joined wires, beating down the sleeve at its ends until it approximately touches the lead sheath, and soldering the ends to the sheath by wiping a joint with solder. Of course the lead sleeve is slipped over one of the free ends of the cable before the wire-splicing operations are started.

EVIDENCES AND EARLY WORK ON THE CAUSES OF THE RASH

All cases of rash reported had been contracted by splicers working on a particular type of cable—1,800-pair "pulp insulated" cable. This type of cable, first introduced in the telephone plant in 1929, was coming to be handled to a considerable extent by splicers at the time of the incidence of the dermatitis. The use of this cable involved the handling of two materials new to splicers—"pulp insulated" conductors and "splicing oil." No other changes in materials or in technique of cable splicing had been introduced for many years previously.

Pulp insulation is a tube of wood-pulp fibers felted directly onto cable conductors. Its use has partly supplanted that of strip-paper insulation which has been employed for upwards of 40 years. Strip insulation is a spiralled wrapping of thin paper tape made from a mixture of old Manila rope fibers and wood pulp.

Pulp-insulated conductors differ ostensibly from strip-insulated ones only in the nature of the paper fibers and the method of applying the insulation. Even the three dyes used as identifying coloring of the pulp insulation are nearly the same as those used in strip paper. The red and green dyes are identical—fuchsine and malachite-green respectively; and the blue dyes are chemically similar—methyl violet for the strip paper, and crystal violet for the pulp insulation.

Splicing oil is a highly refined white mineral oil similar to the white oils taken internally. It came into use in cable-splicing work shortly after the introduction of pulp insulation. The pulp insulation was found to be difficult to handle and remove, particularly in cold weather, unless boiled out with some material softer than paraffin. Consequently, splicing oil is furnished for the workmen to add to paraffin in the proportions needed for their work.

Pulp insulation and splicing oil were the logical materials to be suspected as causing the rash, but there was certain contradictory evidence. First, no cases of rash had ever been reported in the splicing of 1,200-pair, 900-pair, or smaller sized pulp-insulated cables. All cases had occurred as a result of splicing the largest size (1,800-pair) cable, although the materials handled by the workmen and the technique of their operations are the same for all sizes of pulp-insulated cable. Second, no cases of rash had ever been reported from splicing strip-insulated cable of any size, although a little oil is sometimes added to the boiling-out compound in working on strip-insulated cables. Third, discussion with the medical officers of the

paper-pulp supplier disclosed that no dermatitis had ever developed among workmen in their factory traceable to the handling of the pulp. Finally, the splicing oil, which is a highly refined material, was being used in other industries and had caused no dermatitis as far as could be ascertained.

In the early stages of the investigation many patch tests were made at one time or another by the medical staffs of the New York Telephone Co., the Illinois Bell Telephone Co., and later by the American Telephone & Telegraph Co. A recapitulation shows that a total of about 220 individual patches were applied, partly to splicers who had experienced the rash and were willing to be patch-tested, and partly to other men who volunteered to take part in the experiments. The materials used included the following:

1. New paraffin.
2. New splicing oil.
3. Mixture of new paraffin and new splicing oil.
4. New paraffin which had been repeatedly heated.
5. New splicing oil which had been repeatedly heated.
6. Mixture of new paraffin and new splicing oil which had been repeatedly heated.
7. Mixture of paraffin and splicing oil taken from compound repeatedly used in the field.
8. Ground-up strip paper.
9. Dust shaken out of pulp-insulated cable.
10. Dust shaken out of undyed pulp insulation.
11. Green dyed pulp insulation.
12. Red dyed pulp insulation.
13. Blue dyed pulp insulation.
14. Green dye.
15. Red dye.
16. Blue dye.

Skin irritations or reactions (mostly slight ones) were obtained for about 10 percent of the patches applied. No one material consistently produced a reaction either on rash-susceptible splicers or on other men patch-tested.

Viewing collectively the results of the mentioned patch tests, the findings were so inconsistent that they afforded no trustworthy indication of the cause of the rash. Later findings explained why patch tests alone could not determine the cause of the dermatitis.

Early in the investigation, dyes in the pulp insulation were suspected as possible causes of the skin disorder. Consultation with certain dye manufacturers brought out that they had observed no dermatitis among their workmen due to the handling of these dyes, but they would suspect certain of the intermediates used in the preparation of the dyes, such as dimethyl aniline and Michler's hydrol. There was a possibility that the heat treatment received by the cable in boiling out would decompose the dyes to produce these intermediates.

Laboratory experiments did show that the dyed pulp insulation was dulled in color by the boiling-out operation, which possibly indicated some decomposition of the dyes. It was also found that any of the triphenyl methane dyes used in a cable would decompose when heated with splicing oil at 400° F., the destruction being more rapid if a little moisture was present. In these laboratory tests, aniline was shown to be a decomposition product of fuchsin, and dimethyl aniline to be a product obtained from the heating of malachite-green and crystal violet. Also, traces of dimethyl aniline were found in a mixture of paraffin and oil which had been used repeatedly in the field for boiling out pulp-insulated cable.

PLAN OF THE PRESENT INVESTIGATION

In view of the indecisive results obtained from the early work outlined above, the course which seemed most promising for further prosecution of the investigation was that of observing splicers occupationally engaged. It was planned that some, if not all, of the splicers taking part in the test should be men known from plant experience to be susceptible to contracting rash, provided the men gave their free consent to take part in this work.

In leading up to a systematic plan, engineers of Bell Telephone Laboratories consulted a number of experts in industrial hygiene, and, as a result, the advice and cooperation of the Public Health Service were obtained in the planning and conduct of the study.

A plan of study was formulated in which the workmen would splice cables substantially in accordance with their regular technique, but would handle only selected materials in each experiment. The main outline of this plan involved carefully observing susceptible workmen to note any appearance of rash in the following successive experiments:

1. Splicing undyed pulp-insulated conductors with no boiling-out treatment.
2. Splicing undyed pulp-insulated conductors boiled out with a 50–50 paraffin-oil mixture.
3. Splicing red-dyed pulp-insulated conductors boiled out with a 50–50 paraffin-oil mixture.
4. Splicing green-dyed pulp-insulated conductors boiled out with a 50–50 paraffin-oil mixture.
5. Splicing blue-dyed pulp-insulated conductors boiled out with a 50–50 paraffin-oil mixture.
6. An intensification of experiments (3), (4), and (5) provided by adding a little red, green, or blue dye to the boiling-out compound.[2]
7. Conducting such patch tests as might appear warranted to check observations of the occurrence of rash on the susceptible workmen taking part in the splicing tests.

[2] Because the men in actual work repeatedly use the same boiling-out compound, which has in it an accumulation of dyes dissolved out of the cables.

This plan of work was carried out substantially as conceived but with later additions of certain tests suggested by the results of the experiments as outlined.

Chicago was chosen as the place for conducting the planned splicing tests because of the availability in that city of several splicers who had contracted rash previously. The tests were conducted indoors in space made available in a shop of the Illinois Bell Telephone Co. An arrangement was made for the men to work from Monday to Thursday of each week, and then be off the job until the following Monday.

In any experiment the set-up of wires to be spliced (1,200 pairs of the same color) and the boiling-out materials to be used were prepared ahead of time by the test supervisor. Each splicer was instructed not to touch any wires, splicing tools, or materials, except those assigned to him. At the start of the test series, each splicer was provided with a new shirt, overalls, and tools. The man's name was painted on each piece of his equipment.

In any experiment in which boiling out was involved, this operation was conducted three times a day. At the end of each week, samples of each used compound were retained for possible subsequent examination. To make sure that the splicers came thoroughly in contact with the fumes from the compound during the boiling-out operation, each man after removing the lid from his pot of heated compound held his hands and arms over the pot for 2 minutes. The cables were then boiled out, during which operation each man held his hands and arms over the pot for an additional 2 minutes. Before each boiling out, the wires were sprayed with a little water to simulate the absorption of moisture by an open cable in humid atmosphere. This was done because it was found in previous laboratory tests that the dyes decompose more readily in the presence of moisture than when no water is present.

The splicing experiments were started on July 16, 1934. The seven splicers who had previously experienced the rash expressed their willingness to take part in the study. All of these men were given a very careful physical examination, the results of which are shown in detail in the appendix to this report. None of the seven splicers was found to be entirely free from some form of the skin disorders often detected in a careful physical examination of a group of people.

Each workman was carefully watched for any appearance of rash while at work. As soon as any man developed any indication of dermatitis, he was examined by the Illinois Bell Telephone Co.'s physician cooperating in the study. If the case was definitely identifiable as rash, the man was excused from work until it had cleared up. If the case was uncertain, he was returned to the job for observation of further developments.

The severity of cases of rash contracted during the splicing tests was graded in the following manner:

Severity	*Symptoms*
(?)	Erythema so slight as to be confused with that caused by exposure to heat or wind, or so localized as to be doubtful. Usually accompanied by some itching.
1+	Persistent erythema over definite areas accompanied by a drawing sensation of the skin.
2+	More definite erythema with small areas of oedema accompanied by a burning sensation of the skin.
3+	Symptoms of one and two more advanced and usually showing beginning papular elevations.
4+	Brilliant erythema over large areas with considerable oedema and small watery blisters accompanied by intense itching and burning of the affected skin.

PLANNED SPLICING TESTS AND RESULTING EVIDENCE ON THE CAUSES OF RASH

The planned cable-splicing tests were conducted for 14 weeks. During 8 of these weeks, seven splicers were working; during the other 6 weeks fewer than seven men were available, because of vacations or other considerations. The following tabulation lists chronologically the splicers who were at work each week, the materials which they handled in their work, and the observations on the cases of dermatitis developed.

Cable-splicing operations and results

[Key to abbreviations: P=paraffin; P-O=50-50 mixture of paraffin and splicing oil; 1+, 2+, 3+, 4+=cases of rash of increasing severity]

Splicers	Materials handled			Results and remarks
	Color of insulation	Boiling-out compound (B. O.)	Dye added to boiling-out compound	
First week				
A, B, D, and F	None	None	None	No reaction.
Second week				
A, B, and F	do	P-O	do	Do.
G	do	None	do	Do.
Third week				
F	Red	P-O	do	Do.
G	None	do	do	Do.
Fourth week				
F	Green	do	do	Do.
A and G	Red	do	do	Do.
C, D, and E	None	do	do	No reaction. Supervisor got case of rash on Thursday while preparing material for next week's experiment.
Fifth week				
F	Blue	do	do	No reaction.
A and G	Green	do	do	Complained of itching on Thursday.
B, C, D, and E	Red	do	do	No reaction.

Cable-splicing operations and results—Continued

[Key to abbreviations: P=paraffin; P-O=50-50 mixture of paraffin and splicing oil; 1+, 2+, 3+, 4+=cases of rash of increasing severity]

Splicers	Materials handled: Color of insulation	Materials handled: Boiling-out compound (B. O.)	Materials handled: Dye added to boiling-out compound	Results and remarks
Sixth week				
F	Red	P-O	Red	No reaction.
A and G	Blue	do	do	Do.
B, C, D, and E	Green	do	do	Do.
Seventh week				
F	do	do	Green	Do.
G	Red	do	Red	Do.
B, C, D, and E	Blue	do	None	D complained of itching on Wednesday.
Eighth week				
F	do	do	Blue	4+ on Thursday.
G	Green	do	Green	4+ on Tuesday.
A, B, C, D, and E	Red	do	Red	C, 4+ on Wednesday. B, 2+ on Thursday. A, complained of itching. Cases A, B, and C were proved by experiments in 11th week to be false indications.
Ninth week				
F and G	None	do	None	Worked in other room than that used by other splicers. No reaction.
A, B, C, D, and E	Green	do	Green	A, 2+ on Monday. B, 4+ on Monday. C, 3+ on Tuesday. D, questionable reaction on Monday. E, 4+ on Tuesday. Dr. B, 4+ on Monday. Did not handle splices. Supervisor, 2+ on Monday. Did not handle splices.
Tenth week				
A, B, C, D, E, and G	Blue	do	Blue	A, questionable reaction on Tuesday. B, 4+ on Tuesday. C, 3+ on Tuesday. D, Faintly positive on Tuesday. E, 1+ on Tuesday. G, 4+ on Tuesday. Dr. B, faintly positive on Monday.
Eleventh week				
B, C, E, F, and G	Red	do	Red	Check test on 8th week. No reactions. Patch tests performed this week.
Twelfth week				
B, E, F, and G	(1)			
Thirteenth week				
B, C, F, G, and 3 other splicers.				
Fourteenth week				
B, C, and G	Green	P	Green	No reaction.
F	Blue	P	Blue	Complained of itching. No reaction evident.

[1] Splicing operations involving new dyes described later.

The following evidence on the possible cause of the rash was brought out by the results of the tests listed in the table.

1. No skin affections were developed from handling undyed pulp insulation, dry or boiled-out with paraffin-oil mixture (first to fourth weeks, inclusive).

2. No definitely identifiable skin reactions developed from handling red-, green-, or blue-dyed pulp insulation boiled out with paraffin-oil mixture (third to seventh weeks, inclusive). However, out of the seven men employed, two complained of itching while working on the green-dyed wires (fifth week), and one had the same experience while working on the blue-dyed wires (seventh week).

3. When a little green or blue dye was added to the boiling-out compound, nearly all the splicers became affected with dermatitis (seventh to tenth weeks, inclusive).

Also in the first tests in which a little red dye was added to the paraffin-oil mixture, two cases of dermatitis developed among five men (eighth week). However, it was suspected that the reactions of these two men might not be due to the red dye but to fumes from the boiling-out operations of other splicers working nearby in the same room with boiling compounds containing added green or blue dyes. A check test made during the eleventh week showed that the red dye did not cause the rash.

The amount of dye added to the boiling-out compound was small, 1½ to 4 gm (depending on the dye) to 10 quarts of the paraffin-oil mixture. These small quantities of dye were amounts calculated in the following manner: When an 1,800-pair cable is spliced, as much as 5 feet of insulated conductors may be unsheathed and boiled out. The dye used to color the red insulation in this 5-foot length is about 0.15 gm. Ten times this quantity is 1.5 gm—the amount of fuchsin added to the boiling-out mixture in experiments involving red dye additions. Similar calculations for the blue and green dyes fix the corresponding amounts used at figures up to about 4 gm.

4. Men who contracted the rash while working with green or blue dyes added to boiling-out compounds one week had no recurrence of the rash the next week while working on undyed wires boiled out with a paraffin-oil mixture containing no added dyes (eighth and ninth weeks).

5. Men who contracted pronounced cases of rash while working with green or blue dyes added to 50–50 paraffin-oil boiling out compound did not contract the rash in a similar test in which the boiling-out compound used was paraffin containing no oil (fourteenth week).

6. The production of the rash is apparently due to an effect of fumes rather than to direct handling of boiled-out cable conductors. Throughout all the experiments the skin reactions which appeared on splicers were generally noted just after a boiling-out operation. Also, at least two cases of rash were produced on men present as observers who had not been handling the cable conductors or other materials (ninth and tenth weeks).

A general consideration of these observations indicated that the rash was caused by volatile materials arising from the green and blue

dyes during the boiling-out operations, and that these volatile irritants are effective only when splicing oil is present in the boiling-out compound. Possibly the fumes from an oil-paraffin boiling-out mixture carry the irritants to a workman's bare arms and face more effectively than do the fumes of paraffin alone; or possibly the greasy layer of boiling-out compound naturally collecting on a splicer's skin inhibits the action of the irritants more effectively when the layer is entirely paraffin than when it is of paraffin-oil mixture.

PATCH TESTS AND RESULTING EVIDENCE ON THE CAUSES OF THE RASH

Certain additional evidence on the possible causes of the rash were obtained from patch tests performed on the workmen employed in the planned cable-splicing tests.

Splicers B, C, E, F, and G were patch-tested with the four dyes used in pulp insulation; namely, (1) fuchsin (the red paper dye); (2) crystal violet (the blue paper dye); (3) auramine (the yellow constituent of the green paper dye); and (4) malachite-green (the dark green constituent of the green paper dye). The first three of these dyes produced no skin reaction on any of the men. However, the fourth dye, malachite-green, caused a reaction on four out of the five men as outlined in the tabulation presented below. It was known that the malachite-green used in pulp insulation is the form of the dye marketed as a double salt with oxalic acid; and it was surmised that this acid constituent might be the cause of the irritation. Accordingly, splicers B, C, E, F, and G were also patch-tested with a 5 percent solution of oxalic acid as well as with the green dye. The results of these tests are shown in the following table:

Reaction	Subject				
	B	C	E	F	G
Severity of rash contracted with green dye added to the boiling out compound in splicing test	4+	4+	4+	0	4+
Reaction to green dye (24 hrs.)	0	0	0	0	0
Reaction to green dye (48 hrs.)	2+	3+	2+	2+	1+
Reaction to 5 percent oxalic acid (24 hrs.)	2+	0	0	0	0
Reaction to 5 percent oxalic acid (48 hrs.)	2+	2+	0	0	2+

While the above-described tests indicate that oxalic acid can be a general irritant when in direct contact with the skin, this material cannot be considered as the only cause, and perhaps not the primary cause, of the rash. The blue dye (crystal violet), which also causes the rash, contains no oxalic acid. However, the acid in the green dye may contribute to its potency in causing the rash. The tabulated results of the planned splicing tests indicate that the green dye produced rash somewhat more readily than did the blue dye. (Compare results of the ninth and tenth weeks.)

Another series of patch tests lent credence to the belief that the rash-producing irritants are volatile substances arising from dyes and not the dyes themselves. This series of tests employed boiling-out materials containing dyes. Wherever possible, the boiling-out materials employed were those actually in use by splicers when they contracted the rash. These materials were 50–50 paraffin-oil mixtures to which had been added (1) the red dye, (2) the green dye (the commercially used dyeing mixture of auramine and malachite-green), (3) the blue dye, and (4) a mixture of (1), (2), and (3). None of these materials produced any skin reaction on any of the men patch-tested, who were splicers B, C, E, F, and G, and three other men who were technical people interested in the study.

In an attempt to identify the rash-producing irritant, patch tests were made on splicers B, C, E, F, and G, using dimethyl aniline and Michler's hydrol. Both materials are intermediates used in the manufacture of the dyes and were suspected as possible irritating decomposition products of the dyes. In fact, laboratory tests had actually identified dimethyl aniline as a product produced by heating either the green or the blue dye. No skin reaction was obtained on any of the five splicers patch-tested with Michler's hydrol or dimethyl aniline.

To sum up, the evidence of patch tests supported the hypothesis that it is not the dyes themselves but some decomposition product of them that produces the rash. However, the suspected decomposition products, Michler's hydrol and dimethyl aniline, did not actually produce skin reactions.

SPLICING TESTS INVOLVING NEW DYES AND THEIR EVIDENCE ON THE CAUSES OF THE RASH

During the twelfth and thirteenth week of the planned cable-splicing studies, certain splicing tests involving new green and blue dyes were performed. These tests resulted not only in a practical selection of cable insulation dyes which would not cause the rash during cable splicing, but also helped to explain why the standard dyes do cause the dermatitis.

The rash-producing possibilities of the new dyes were studied by the same method as that used to test the standard ones; that is by observing rash-susceptible workmen while they spliced pulp-insulated cable using a boiling-out compound to which the new dyes had been added.

The new dyes were chosen to avoid the one peculiarity of chemical constitution common to all the old ones which produced the rash. This was the methyl ($-CH_3$)-to-nitrogen (N) linkages common as atomic groupings in auramine, malachite green, and crystal violet. Fuchsin, which did not cause the rash, does not contain this characteristic atomic grouping.

The new dyes studied were brilliant green, ethyl violet, and fast yellow 4GL. Brilliant green and ethyl violet are respectively identical in chemical constitution with malachite green and methyl violet, except that the new dyes contain ethyl groups ($-C_2H_5$) in the molecules in position where the old dyes contain methyl groups. All four of these are triphenyl methane dyes which are about the only class of coloring materials economically and satisfactorily meeting the requirements of cable fabrication, and having the heat-resisting qualities required by boiling-out operations.

In the interest of shortening the cable-splicing studies involving the new dyes, all of them were tested together instead of separately—that is, all of them were added to the boiling-out compound, instead of being tried out one at a time. Accordingly, the prepared boiling-out mixture contained (1) ethyl violet, (2) brilliant green, (3) fast yellow 4GL, and (4) fuchsin. The total amount of the added dyes was that which would be used commercially to color all the wires in 50 feet of an 1,800-pair pulp-insulated cable. This 50 feet represents about 10 times the maximum length of 1,800-pair cable unsheath for a single splice. This was the same basis as had been employed for calculating dye additions in splicing tests on the standard dyes. However, the total dye additions in these new dye tests were several times as much as had been used in any former test.

Splicers B, E, F, and G worked during the twelfth week of the planned cable-splicing tests with pulp-insulated cable boiled out with a 50–50 paraffin-oil mixture containing all the new dyes in addition to fuchsin. Splicer B developed a doubtful reaction on Thursday, while the other three were unaffected.

Splicers B, C, F, and G, and in addition three new splicers not previously employed in the tests, repeated the tests of the twelfth week during the thirteenth week. No reactions developed.

To sum up, the results of the work on new dyes were the finding of a practical selection of dyes which do not cause a rash during cable splicing. The results also indicate the volatile irritants generated by the old dyes during boiling-out are probably due in some manner to the presence in the old dyes of the methyl groups attached to the nitrogen atoms.

DEDUCTIONS REGARDING THE NATURE OF THE RASH-PRODUCING IRRITANTS

The experimental facts that the volatile irritants producing the rash are generated from malachite green and crystal violet but not from the homologous new dyes, permit certain deductions to be made concerning the chemical nature of the irritants.

It seems reasonable to conclude that the irritants are heat-decomposition products, or decomposition and oxidation products of the methyl or of the dimethyl aniline groups contained in the molecules

of the offending dyes. It is possible that the irritants are small amounts of formaldehyde or formic acid generated during the boiling-out operation by the splitting off and oxidation of the methyl groups attached to the nitrogen atoms. Dimethyl aniline (which has been identified as a decomposition product of the offending dyes) is known to react with moisture at elevated temperatures and in the presence of copper to produce formaldehyde.[3]

The presence of a certain amount of moisture in cable insulation, the copper conductors, and the boiling-out temperature of nearly 400° F. would seem to be favorable to the production of some formaldehyde or formic acid from the offending dyes.

The accompanying chart shows the chemical constitution of the standard and of the new dyes used in these studies of the cause of the rash. This chart is reproduced for its possible interest in the deductions regarding the chemical nature of the rash-producing irritants.

THE PRACTICAL OCCURRENCE AND AVOIDANCE OF THE RASH

The evidence on the causes of the rash as presented in the foregoing makes it possible to explain certain peculiarities concerning the practical occurrence of the dermatitis.

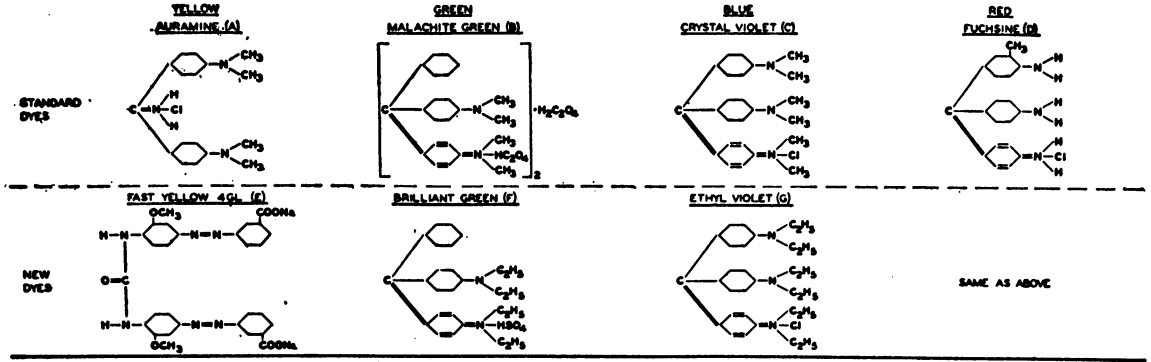
The fact that the irritants are apparently volatile decomposition products produced during boiling-out operations explains why practically all cases of the rash occurred as a result of splicing cables in manholes. In spite of precautions that are taken to ventilate manholes before men enter them and while they are at work, there is less positive air circulation in manholes than in most other locations where cables are spliced.

Probably even a susceptible man cannot contract the rash unless he is exposed to a larger amount of irritants than a certain minimum. This may explain why the dermatitis always occurs as a result of working on large cables. The insulation in small cables may contain insufficient offending dyes to generate the irritants in adequate quantities. The quantitative element of the amount of rash-producing irritants may help to explain the spotty occurrence of the dermatitis. Thus, all the Chicago cases occurred at about the same time, when an unusual amount of cable splicing was being done in certain manholes in one section of the city in preparation for putting a new exchange into service by a certain date. Also, it is possible that repeated reuse of the same boiling-out compound a little longer than normal may permit accumulation in the compound of an adequate amount of offending dye from the cable insulation.

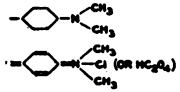
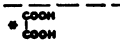
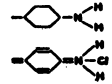
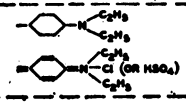
The fact that the dermatitis has not been contracted as a result of working on strip-insulated cable may be due to the practice of using

[3] Trillat, M.: Compte Rendus, 136, 55; and 137, 188; also Bull. de la Soc. Chim. de France, Series 3, 29, p. 876 and p. 941.

DYES USED IN STUDIES OF THE CAUSES OF RASH



DISTINCTIVE ATOMIC GROUPINGS OF THESE DI- AND TRI-PHENYL METHANE DYES (DOES NOT INCLUDE E)

STRUCTURE	RESEMBLING	OCCURRENCE IN DYES	POSSIBLE DECOMPOSITION PRODUCTS
	DIMETHYL ANILINE	ONLY IN A, B & C, THE RASH PRODUCING DYES	⊕DIMETHYL ANILINE FORMIC ACID] BY SPLIT OF -CH_2 GROUP FROM FORMALDEHYDE] THE AMINE AND ITS OXIDATION MICHLER'S HYDROL OR KETONE
	ACTUALLY OXALIC ACID	ONLY IN B, A STRONG RASH PRODUCING DYE.	◇FORMIC ACID ◇CARBON MONOXIDE AND DIOXIDE ◇WATER
	ANILINE	ONLY IN D, NOT A RASH PRODUCING DYE.	⊕ANILINE
	DIETHYL ANILINE	ONLY IN F & G, NOT RASH PRODUCING DYES.	DIETHYL ANILINE

⊕ ACTUALLY FOUND IN LABORATORY TESTS
◇ KNOWN DECOMPOSITION PRODUCTS NOT LOOKED FOR IN LABORATORY TESTS

little or no splicing oil in the boiling-out compound when handling such cables. Also, most of the large-sized cables which have gone into the telephone plant in the last few years have been pulp-insulated.

The practical avoidance of the rash from the handling of pulp-insulated cables manufactured in the future is indicated as achievable by using the selected green and blue dyes for coloring the insulation. This step has been taken. A parallel change of dyes can be made in strip-paper insulation if the need for it becomes evident.

The practical avoidance of the rash from the handling or resplicing of existing pulp-insulated cables in the plant appears to offer no great difficulty now that it is known that the rash-producing irritants are generated only during the boiling-out operation. It seems probable that any significant trouble with this class of work can be avoided by judicious assignment of splicers and by certain precautions of avoiding exposure to fumes during boiling out.

CONCLUSIONS

1. An investigation was conducted which determined the cause of a dermatitis occasionally contracted by certain susceptible telephone cable splicers.

2. The chief method used in the investigation was careful observance of rash-susceptible workmen occupationally engaged in planned cable-splicing tests. Patch tests and chemical studies were used as supplemental methods of investigation.

3. Paper-pulp cable-conductor insulation, suspected as a possible cause of the rash because of its relatively recent introduction into use, was found to be not a cause of the dermatitis.

4. Splicing oil, a refined white mineral oil, also suspected because of its relatively recent adoption, was found to be not a primary cause of the dermatitis. Mixtures of this oil and paraffin heated to nearly 400° F. are used to "boil out" (dry and impregnate) cables while opened for splicing.

5. The dermatitis was found to be produced by some irritant evolved during boiling-out operations.

6. The rash occurred only while splicing cables in which the conductor insulation was colored with the green and blue dyes which had been in use many years. A red dye also normally used did not cause the dermatitis.

7. Contact with the dyes themselves was shown to be not the chief cause of the rash, although a substantial quantity of the green dye applied in a patch test would cause skin reactions.

8. The rash was not produced in cable-splicing tests in which the green and blue dyes were present if paraffin containing no splicing oil was used for boiling out. Apparently the oil is necessary as a

fume carrier or as an agent present on a man's skin to facilitate the action of the volatilized irritants.

9. The volatilized irritants were found not to be certain suspected decomposition products of the dyes. While the irritants were not identified by experiment, their nature was fairly definitely surmised from chemical considerations.

10. New dyes were selected for adoption on the basis of their chemical constitution and adaptability to manufacturing requirements. Splicing experiments with rash-susceptible men showed that the new dyes did not produce rash even when splicing oil was present in the boiling-out compound.

11. It is worthy of note that all of the seven splicers who had dermatitis and who were used in these experiments also had fungus infections on various portions of their bodies (see Case histories). This may be of significance as to their hypersensitivity to the decompostion products of the dyes.

ACKNOWLEDGMENT

The authors wish to give credit to C. F. Bidwell, M. D., of the Illinois Bell Telephone Co., for his active interest and cooperation in observing and making physical examinations of cable splicers working on these tests; to the officers, supervisory staff, and personnel of the Illinois Bell Telephone Co. for facilitating the conduct of the tests; and to Messrs. R. G. Watling and C. C. Lawson of Bell Telephone Laboratories for their personal supervision of the splicing tests and for assistance in the preparation of this report.

Appendix

EXAMINATION OF CABLE SPLICERS BEFORE BEGINNING EXPERIMENTS

Case A.—E. J. B., splicer's helper; complexion, dark; age, 30; service, 10 years. States that he has had the rash on the dorsum of his hands between the fingers, over the arms, face, and legs, and states that the rash was worse when he boiled out with paraffin-oil mixture than when he used paraffin alone. Examination shows a few scratched papules on the forehead and several moles on the face and body; acne lesions on the back of the neck and a few active acne lesions on the back. Forearms and hands are clear, except the left hand, on which there is a scratched ulcer; and he also has a cut on the left thumb. Examination of the feet shows scaling and cracks between the toes. Has a few vesicles on webs of the fingers.

DIAGNOSIS: Dermatophytosis and acne.

Case B.—A. J. D., splicer; complexion, dark; age, 51; service, 22 years. Has had a rash between the fingers and on the wrists and face and thinks he got the rash from contact with the paraffin-oil vapor.

EXAMINATION: Papulo-vesicular eruption under right nipple and scattered vesicles over breast. A few erythematous papules around the spine and the neck. Has scaling and cracks between the toes of both feet, with desquamation

under the instep of the left foot. Has small wax keratoses on both hands and a large wart on the left thumb.

DIAGNOSIS: Dermatophytosis and wax keratoses.

Case C.—R. J., splicer; complexion, dark; age, 38; service, 19½ years. Has had rash on both hands, wrists, arms, and legs, and on face. Thinks that the paraffin-oil mixture is responsible. He states that he worked on one job continuously for 2 weeks before the rash appeared and that it became much worse after he washed with strong soap. The rash disappeared 4 days after he discontinued work and reappeared after he resumed his job.

EXAMINATION: Has tinea versicolor on chest, arms, forearms, and back. Has a discolored mark in the left lumbar region which is probably due to an injury. Also has tinea cruris. No signs of dermatophytosis of the feet. There is a small scar on the left leg above the ankle. Has small keratoses on the dorsum of both hands. Has enlarged thyroid.

DIAGNOSIS: Tinea versicolor, tinea cruris, wax keratoses.

Case D.—E. C., splicer; complexion, dark; age, 50. Has had a rash on both hands and forearms. He worked 3 months on the job before the rash appeared. The rash disappeared after discontinuing work for 3 or 4 days and reappeared when he resumed work. He worked only on smaller cables (2 to 600-pairs of wires) and has not had a recurrence of the rash for 2 years.

EXAMINATION: Has small papilloma on the right forearm and scaling and roughened skin over the posterior surface of the right upper arm. There is a pustule on the left hand near the thumb and an area of desquamation on the posterior surface of the left arm. There is branny desquamation on both legs and thighs, and the skin on the knees is erythematous and thickened. Has scaling of the skin between the toes of both feet and varicose veins on both legs.

DIAGNOSIS: Dermatophytosis; wax keratoses.

Case E.—J. Z., splicer; complexion, blonde; age, 35. Had a rash on hands, wrists, and forearms. He worked for 1 month continuously before the rash appeared. He has had no recurrence of the rash.

EXAMINATION: Has a few scabs on both legs, probably the result of trauma. Has tinea cruris and desquamation and cracks between the toes of both feet.

DIAGNOSIS: Dermatophytosis.

Case F.—J. A., splicer; complexion, dark; age, 37; service, 16 years. Had an eruption on both wrists and forearms which disappeared 4 days after he left the job. He stopped using oil in the boiling-out mixture and has not had a recurrence of the rash for a year.

EXAMINATION: Has a few acne lesions on the back and chest, with some small keloidal scars. Forearms and wrists are clear except for a pigmented mole on the anterior surface of the right wrist. Has cracks and scales between toes of both feet.

DIAGNOSIS: Dermatophytosis and acne.

Case G.—E. S., splicer; complexion, fair; age, 45; service, 22 years. Contracted the rash about 4 days after working with oil and paraffin mixture on new pulp-insulated cable. The rash appeared on both hands and wrists and on the face. He lost 18 days from work as a result of the eruption. This man was not examined on July 16, as he was away on a vacation, but an examination made on August 16 showed the following:

EXAMINATION: Has a deep-seated vesicle on the fourth finger of the right hand near the web and the remains of another vesicle on the middle finger of the left hand. On the dorsal surface of both hands there were a few small keratoses.

DIAGNOSIS: Dermatophytosis (?); wax keratoses.

THE EARLY APPEARANCE AND RATHER RAPID DISAPPEARANCE OF THE EPITHELIAL CELL INCLUSION IN TRACHOMA

By C. E. Rice, *Surgeon, United States Public Health Service*

From March 15, 1935, to February 1, 1936, 96 individuals with varying degrees of lid activity were studied at the Trachoma Hospital at Rolla, Mo., to determine whether the epithelial cell inclusion might be associated with a certain period of the disease. Fifty-one patients had had the disease less than 2 years and 45 had had it 2 years or longer.

In the 96 active trachoma cases, there were 184 infected eyes. A few were unilateral cases of trachoma. Of these 184 actively infected eyes, 49 or 27 percent showed the presence of epithelial inclusions. In the first group of 51 cases under 2 years' duration, 19 showed inclusions. In the second group of 45 cases, with duration of the disease 2 years or longer, there were 8 cases showing inclusions. Among the 51 patients who had had the disease less than 2 years and showing 19 cases with inclusions, 12 were of 3 months' duration or less.

The writer has seen two cases of unilateral trachoma enter the hospital with one eye entirely negative and then develop trachoma in the normal eye while under observation. The inclusions came with the first symptoms of the disease, before the conjunctiva had hardly started to thicken, and certainly long before the follicles were formed. These two cases and three other very early cases seemed to reach an apex, as regards the number of inclusions seen in a smear, in 1 month's time. From then on there was a steady diminution in the number of inclusions until at the end of 6 months only an occasional epithelial inclusion was seen. Two of the cases of 5 years' duration or more, that showed several inclusions in smears made on the first day in the hospital, did not show the presence of inclusions after the first day, even though repeated examinations were made and no therapy was being administered other than drops of water in the conjunctival sac.

The inclusion usually persists for only a few months; and in individuals who have had the disease more than 6 months, the epithelial inclusion is found only occasionally. When found in the cases of long duration, they are few in number and tend to disappear from the conjunctival scrapings in 2 or 3 days when one is taking light scrapings daily.

There is presented graphically in figure 1 the occurrence of the epithelial cell inclusion in different stages of the disease. The first

two columns in this graph and the last column represent fairly accurately the duration of the disease in the individuals placed in these groups. The other columns are only approximations.

CONCLUSIONS

The findings from this group of 96 cases of trachoma with varying degrees of lid activity would seem to indicate that the epithelial cell inclusion seen frequently in this disease is much more likely to

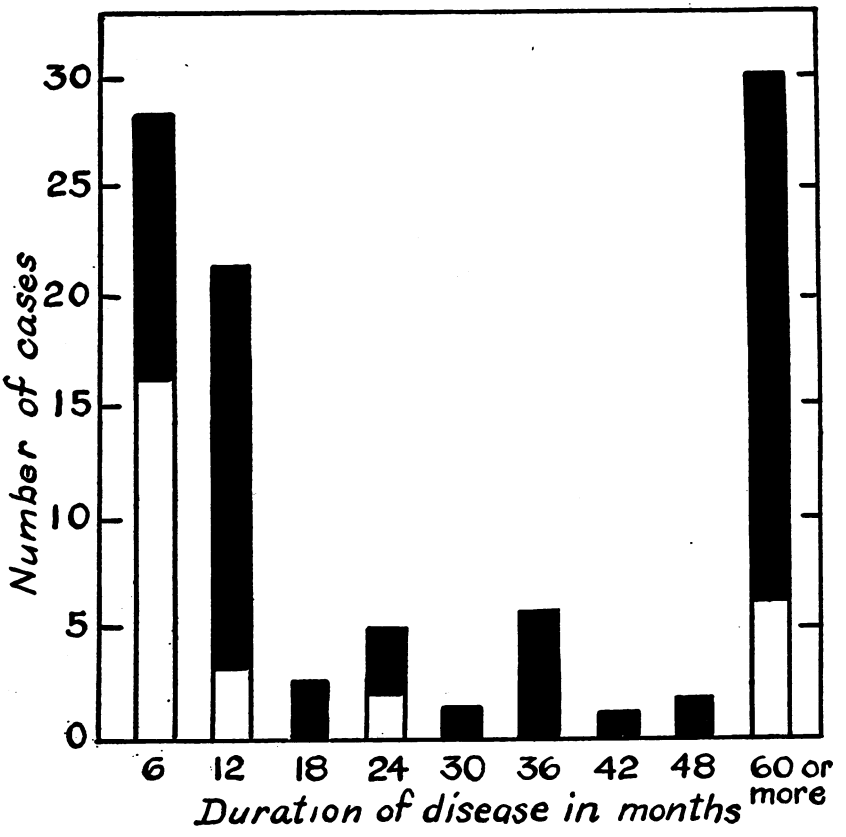


FIGURE 1.

Each column represents the total number of cases in any group. The white portion represents the number of cases showing inclusions. Under "Duration of disease," the first column includes all cases of from 1 day to 6 months' duration, the second column those from 6 months to 1 year. The last column represents cases of 5 years' duration or longer.

be found during the first 6 months of the disease than it is later. The oftener the examination can be done during the first 8 weeks of the disease, the higher will be the percentage of cases showing the presence of the inclusion bodies.

NOTES ON THE OCCURRENCE AND HOST RELATIONSHIPS OF THE TICK *Ornithodoros talaje* IN ARIZONA[1]

By GLEN M. KOHLS, *Assistant Entomologist*, and R. A. COOLEY, *Entomologist*, *United States Public Health Service*

The argasid tick *Ornithodoros talaje* (Guér.-Mén.) is prevalent in Mexico, Central America, and parts of South America. It inflicts bites very painful to man, and in the tropics is an agent in the transmission of relapsing fever (*1*). It has been reported only sporadically in the United States, the first records having been published by Banks (*2*) in 1908 (Citrus County, Fla., Brownsville, Tex., and San Clemente Island, Calif.). Subsequently, Essig (*3*) has listed it from Nevada, and more recently Matheson (*4*), Herrick (*5*), and Riley (*6*), have reported 10 instances of its occurrence in residences and other places of habitation in the States of New York, Wisconsin, and Minnesota, respectively.

Although this tick is credited with a wide host relationship in the tropical and subtropical sections of its range, the United States records are only of locality occurrence and there have been no data as to its natural hosts in our native fauna. What is believed to be the first information concerning the latter was obtained recently by a field group of the Rocky Mountain Laboratory working in Arizona. An account of these observations follows:

On October 2, 1935, larval ticks of this species were collected from kangaroo rats (*Dipodomys* sp.) in the Eagletail Mountains some 40 miles southwest of Aguila, Ariz. Three animals were infested with 21, 16, and 18 ticks, respectively. Six pocket mice (*Perognathus* sp.), one deer mouse (*Peromyscus* sp.), and one wood rat (*Neotoma* sp.) taken in the immediate vicinity carried no ticks. This area is unfrequented except for occasional prospecting parties, the nearest human habitation being about 10 miles distant.

During the period October 8 to 11, 10 systems of kangaroo-rat burrows within 3 miles of Aguila were then examined. No nests were found, but nymphal and adult *talaje* were collected by searching carefully the removed soil. Part of this soil was sifted through an ordinary fly screen. In three instances ticks were found in niches or crevices of earth clods removed from the sides of the passages. The runways were quite extensive, and it is probable that many ticks were undetected. Nevertheless, a total of 79 nymphs and adults were collected, some of which showed evidence of having fed recently. Three larvae were found on one of four kangaroo rats taken on the area, while four jack rabbits and one pocket mouse carried no ticks.

[1] Contribution from the Rocky Mountain Laboratory of the United States Public Health Service, Hamilton, Mont.

Pocket mice are prevalent throughout the region and apparently have no aversion to using deserted kangaroo-rat runways. The fact that ticks were not found on this and other hosts suggests that *O. talaje* may be distinctly limited in its host relationships in this region.

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DEATHS DURING WEEK ENDED APR. 4, 1936

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

	Week ended Apr. 4, 1936	Corresponding week, 1935
Data from 86 large cities of the United States:		
Total deaths	9,302	8,615
Deaths per 1,000 population, annual basis	13.0	12.0
Deaths under 1 year of age	623	602
Deaths under 1 year of age per 1,000 estimated live births	56	55
Deaths per 1,000 population, annual basis, first 14 weeks of year	13.7	12.7
Data from industrial insurance companies:		
Policies in force	68,304,318	67,690,404
Number of death claims	14,248	13,806
Death claims per 1,000 policies in force, annual rate	10.9	10.6
Death claims per 1,000 policies, first 14 weeks of year, annual rate	11.0	10.8

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 Apr. 11, 1936, and Apr. 13, 1935

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Apr. 11, 1936, and Apr. 13, 1935

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Apr. 11, 1936	Week ended Apr. 13, 1935	Week ended Apr. 11, 1936	Week ended Apr. 13, 1935	Wee ended Apr. 11, 1936	Week ended Apr. 13, 1935	Week ended Apr. 11, 1936	Week ended Apr. 13, 1935
New England States:								
Maine	----	4	19	----	152	223	1	0
New Hampshire	----	----	----	3	29	7	0	0
Vermont	----	3	----	----	852	11	0	0
Massachusetts	7	7	----	----	1,170	530	8	0
Rhode Island	2	----	3	----	75	183	3	1
Connecticut	3	5	3	7	91	1,779	4	2
Middle Atlantic States:								
New York	44	29	[1] 14	[1] 5	2,842	2,957	18	9
New Jersey	12	27	9	7	258	1,488	8	0
Pennsylvania	21	49	----	----	863	4,816	7	10
East North Central States:								
Ohio	17	46	26	123	237	2,417	18	22
Indiana	16	11	39	30	13	284	2	3
Illinois	30	53	68	35	33	3,017	12	17
Michigan	14	6	11	2	58	5,420	4	0
Wisconsin	3	2	45	60	90	1,733	1	4
West North Central States:								
Minnesota	2	9	----	3	239	1,230	2	1
Iowa	2	16	11	2	4	679	2	3
Missouri	11	18	680	141	----	741	9	5
North Dakota	1	3	10	1	1	57	0	0
South Dakota	2	5	----	1	----	42	0	0
Nebraska	5	3	1	28	27	587	1	5
Kansas	12	13	133	5	19	1,619	1	2
South Atlantic States:								
Delaware	----	----	----	----	13	10	0	0
Maryland [2]	2	6	8	9	247	79	20	5
District of Columbia	7	16	1	1	68	50	3	4
Virginia	8	11	414	----	148	769	16	10
West Virginia	9	17	165	69	61	623	12	2
North Carolina	19	15	50	9	44	253	4	4
South Carolina [3]	4	4	331	221	40	42	5	0
Georgia	8	7	201	55	----	----	7	0
Florida	1	9	38	2	14	82	5	0
East South Central States:								
Kentucky	11	14	312	21	39	672	18	7
Tennessee	7	10	745	68	69	82	7	4
Alabama	7	9	1,440	76	18	286	6	3
Mississippi [3]	4	5	----	----	----	----	3	3

See footnotes at end of table.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Apr. 11, 1936, and Apr. 13, 1935—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Apr. 11, 1936	Week ended Apr. 13, 1935	Week ended Apr. 11, 1936	Week ended Apr. 13, 1935	Week ended Apr. 11, 1936	Week ended Apr. 13, 1935	Week ended Apr. 11, 1936	Week ended Apr. 13, 1935
West South Central States:								
Arkansas	5	4	568	24	5	75	2	2
Louisiana	4	18	291	117	62	100	2	1
Oklahoma [4]	11	7	236	94	12	259	5	6
Texas	52	36	646	250	483	270	16	7
Mountain States:								
Montana	1	7	121	42	15	439	5	0
Idaho	1	----	4	4	39	17	1	0
Wyoming	1	----	----	----	2	106	0	0
Colorado	5	5	----	----	13	315	4	0
New Mexico	3	3	15	16	35	28	4	1
Arizona	3	----	110	38	65	21	3	0
Utah [2]	----	----	----	----	18	12	0	0
Pacific States:								
Washington	----	1	3	1	378	228	2	2
Oregon [5]	----	2	98	35	276	232	0	4
California	20	20	673	57	2,342	1,645	8	9
Total	397	535	7,542	1,662	11,559	36,515	259	158
First 15 weeks of year	8,872	10,488	115,818	95,046	128,696	388,695	3,509	1,984

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Apr. 11, 1936	Week ended Apr. 13, 1935	Week ended Apr. 11, 1936	Week ended Apr. 13, 1935	Week ended Apr. 11, 1936	Week ended Apr. 13, 1935	Week ended Apr. 11, 1936	Week ended Apr. 13, 1935
New England States:								
Maine	0	0	11	18	0	0	1	7
New Hampshire	0	0	10	16	0	0	0	1
Vermont	0	0	7	9	0	0	0	0
Massachussetts	0	0	312	238	0	0	0	2
Rhode Island	0	0	35	13	0	0	0	0
Connecticut	0	0	47	105	0	0	0	1
Middle Atlantic States:								
New York	2	0	986	1,362	0	0	5	6
New Jersey	0	0	341	194	0	0	0	0
Pennsylvania	0	0	348	755	0	0	4	8
East North Central States:								
Ohio	0	0	261	895	1	2	16	4
Indiana	1	0	287	145	3	0	2	1
Illinois	0	1	789	1,397	4	2	6	9
Michigan	0	1	318	368	0	0	4	4
Wisconsin	0	2	586	477	3	20	6	2
West North Central States:								
Minnesota	0	1	402	304	4	6	0	0
Iowa	0	0	204	72	47	0	0	0
Missouri	0	0	167	41	19	0	2	1
North Dakota	0	0	42	76	4	3	2	0
South Dakota	0	0	79	14	44	14	0	0
Nebraska	0	1	170	36	24	44	0	0
Kansas	0	0	351	75	45	21	0	1
South Atlantic States:								
Delaware	0	0	10	17	0	0	1	0
Maryland [3]	0	1	58	125	0	0	0	3
District of Columbia	0	0	18	74	0	0	1	0
Virginia	1	0	56	46	0	0	4	3
West Virginia	0	0	39	97	0	0	3	14
North Carolina	1	1	14	22	0	1	1	1
South Carolina [3]	0	0	3	6	0	0	2	3
Georgia	0	0	20	8	0	0	2	7
Florida	0	0	3	3	0	0	1	0
East South Central States:								
Kentucky	0	2	47	41	0	1	7	10
Tennessee	0	0	28	33	0	0	5	8
Alabama	0	0	6	7	0	5	0	3
Mississippi [3]	1	1	6	7	0	0	0	6

See footnotes at end of table.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Apr. 11, 1936, and Apr. 13, 1935—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Apr. 11, 1936	Week ended Apr. 13, 1935	Week ended Apr. 11, 1936	Week ended Apr. 13, 1935	Week ended Apr. 11, 1936	Week ended Apr. 13, 1935	Week ended Apr. 11, 1936	Week ended Apr. 13, 1935
West South Central States:								
Arkansas	0	0	5	1	0	0	0	0
Louisiana	0	1	15	7	0	1	5	22
Oklahoma [4]	0	0	39	8	3	0	1	2
Texas	0	1	165	85	1	10	13	6
Mountain States:								
Montana	1	0	93	10	15	0	0	0
Idaho	0	0	35	11	1	0	0	0
Wyoming	0	1	51	4	2	7	0	0
Colorado	0	0	107	215	0	4	0	1
New Mexico	0	0	56	5	0	5	0	0
Arizona	0	0	28	24	0	0	0	0
Utah [2]	0	0	55	95	1	0	0	0
Pacific States:								
Washington	0	2	85	56	22	15	0	1
Oregon [5]	1	0	54	54	3	4	2	3
California	4	6	289	234	0	4	2	4
Total	12	22	7,138	7,905	246	169	98	144
First 15 weeks of year	284	378	116,711	107,855	3,459	2,918	1,661	1,940

[1] New York City only.
[2] Week ended earlier than Saturday.
[3] Typhus fever, week ended Apr. 11, 1936, South Carolina, 1 case.
[4] Exclusive of Oklahoma City and Tulsa.
[5] Rocky Mountain spotted fever, week ended Apr. 11, 1935: Oregon, 3 cases.

SUMMARY OF MONTHLY REPORTS FROM STATES

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

State	Meningococcus meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
March 1936										
California	37	143	6,765	6	11,313	13	14	1,558	19	15
Connecticut	7	12	106	-------	357	-------	1	524	0	4
Maine	1	6	42	-------	947	-------	2	58	0	4
North Carolina	24	55	1,265	-------	311	43	3	149	4	13
Wyoming	[6]	7	58	-------	41	-------	1	444	23	0

March 1936

	Cases
Chicken pox:	
California	2,652
Connecticut	437
Maine	116
North Carolina	415
Wyoming	29
Conjunctivitis, infectious:	
Connecticut	21
Dengue:	
North Carolina	1
Dysentery:	
California (amoebic)	5
California (bacillary)	10
Epidemic encephalitis:	
California	4
Connecticut	3
Maine	1
Food poisoning:	
California	81
German measles:	
California	1,533
Connecticut	1,582
Maine	307
North Carolina	1,064
Granuloma, coccidioidal:	
California	4
Lead poisoning:	
Connecticut	1
Mumps:	
California	2,279
Connecticut	267
Maine	1,046
Wyoming	62
Ophthalmia neonatorum:	
California	2
Connecticut	1
North Carolina	1
Paratyphoid fever:	
California	3
Rabies in animals:	
California	94
Rocky Mountain spotted fever:	
Wyoming	1
Septic sore throat:	
California	15
Connecticut	21
Maine	1
North Carolina	5
Wyoming	10
Tetanus:	
California	3
Trachoma:	
California	17
Connecticut	1
Trichinosis:	
California	2
Connecticut	4
Tularaemia:	
North Carolina	3
Typhus fever:	
North Carolina	4
Undulant fever:	
California	15
Connecticut	8
Maine	1
North Carolina	4
Vincent's infection:	
Maine	7
Whooping cough:	
California	1,182
Connecticut	423
Maine	103
North Carolina	133
Wyoming	12

PLAGUE IN SONOMA COUNTY, CALIF.

Under date of April 13, 1936, the Director of Public Health of California reported a case of human plague in a male patient removed from Santa Rosa, Sonoma County, Calif., to San Francisco Isolation Hospital. The diagnosis was confirmed bacteriologically and by animal inoculation. Santa Rosa is suspected as the source of the infection.

WEEKLY REPORTS FROM CITIES

City reports for week ended Apr. 4, 1936

This table summarizes the reports received weekly from a selected list of 140 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	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths all causes
		Cases	Deaths								
Maine:											
Portland	0	------	0	1	6	0	0	0	2	10	23
New Hampshire:											
Concord	0	------	0	0	2	2	0	0	0	0	14
Manchester	0	------	0	0	1	0	0	0	2	0	12
Nashua	------	------	------	------	------	------	------	------	------	------	------
Vermont:											
Barre	0	------	0	1	1	0	0	0	0	0	6
Burlington	0	------	0	26	0	0	0	0	0	0	10
Rutland	0	------	0	109	3	3	0	0	0	3	5
Massachusetts:											
Boston	3	------	0	381	23	110	0	6	0	41	216
Fall River	1	------	0	1	4	22	0	0	0	0	33
Springfield	0	------	0	1	1	7	0	0	0	3	32
Worcester	0	------	0	2	1	18	0	3	0	17	48
Rhode Island:											
Pawtucket	0	------	0	0	0	1	0	0	0	0	16
Providence	0	------	0	22	5	16	0	1	0	8	57
Connecticut:											
Bridgeport	0	13	1	1	2	1	0	1	0	2	45
Hartford	0	------	0	1	6	12	0	2	2	2	49
New Haven	0	4	0	0	1	1	0	0	0	47	34
New York:											
Buffalo	0	2	0	58	22	70	0	14	0	9	161
New York	48	17	9	2,011	150	519	0	80	4	75	1,562
Rochester	0	------	1	1	7	3	0	0	0	0	76
Syracuse	0	------	3	38	12	13	0	0	0	14	46
New Jersey:											
Camden	1	------	0	16	2	7	0	0	0	3	27
Newark	0	4	0	2	16	181	0	9	0	13	110
Trenton	0	------	1	2	2	7	0	3	0	7	34
Pennsylvania:											
Philadelphia	10	13	9	533	78	86	0	26	0	52	580
Pittsburgh	2	8	7	30	48	86	0	6	0	27	194
Reading	0	------	0	2	1	3	0	2	0	2	28
Scranton	0	------	------	2	------	6	0	------	0	0	------
Ohio:											
Cincinnati	6	1	1	11	16	19	0	5	0	0	143
Cleveland	4	72	8	54	29	71	0	18	1	56	221
Columbus	1	4	4	2	9	6	0	2	0	6	88
Toledo	0	1	1	83	5	1	0	8	0	16	83
Indiana:											
Anderson	0	------	0	0	2	1	0	0	0	7	13
Fort Wayne	2	2	0	0	6	10	0	1	0	0	26
Indianapolis	1	0	2	5	32	36	0	3	0	8	112
Muncie	0	------	1	0	4	0	0	2	0	0	------
South Bend	0	------	0	0	4	1	0	0	0	7	17
Terre Haute	0	------	0	0	0	8	0	0	0	0	19
Illinois:											
Alton	0	------	0	0	2	4	0	0	0	4	11
Chicago	18	21	10	7	66	229	0	43	0	171	801
Elgin	0	------	0	0	1	4	0	0	0	2	7
Moline	0	2	0	0	2	6	0	0	0	2	9
Springfield	0	------	0	0	5	18	0	1	0	6	20

City reports for week ended Apr. 4, 1936—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths all causes
		Cases	Deaths								
Michigan:											
Detroit	5	11	15	37	61	134	0	21	1	141	354
Flint	1	------	0	0	4	10	0	1	0	14	19
Grand Rapids	0	------	0	11	1	15	0	0	0	7	28
Wisconsin:											
Kenosha	0	------	0	1	0	7	0	0	0	0	8
Madison	0	------	0	0	1	14	0	0	1	4	13
Milwaukee	0	------	0	4	6	76	0	2	0	48	85
Racine	0	------	0	3	2	14	0	0	0	8	17
Superior	0	------	0	1	0	26	0	0	0	0	14
Minnesota:											
Duluth	0	------	0	0	1	10	0	0	0	14	17
Minneapolis	1	------	0	189	8	121	0	2	0	9	99
St. Paul	5	2	2	137	4	30	0	3	0	3	66
Iowa:											
Cedar Rapids	0	------	--------	0	-------	1	0	-------	0	1	--------
Davenport	0	------	--------	0	-------	11	0	-------	0	0	--------
Des Moines	1	------	--------	0	-------	10	0	-------	0	0	32
Sioux City	0	------	--------	0	-------	12	28	-------	0	0	--------
Waterloo	0	------	--------	0	-------	2	0	-------	0	0	--------
Missouri:											
Kansas City	1	------	8	0	20	49	0	3	0	0	107
St. Joseph	0	------	2	0	6	3	1	1	1	0	35
St. Louis	14	18	3	1	47	50	0	6	0	1	307
North Dakota:											
Fargo	0	------	0	0	0	4	1	0	0	0	6
Grand Forks	0	------	--------	0	-------	0	0	-------	0	0	--------
Minot	0	------	0	0	0	5	0	0	1	0	6
South Dakota:											
Aberdeen	0	------	--------	0	-------	0	0	-------	0	0	--------
Sioux Falls	0	------	--------	0	-------	11	11	-------	0	0	--------
Nebraska:											
Omaha	1	------	1	5	7	105	16	2	0	0	72
Kansas:											
Lawrence	0	7	2	1	1	2	0	0	0	0	11
Topeka	------	------	------	------	------	------	------	------	------	------	------
Wichita	0	------	1	0	2	0	0	1	0	0	34
Delaware:											
Wilmington	5	------	0	4	4	2	0	1	0	6	33
Maryland:											
Baltimore	2	14	2	110	36	26	0	16	1	46	260
Cumberland	0	------	0	0	1	3	0	1	0	0	15
Frederick	0	------	0	0	0	0	0	0	0	0	2
District of Col.:											
Washington	11	1	1	45	20	16	0	5	1	16	171
Virginia:											
Lynchburg	0	------	1	8	1	3	0	0	0	17	16
Norfolk	1	15	0	1	5	3	0	1	0	0	35
Richmond	0	------	1	4	8	40	0	2	1	0	57
Roanoke	0	------	1	0	2	1	0	1	0	0	17
West Virginia:											
Charleston	1	3	0	2	13	1	0	0	0	0	28
Huntington	0	------	--------	0	-------	0	0	-------	0	0	--------
Wheeling	0	------	0	24	4	0	0	0	1	2	28
North Carolina:											
Gastonia	0	------	0	0	0	0	0	0	0	0	3
Raleigh	0	------	0	1	1	0	0	0	0	3	20
Wilmington	1	------	0	0	4	1	0	0	0	0	13
Winston-Salem	0	------	1	101	1	3	0	1	0	0	13
South Carolina:											
Charleston	0	11	0	0	0	1	0	1	0	10	18
Columbia	------	------	------	------	------	------	------	------	------	------	------
Florence	0	------	0	0	1	0	0	0	0	0	15
Greenville	1	------	0	18	1	0	1	0	0	0	5
Georgia:											
Atlanta	3	21	4	3	15	8	0	5	0	0	99
Brunswick	0	------	0	0	4	0	0	0	0	0	5
Savannah	0	10	3	0	5	3	0	1	1	0	36
Florida:											
Miami	0	9	3	9	2	2	0	2	0	18	45
Tampa	0	1	1	0	4	1	0	0	1	0	25

City reports for week ended Apr. 4, 1936—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Death all causes
		Cases	Deaths								
Kentucky:											
Ashland	0	0		0		0	0		0	3	
Covington	0		0	1	11	1	0	1	0	0	16
Lexington	0	5	0	5	4	2	0	2	0	2	21
Louisville	1	22	0	4	18	32	0	4	0	18	87
Tennessee:											
Knoxville	1	3	3	46	9	2	0	0	0	0	40
Memphis	0		18	1	19	9	0	5	0	12	109
Nashville	0		4	3	15	1	0	3	0	0	60
Alabama:											
Birmingham	1	40	5	0	4	1	0	4	0	0	100
Mobile	0	10	1	0	1	0	1	0	0	0	23
Montgomery	0	6		0		1	0		0	7	
Arkansas:											
Fort Smith	0			0		0	0		0	0	
Little Rock	0	115	0	0	4	0	0	2	1	0	6
Louisiana:											
Lake Charles	0		0	1	0	0	0	0	0	0	5
New Orleans	5	206	26	36	26	8	0	17	0	24	247
Shreveport	0	0	1	9	13	0	0	0	0	0	39
Oklahoma: Oklahoma City	1	14	2	0	14	8	0	1	0	6	44
Texas:											
Dallas	8	9	9	43	13	4	0	1	0	0	72
Fort Worth	0		1	0	9	6	0	2	0	0	39
Galveston	3		0	4	5	0	0	0	2	0	16
Houston	13		1	14	7	8	0	7	0	0	59
San Antonio	1		4	10	9	4	0	6	0	0	85
Montana:											
Billings	0		0	0	1	4	0	0	0	0	8
Great Falls	0		0	0	1	8	0	0	0	0	8
Helena	0		0	0	0	1	0	0	0	0	3
Missoula	0		0	0	0	4	0	0	0	0	8
Idaho: Boise	0		0	18	1	2	0	0	0	0	10
Colorado:											
Colorado Springs	0		0	1	3	4	1			1	15
Denver	7		1	15	10	14	0	5	0	23	97
Pueblo	0		0	0	0	20	0	0	0	9	3
New Mexico: Albuquerque	0	2	0	0	8	16	0	3	0	0	19
Utah: Salt Lake City	0		0	13	3	43	0	1	0	3	35
Nevada: Reno											
Washington:											
Seattle	1		2	180	8	13	1	7	0	0	102
Spokane	0		0	14	6	23	0	0	0	5	31
Tacoma	0		0	29	5	0	1	0	0	7	42
Oregon:											
Portland	0	9	1	73	4	10	0	6	4	2	80
Salem	0	4		6		2	4		0	0	
California:											
Los Angeles	4	26	0	495	20	55	0	15	0	26	321
Sacramento	2	1	1	6	4	8	0	4	0	4	33
San Francisco	0	3	1	473	15	84	0	5	0	30	149

City reports for week ended Apr. 4, 1936—Continued

State and city	Meningococcus meningitis		Poliomyelitis cases
	Cases	Deaths	
Massachusetts:			
Boston	6	1	0
Fall River	0	1	0
Rhode Island:			
Providence	0	2	0
Connecticut:			
New Haven	1	0	0
New York:			
New York	18	10	1
New Jersey:			
Newark	4	2	0
Pennsylvania:			
Pittsburgh	1	0	0
Ohio:			
Cincinnati	1	1	0
Cleveland	1	0	0
Indiana:			
Indianapolis	0	2	0
Illinois:			
Chicago	9	3	0
Michigan:			
Detroit	1	0	0
Flint	1	0	0
Wisconsin:			
Madison	1	0	0
Milwaukee	1	0	0
Minnesota:			
Minneapolis	1	1	0
Iowa:			
Des Moines	1	0	0
Missouri:			
St. Joseph	0	1	0
St. Louis	2	1	0
Nebraska:			
Omaha	1	0	0
Maryland:			
Baltimore	9	3	0
District of Columbia:			
Washington	7	2	0
Virginia:			
Norfolk	2	0	0
Richmond	1	2	0
West Virginia			
Huntington	1	0	0
Wheeling	0	0	1
North Carolina:			
Wilmington	0	1	0
South Carolina:			
Charleston	2	0	0
Georgia:			
Atlanta	1	2	0
Kentucky:			
Ashland	1	0	0
Lexington	1	0	0
Louisville	3	2	0
Tennessee:			
Knoxville	1	1	0
Alabama:			
Birmingham	3	1	0
Louisiana:			
New Orleans	2	1	0
Oklahoma:			
Oklahoma City	2	0	0
Texas:			
Dallas	1	1	0
Galveston	2	0	0
Houston	11	2	0
San Antonio	1	1	0
Colorado:			
Colorado Springs	1	0	0
Denver	1	0	0
Oregon:			
Portland	1	1	1
California:			
Los Angeles	3	3	0
San Francisco	1	1	0

Epidemic encephalitis.—Cases: Chicago, 1; Flint, 1; Baltimore, 1.
Pellagra.—Cases: Atlanta, 2; Savannah, 2; Montgomery, 1; New Orleans, 1; Los Angeles, 2.

FOREIGN AND INSULAR

ITALY

Communicable diseases—4 weeks ended February 2, 1936.—During the 4 weeks ended February 2, 1936, cases of certain communicable diseases were reported in Italy as follows:

Disease	Jan. 6–12		Jan. 13–19		Jan. 20–26		Jan. 27–Feb. 2	
	Cases	Communes affected	Cases	Communes affected	Cases	Communes affected	Cases	Communes affected
Anthrax	19	17	8	8	10	10	15	13
Cerebrospinal meningitis	19	17	15	14	16	14	18	17
Chicken pox	384	148	344	131	370	142	361	140
Diphtheria and croup	604	305	620	319	595	319	601	310
Dysentery	4	4	5	5	6	6	6	6
Hookworm disease	4	4	21	6	3	3	3	3
Lethargic encephalitis	2	2	2	2	2	2	3	3
Measles	1,179	225	1,366	242	1,469	263	1,582	280
Paratyphoid fever	49	35	35	31	40	36	41	37
Poliomyelitis	8	8	9	9	13	13	16	15
Puerperal fever	33	31	41	38	41	37	41	39
Scarlet fever	320	144	331	167	347	146	299	145
Typhoid fever	258	168	275	172	279	176	222	134
Undulant fever	22	18	35	27	38	28	43	39
Whooping cough	350	100	335	101	312	106	365	120

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, and other sources. The reports contained in the following table must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

CHOLERA

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

Place		Sept. 1–28, 1935	Sept. 29–Oct. 26, 1935	Oct. 27–Nov. 30, 1935	Dec. 1–28, 1935	Week ended— January 1936				February 1936					March 1936			
						4	11	18	25	1	8	15	22	29	7	14	21	28
Ceylon: Batticaloa (near).[1]																		
India	C	51,707	29,882	25,638	11,615	3,695	3,391	3,674	3,473	2,967	2,891	2,606						
	D	24,303	15,039	13,350	6,169	1,948	1,873	2,014	1,964	1,653	1,496	1,389						
Assam	C	585	164	658	707	72	77	120	49	35		21	21	15	8	12	8	31
	D	286	79	356	396	46	39	62	20	19		11	7	9	4	7	5	14
Bombay Presidency	C	7,779	3,318	1,892	941	74	149	157	79	141	63	54	35	39				
	D	3,328	1,510	877	445	44	75	79	39	58	31	25	10	25				
Bombay	C	3		[2] 1														
Calcutta	C	119	90	144	103	15	28	57	40	47	58	61	79	135	227	188	179	208
Central Provinces and Berar	C	11,774	5,775	1,350	98	13	1					8	18	30	26	45	52	94
Chittagong	C			1														
Cochin	D	11	9															
Madras Presidency	C	8,185	4,648	5,280	2,855	1,583	186		2,101									
	D	3,482	2,114	2,527	1,336	786	94		1,133									
Madras	C	31	8	12	13		2	3	4	11	28	18	3	10	5	4	12	5
	D	15	1	4	7			1	2	6	6	8	4	2	3	3	5	
Moulmein	C												1	1	5	1	1	3
Negapatam	C				7	3	7	5	7	2	14	5	18	17	2		4	
	D				4	2	4		2		6	9	7	5	2			
Northwest Frontier Province	C	338	12					1			1							
	D	174	11															
Punjab	C	302	154	24	7		1											
Rangoon	C			[2] 1		[2] 1												
India (French):																		
Chandernagor	C	1					4	2	2	1	1	1						
Karikal	C		4	12														
Pondichery	C	83	16	5														
Indochina (see also table below): Pnom-Penh	C		1															

Place		Oct. 1-10	Oct. 11-20	Oct. 21-31	Nov. 1-10	Nov. 11-20	Nov. 21-30	Dec. 1-10	Dec. 11-20	Dec. 21-31	Jan. 1-10	Jan. 11-20	Jan. 21-31	Feb. 1-10	Feb. 11-20
Siam:															
Ang Thoang Province	C		10	3						1	1	1			
	D		9	3						1	1	1			
Ayudhaya Province	C	46	30	25	40	17	9	23	25	31	46	48	53	36	
	D	31	25	16	35	11	6	16	16	27	28	35	41	28	
Bankok	C	43	44	77	49	17	21	39	47	31	82	96	91	75	48
Bejrpuri Province	C	14	14	3		1	9	20	26	19	9	15	13	10	
Bichitr Province	C													P	
Bisnulok Province	C												1	12	
Chhaxengsao Province	C				55	14	60	57	44	51	23	11	8	2	
Jalapuri Province	C				3	6	1	8	5		9	1		2	
Jayanad Province	C													13	
Lobpuri Province	C				10						2	3	1	1	
Nagara Nayok Province	C										2	5		3	
Nagara Pathom Province	C		11	25	1	3	1						4	7	
Nagara Rajsima Province	C										1	1			
Nagara Svarga Province	C										7	6	1	1	
Nondpuri Province	C	2	8	19	3	1		2	4		12	2	2	5	
Prachinpuri Province	C			14	54	5	7	12	2	4					
Praduindhani Province	C		6	2	1		1		3	14	5	7	3	12	
Rajpuri Province	C	107	18	36	54	24	29	10		5	3	1		7	
Sarapuri Province	C		6	17			2			15	41	27	16	5	
Singhapuri Province	C		11	15	2		1						1		
Smudprakar Province	C	5	5	6	49	5	1	6	3	25	48	27	20	36	
Smudsagara Province	C	9	9	7	36	8	25	16	9	14	17	25	9	11	
Smudsongram Province	C	56	23	34	38	16	12	8	13	14	12	21	20	17	
Subarnpuri Province	C			18								4	6	3	
Upala Rajdhani Province	C														P
Utradith Province	C														
On vessels:															
S. S. *Egra* at Rangoon	C						1								
S. S. *Floristan* at Masulipatam	C						[3] 1								

Place		Oct. 1-10	Oct. 11-20	Oct. 21-31	Nov. 1-10	Nov. 11-20	Nov. 21-30	Dec. 1-10	Dec. 11-20	Dec. 21-31	Jan. 1-10	Jan. 11-20	Jan. 21-31	Feb. 1-10	Feb. 11-20
Indochina (French) (see also table above):															
Cambodia [4]	C		1				1				1		1	4	7
	D		1								1		1	3	1
Cochinchina [4]	C		1			1	1		2	1			2	2	
	D		1			1			2	1			2	2	

[1] According to a report dated Apr. 7, 1936, 29 cases of cholera with 24 deaths were reported in the vicinity of Batticaloa, Ceylon, from Mar. 30 to Apr. 7, 1936.
[2] Imported.
[3] Suspected.
[4] Reports incomplete.

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

PLAGUE[1]

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

Place		Sept. 1–28, 1935	Sept. 29–Oct. 26, 1935	Oct. 27–Nov. 30, 1935	Dec. 1–28, 1935	Week ended— January 1936 4	11	18	25	February 1936 1	8	15	22	29	March 1936 7	14	21	28
Algeria: Philippeville	C		3															
Argentina (see also table below):																		
Bahia Blanca (vicinity of)	C													2				
	D													2				
Pampa Territory—Leventue.[2]																		
San Luis.[2]																		
Azores. (See table below.)																		
Basutoland	C													2				
Belgian Congo	C	2	1															
Plague-infected rats			3															
Brazil.[4] (See also table below.)																		
British East Africa:																		
Kenya	C	33	10	7	25	4	1	2	3	4	4	3	5	6		2		
Tanganyika	C								7			1	1		5			
Uganda	C	188	206	281	61	6	7	19	12	6	8	3	8	19	14			
	D		188	231	54	5	6	18	11	5	8	3	8	18	13			
Ceylon:																		
Anuradhapura	C																1	
Balapitiya	C			1														
Colombo	C	11	6	5	11	3	2	2	3	1		2	2	1	1			2
	D	8	6	4	10	3	2	2	2	1		2			1			2
Plague-infected rats			4	27	4									1		1		
Ratnapura	C		1															
Tellijjawilla	C		1															
China: Manchuria.[5]																		
Dutch East Indies: West Java	C	868	769	985	878	190												
	D	866	769	980	873	190	157											
Ecuador:																		
Daule.[6]																		
Duran	C		1															
Guayaquil	C	8	35	48	20		8	4	1		2	1	2	1		1		
	D	3	15	16	4		1	3	2	1	2							
Plague-infected rats			8	12	5	1	1								1			
Nobol	C		1															

Egypt:																			
Alexandria—Plague-infected rats		P	P	P	P		P		P		P		P		P				
Asyut Province	C			1	3	1	2	2	1	3	1	2	1	2	1	1	4	7	
Girga Province	C							1		1			1					1	
Minya Province	C													2		1	4		
Qena Province	C		1																
Great Britian—England—Liverpool—Plague-infected rats					2														
Hawaii Territory: Plague-infected rats:																			
Hawaii Island—Hamakua district—																			
Hamakua Mill				1	1								1						
Kukaiau			1	2	1														
Paauhau		1	2			1													
Pohakea Sector [7]												1							
Maui Island—Makawao district—Kahului (9–10 miles from)		1																	
India	C	1,433	2,635	3,131	1,852	415	497	827	429	661	545	761							
	D	633	1,228	1,019	928	197	297	396	254	267	349	328							
Bassein	C	3	1		1						3	1	3		1	2	1		
Plague-infected rats				1								1							
Bombay Presidency	C	163	363	148	88	15	32	28	24	15	28	39	36	51					
	D	94	234	93	48	8	22	18	13	17	20	15	24	34					
Bombay	C								[8] 1										
Central Provinces and Berar	C	483	464	1,651	716	55	137		2	28	75	165	150	166			345	111	
Karachi	C															5			
Madras Presidency	C	111	121	133	71	10	7		25										
	D	46	73	88	51	4	4		18										
Punjab	C			48						1					7	2	3		
	D			21											3	2			
Rangoon	C	1	1		[8] 1							[8] 1							
Plague-infected rats		1	1		1					1	1		1			2			
Indochina (see also table below):																			
Pnom-Penh	C								1					1					
Saigon-Cholon	C								1										
Iraq: Baghdad	C	1		1	1	[8] 1													
Madagascar. (See table below.)																			
Peru. (See table below.)																			
Senegal. (See table below.)																			
South-West Africa. (See table below.)																			
Tunisia: Tunis	C	10	2	1															
	D	2		1															
Plague-infected rats				1								2							

[1] Including plague in the United States and its possessions.

[2] A report dated Aug. 8, 1935, states that 4 cases of plague occurred at Leventue, Pampa Territory, Argentina, during 2 months.

[3] A report dated Aug. 2, 1935, states that plague-infected rats were present at San Luis, Argentina.

[4] Reports of plague in Brazil have also been received under the dates indicated, as follows: July 25, 1935, 4 cases at Vicosa, Alagoas State; July 2, 1935, about 16 deaths in Fiera Santana, Bahia State, since Jan. 1; July 26, 1935, 10 cases in Ceara State since Jan.1; Sept. 10, 1935, 204 cases with 72 deaths in Pernambuco State up to Aug. 24; Oct. 8, 1935, 4 cases and 1 death at Paulista, Piauhy State.

[5] A report dated Oct. 28, 1935, states that up to Oct. 23, 155 deaths from plague were reported in the provinces of Kirin, Lungkiang, Fengtien, and South Hsingan, Manchuria, China. A report dated Nov. 27, 1935, stated that 23 deaths from plague had occurred in the vicinity of Koshan, and that there were about 15 cases in Harbin.

[6] During the period Jan. 1 to Feb. 20, 1936, 7 cases of plague were reported at Daule and vicinity, Ecuador.

[7] During the week ended Apr. 4, 1936, 1 rat was proved positive for plague at Pohakea Sector, Hamakua district, Hawaii Island, Hawaii Territory.

[8] Imported.

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

PLAGUE—Continued

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

Place		Sept. 1–28, 1935	Sept. 29–Oct. 26, 1935	Oct. 27–Nov. 30, 1935	Dec. 1–28, 1935	Week ended— January 1936				February 1936					March 1936			
						4	11	18	25	1	8	15	22	29	7	14	21	28
Union of South Africa	C	8	18	7	7	[9] 24	-------	[9] 20	-------	[9] 91	-------	[9] 18	-------	[9] 35	-------	[9] 22	-------	-------
Cape Province	C	-------	-------	-------	2	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
Orange Free State	C	-------	-------	1	1	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
United States: California.[10]																		
On vessel: S. S. *Ipanema* at Marseille	C	-------	[11] 2	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------

Place		September 1935	October 1935	November 1935	December 1935	January 1936	February 1936
Argentina (see also table above):							
Buenos Aires Province	C	-------	-------	-------	-------	-------	2
Cordoba Province	C	-------	-------	-------	5	1	-------
Santa Fe	C	-------	-------	-------	-------	1	-------
Azores	C	4	2	2	2	3	-------
Basutoland	C	-------	-------	-------	16	-------	-------
Brazil:							
Bahia State	C	7	3	7	20	-------	-------
Ceara State	C	-------	-------	-------	-------	-------	7
Pernambuco State.[12]							
Indochina (see also table above):							
Cambodia	C	1	-------	-------	-------	1	2
Cochinchina	C	-------	-------	1	-------	1	-------
Madagascar (central region)	C	232	293	345	507	503	-------
	D	227	282	333	485	485	-------

Place		September 1935	October 1935	November 1935	December 1935	January 1936	February 1936
Peru	C	3	1	14	9	23	19
Arequipa Department	C	-------	-------	-------	-------	5	-------
Catamarca Department	C	-------	-------	13	-------	-------	-------
Lambayeque Department	C	-------	-------	-------	1	4	3
Libertad Department	C	1	1	1	-------	5	1
Lima Department	C	2	-------	10	7	9	8
Callao	C	-------	-------	-------	-------	1	2
	D	-------	-------	-------	-------	1	2
Senegal:							
Baol [13]	C	8	-------	-------	-------	-------	-------
Dakar [13]	C	-------	-------	-------	-------	1	1
	D	-------	-------	-------	-------	1	1
Tivouane [13]	C	11	1	1	1	-------	-------
South-West Africa: Ovamboland	C	[14] 185	-------	-------	-------	-------	-------

[9] For 2 weeks.

[10] Plague has been reported in California as follows: Apr. 3, 1936, 1 plague-infected squirrel at Ventura County, and on Apr. 18, 1936, 1 human case of plague was reported at San Francisco having been brought from Santa Rosa, Calif.

[11] One of these cases was a member of the crew and the other was a stevedore believed to have worked on the vessel. Several plague-infected rats were reported found on board the vessel.

[12] From Jan. 1 to Mar. 16, 1936, 15 cases of plague were reported in Pernambuco State, Brazil.

[13] Incomplete reports.

[14] From Jan. 1 to Sept. 30, 1936.

SMALLPOX

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

Place		Sept. 1–28, 1935	Sept. 29–Oct. 26, 1935	Oct. 27–Nov. 30, 1935	Dec. 1–28, 1935	Week ended—												
						January 1936				February 1936					March 1936			
						4	11	18	25	1	8	15	22	29	7	14	21	28
Algeria: Algiers Department	C	5										1	1					
Argentina. (See table below.)																		
Belgian Congo. (See table below.)																		
Bolivia. (See table below.)																		
Brazil: Santos	C	2																
British East Africa:																		
Tanganyika	C	36	6	18					9	6		2						
Uganda	C							8	2	1	1	3		7	4			
British Somaliland	C	25	4	3	7	2	1	1			31		3					
British South Africa:																		
Northern Rhodesia	C	1																
Southern Rhodesia	C		1									1						
Canada:																		
Alberta	C			[1] 1			[1] 1						1	2	4	18	5	3
British Columbia	C	5	[1] 1	[1] 1	2			1	1									
Saskatchewan	C		[1] 3	[1] 1														
Ceylon: Colombo	C							1										
China:																		
Amoy	C												2					
Dairen	C										3							
Foochow	C	P	P	P	P		P		P		P		P		P			
Hangchow	C				1		1	2		1	2		11	1				
Hankow	C									1	1	1		1				
Hong Kong	C			2											2	1	2	1
Nanking	C			26	43	1	7	5	3	8	11	10	9	3				
Shanghai	C	1	2	4	6	1	1	2	1	4	2	9	5	10	7	6	7	8
Swatow	C	1		3	1								1	1				
Tientsin	C				3													
Chosen. (See table below.)																		
Colombia	C	111		44	32	7	11	20	30		[1] 13							
Bogota	C			8	3													
Dahomey. (See table below.)																		
Dutch East Indies: Palembang	C														1			
Ecuador. (See table below.)																		
Egypt: Provinces	C											2			5			

[1] For 2 weeks.

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

SMALLPOX—Continued

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

Place		Sept. 1–28, 1935	Sept. 29–Oct. 26, 1935	Oct. 27–Nov. 30, 1935	Dec. 1–28, 1935	Week ended— January 1936 4	11	18	25	February 1936 1	8	15	22	29	March 1936 7	14	21	28
Eritrea	C	14	7									1						
Asmara	C		4															
France. (See table below.)																		
Greece: Salonika	C	6		4			2	2	2	2	3	3	3	3	5			
Guatemala. (See table below.)																		
Honduras: Tela	C		2															
India	C	5,530	4,147	8,642	9,617	4,618	4,755	5,146	5,364	5,660	6,951	6,830						
	D	1,256	865	1,762	2,106	857	962	1,231	1,170	1,387	1,592	1,641						
Assam	C	19	10	17	168	38	18	23	37	303	59	130	164	142	85	84	64	88
Bassein	C						[1]1											
Bombay Presidency	C	748	487	635	741	279	490	398	536	504	662	713	801	764				
	D	133	65	90	103	67	60	66	89	104	111	122	165	148				
Bombay	C	24	11	21	30	13	22	18	33	38	46	47	72	63	54	64	78	81
	D	15	4	12	21	8	15	9	17	19	27	21	46	36	34	37	43	43
Calcutta	C	24	13	19	88	49	105		116	223	270	309	378	426	330	464		511
	D	15	5	12	56	29	45		59	131	180	24	258	300	272	312		361
Central Provinces and Berar	C	114	380	475	808	125	386	340	415	415	965	502	280	490	479	549	541	540
Chittagong	D							1					1					
Cochin	C		5	1						6			8	7	2		5	
Karachi	C	1	2	3	11		7	9	1	8	10	16	26	17	12	5	6	5
Madras Presidency	C	2,246	1,664	1,811	1,366	529	76		707			96						
	D	401	339	324	269	80	6		90			23						
Madras	C	10	1	7	5	1	2				1		1	1		4	7	1
Moulmein	C	5		2	6	1		6	20	16		17	13	15	26	22	20	15
Negapatam	C	3	2			2			1		1	1						
Northwest Frontier Province	C	2		9	7	4	11		11	6	5	5	29	5		1		
Punjab	C	79	99	336	313	148	83	118	149	116	111	173	183	58	92	140	100	
Rangoon	C	2	1	[1]1	4		[2]2	1	[6]6	[1]1	1	3	4	1	2	7	5	2
Tuticorin	C	12	11	3	5													
Vizagapatam	C	14	18	6	9	4	10	15	7	12	9	2	4	12	1	2	11	5
India (French):																		
Chandernagor	C	5	4	44														
Karikal	C	12	25	1														
Pondichery	C	22	11	3														
	D	24	8	3		3	1		3									

Indochina (seealso table below): Haiphong	C													1					
Iran	C	3	19	3	12	8			1	12									
Teheran	C	2	3																
	D	1	1																
Iraq	C		11	8	36	7	20	28	3	7	9	4	18	2	5	1	1	2	
Baghdad	C			2			1												
Basra	C		1	1															
Italian Somaliland	C			2															
Japan:																			
Moji	C														1				
Osaka	C																5		
Yamaguchi Prefecture	C								1										
Libya: Tripolitania	C					2													
Mexico (see also table below):																			
Chihuahua	C			1					1					1					
Guadalajara	D	2	1	9	16	4	5	4		8	9		14	15	14	13	6	6	
Mazatlan	C			1						1					1	1			
Mexico, D. F	C	19	3	12	5	2	2			3	5	2		1					
Monterrey	C		1	1										2	2				
San Luis Potosi	D	4														1			
Torreon	C			5	1	1										1		1	
Morocco. (See table below.)																			
Mozambique. (See table below.)																			
Nigeria	C	290	289	146	427	8		76		265		[1] 252							
Niger Territory. (See table below.)																			
Nyasaland. (See table below.)																			
Oman: Sharjah and Pirate Coast	C					750			[2] 125				[2] 70						
Peru. (See table below.)																			
Poland	C			1							1								
Portugal (see also table below): Lisbon	C	2	3	5	8	1	2			1		1		3	1		1		
Portuguese East Africa. (See table below.)																			
Salvador. (See table below.)																			
Saudi Arabia	C			4										8					
Sierra Leone	C	288	110	222	116	[1] 31		[1] 6		[1] 41		[1] 67							
Freetown	C	2	7		2							[1] 1							
Spain	C	12	7	1	1	3	9	7	1			1	4	7	1	2			
Straits Settlements: Singapore	C	1																	
Sudan (Anglo-Egyptian)	C			2		3						2	1	2	12				
Syria: Tripoli	C		1																
Turkey. (See table below.)																			
Union of Soviet Socialist Republics. (See table below.)																			
Uruguay. (See table below.)																			

[1] For 2 weeks.

[2] Imported.

[3] For 3 weeks.

On vessels:

S. S. *Talamba* at Rangoon from Madras	1 case	Sept.	9, 1935
S. S. *Ethiopia* at Rangoon from Madras	1 case	Oct.	4, 1935
S. S. *Ekma* at Rangoon from Calcutta	1 case	Dec.	10, 1935
S. S. *Cape St. Francis* at Rangoon from Calcutta	1 case	Dec.	17, 1935
S. S. *Bankura* at Karachi	1 case	Jan.	4, 1936

On vessels—Continued.

S. S. *Jalgopal* at Rangoon from Aracan	1 case	Jan.	5, 1936
S. S. *Matua* at Suez from Calcutta	1 case	Jan.	21, 1936
S. S. *Khosrou* at Kamaran quarantine station	1 case	Feb.	15, 1936
S. S. *Karapara* at Rangoon from Calcutta	1 case	Mar.	9, 1936

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

SMALLPOX—Continued

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

Place		September 1935	October 1935	November 1935	December 1935	January 1936	February 1936
Argentina:							
Buenos Aires Province	C	------	------	------	------	------	4
Entre Rios Province [4]	C	------	------	------	------	------	5
Belgian Congo	C	303	248	------	54	456	------
Bolivia	C	57	23	38	43	48	------
China: Manchuria—Harbin	C	------	1	------	1	1	------
Chosen	C	16	53	53	53	86	------
Dahomey	C	3	------	31	11	------	------
Ecuador: Guayaquil	C	------	------	------	------	------	1
France	C	6	16	7	18	76	24
Guatemala	C	4	------	1	------	2	14
Indochina (see also table above)	C	103	98	66	44	57	229
	D	16	12	10	3	3	31
Mexico (see also table above):							
Mexico City	C	2	2	------	------	9	1
Morocco	C	1	------	------	------	9	------
Mozambique	C	37	15	1	------	------	------
Niger Territory	C	111	127	------	43	------	------
Nyasaland	C	14	24	19	------	------	------
Peru	C	141	------	7	------	------	------
Portugal (see also table above)	C	52	154	103	74	------	------
	D	9	34	26	11	------	------
Portuguese East Africa	C	------	------	------	------	3	------
Salvador	C	------	------	36	12	32	46
Turkey	C	------	1	------	------	5	------
Union of Soviet Socialist Republics	C	47	------	------	------	------	------
Uruguay	C	------	------	------	------	3	------

[4] A report dated Oct. 25, 1935, states that 19 cases of smallpox have been reported in Entre Rios Province, Argentina.

TYPHUS FEVER

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

Place		Sept. 1–28, 1935	Sept. 29–Oct. 26, 1935	Oct. 27–Nov. 30, 1935	Week ended— December 1935				January 1936				February 1936					March 1936		
					7	14	21	28	4	11	18	25	1	8	15	22	29	7	14	21
Algeria:																				
Algiers Department	C	1	1	1	------	------	------	------	------	------	1	3	3	6	------	15	7	7	------	------
Algiers	C	------	------	------	------	------	------	------	1	------	------	------	------	------	------	------	------	------	------	------
Constantine Department	C	4	5	1	------	------	------	------	3	18	------	4	5	24	10	10	11	------	10	------
Bone	C	2	------	------	------	------	------	------	------	1	------	------	------	------	------	------	------	------	------	------
Constantine	C	1	1	------	------	------	------	------	2	1	------	------	------	------	------	------	------	------	1	------

Oran Department	C											7			50	2	1		12			
Australia: **Sydney**	C			2								1										
Belgian Congo	C		1																			
Bolivia. (See table below.)																						
Bulgaria	C	1																				
Chile	C	285	473	691																		
Concepcion	C	32	21																			
Santiago [1]	C	172	333																			
Valparaiso	C	24	26	56	6	15	10	6	3	2		7	6	8	5	6	4	2	1			
China:																						
Canton	C			2																		
Hankow	C	1	3	1																		
Hong Kong	C	1																				
Nanking	C			1																		
Shanghai	C					1	1	1														
South Manchuria Railway Zone	C	2		4																		
Tientsin	C			1												1						
Tsingtao	C	7					3							1								
Chosen. (See table below.)																						
Czechoslovakia. (See table below.)																						
Egypt:																						
Alexandria	C				1					1									3	1		
Asyut Province	C		1	1										5	2				1			
Beheira Province	C	2	10	11	8		4			22		6	14	16	52			33	31			
Cairo	C	1										1	3	3		3	2			1		
Dakahliya Province	C											1		10	25			4	3			
Damietta	C	1																				
Faiyum Province	C			1																		
Gharbiya Province	C	2		1						6		40	26	36	16			49	37			
Girga Province	C			1								1										
Minufiya Province	C	1												26	4			9	2			
Port Said	C	1																				
Qena Province	C			1										2	1			1				
Sharkiya Province	C											1	1					1	11			
Suez	C			1																		
Provinces	C	18	14	26	13	9	4	15	49	35		54	44		103	126	98	86	153	133		
Greece (see also table below): **Salonika**	C			1	1	1	1	1	1		1	1	1	2	2	2	2	6				
Guatemala. (See table below.)																						
Hawaii Territory—**Honolulu**	C		6	1	1														1	4		
Hungary	C									3										7		
Iran	C	21	5	7		1	1		2	4	5	6	3			4	2					
Teheran	C	3	2						1									1				
Iraq	C					17				19												
Basra liwa	C	1																				
Irish Free State: Waterford County: Youghal District No. 2	C			1																		
Japan	C									1												
Lithuania	C	3		19					12		[2] 57			9				6				

[1] A report dated Jan. 20, 1936, states that there were 305 cases of typhus fever with 58 deaths in Santiago Province, Chile, from Nov. 2–16, 1935.
[2] For 2 weeks.

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

TYPHUS FEVER—Continued

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

Place		Sept. 1–28, 1935	Sept. 29–Oct. 26, 1935	Oct. 27–Nov. 30, 1935	Week ended— December 1935 7	14	21	28	January 1936 4	11	18	25	February 1936 1	8	15	22	29	March 1936 7	14	21
Mexico																				
Mexico, D. F.	C	134	50	60	16	24	28	------	9	26	------	------	12	14	21	------	24	------	------	------
San Luis Potosí	D	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	1	------	------	------
Torreon	D	2	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Morocco (see also table below)	C	3	1	8	1	8	------	3	2	2	2	33	7	11	1	9	9	------	------	3
Palestine: Haifa	C	[1] 11	8	11	------	------	------	------	[1] 2	------	------	1	------	1	1	------	------	------	------	------
Panama Canal Zone. (See table below.)																				
Peru. (See table below.)																				
Poland	C	56	109	159	59	63	73	35	55	96	100	131	101	153	121	150	146	126	153	------
	D	2	4	8	5	6	6	5	6	6	6	6	16	7	6	11	8	6	6	------
Portugal (see table below): Oporto	C	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	1	------
Rumania. (See table below.)																				
Straits Settlements: Singapore	C	1	1	1	1	------	------	1	1	1	1	------	------	------	------	------	------	------	------	------
Syria: Beirut	C	------	------	------	------	------	------	------	------	------	------	------	------	------	------	[1] 2	------	------	------	------
Trans-Jordan	C	2	2	------	------	------	------	------	------	------	3	3	5	4	1	------	1	2	------	------
Tunisia:																				
Tunis	C	4	2	1	1	------	------	------	------	------	3	2	------	------	------	------	------	------	3	1
Provinces	C	18	13	6	4	------	20	7	12	34	10	5	20	4	9	22	9	14	30	45
Turkey. (See table below.)																				
Union of Soviet Socialist Republics. (See table below.)																				
Union of South Africa. (See table below.)																				
Yugoslavia. (See table below.)																				
On vessel: S. S. *Agamemnon* at London	C	1	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

[1] Imported.

Place		September 1935	October 1935	November 1935	December 1935	January 1936	February 1936
Bolivia	C	140	88	134	168	135	-------
China: Manchuria—Harbin	C	-------	1	3	-------	1	-------
Chosen	C	17	20	30	50	51	-------
Czechoslovakia	C	1	12	-------	-------	-------	25
Greece	C	4	6	4	9	5	-------
Guatemala	C	43	18	26	7	9	17
Morocco	C	3	8	-------	13	45	30
Panama Canal Zone	C	-------	5	1	1	-------	-------
Peru	C	41	16	-------	-------	-------	-------
Portugal	C	3	2	-------	-------	-------	-------
Rumania	C	26	37	92	210	572	-------
Turkey	C	10	13	18	35	33	-------
Istanbul	C	-------	-------	-------	-------	5	-------
Union of Soviet Socialist Republics	C	2,205	-------	-------	-------	-------	-------
Union of South Africa:							
Cape Province	C	55	66	79	76	36	-------
Natal	C	-------	-------	6	1	7	-------
Orange Free State	C	10	23	18	4	17	-------
Transvaal	C	2	2	25	12	1	-------
Yugoslavia	C	11	6	10	-------	131	80

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

YELLOW FEVER

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

Place		Sept. 1–28, 1935	Sept. 29–Oct. 26, 1935	Oct. 27–Nov. 30, 1935	Week ended— December 1935 7	14	21	28	January 1936 4	11	18	25	February 1936 1	8	15	22	29	March 1936 7	14	21
Brazil: [1]																				
Bahia State	C							1	2											
Matto Grosso State	C							1			1		1				1			
Minas Geraes State [1]	C						2	8	3	2	3		2	3	4		1			
	D						2	3	3	2	3		2	3	4		1			
Para State	C		1																	
Parana State [1]	C														1	4	4	1	3	1
Sao Paulo State [1]	C						2	9	2		3			2	2	3	12	1	2	
Colombia:																				
Boyaca Department	C															3				
Intendencia of Meta	C	1														3				
Acacias	C			2																
Restrepo	C			2																
Gold Coast:																				
Bawku	C		3																	
Kumasi [2]	C																1			
Preprawase. [3]																				
Tamale	C	1																		
Ivory Coast:																				
Abidjan	C			1			1													
Sassandra	C			1																
Vavua. [4]																				
Senegal:																				
Dakar	C						[5] 1													
M'Bake	C						1													
Sudan (French): Koutiala	C		1	1																

[1] In addition to the above figures, yellow fever has also been reported in Brazil as follows: Week ended Mar. 28, 1936, 1 case and 1 death at Minas Geraes State; Feb. 16–25, 1936, 5 cases and 5 deaths and Mar. 3–11, 1936, 4 cases and 4 deaths at Parana State; Feb. 26–Mar. 3, 1936, 2 cases and 2 deaths and with no date given, 2 cases and 2 deaths at Sao Paulo State.

[2] During the week ended Mar. 28, 1936, 1 case of yellow fever was reported at Kumasi, Gold Coast.

[3] During the week ended Apr. 11, 1936, 1 case of yellow fever was reported at Preprawase, near Nsawam, Gold Coast.

[4] During the week ended Apr. 4, 1936, 1 case of yellow fever with 1 death was reported at Vavua, Ivory Coast.

[5] Suspected.

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