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REPORT OF ADVISORY COMMITTEE ON OFFICIAL WATER STANDARDS

A committee composed of representatives from Government departments and scientific associations and of eminent sanitarians was appointed by the Surgeon General in May, 1922, to review the Treasury Department standard for drinking water on interstate common carriers, promulgated by the Secretary of the Treasury October 21, 1914,[1] and to recommend a standard or standards, based on specific methods of laboratory analysis and field surveys, to be applicable to all classes of water supplies coming within the jurisdiction of the interstate quarantine regulations of the United States. The following is the report of the committee:

Report of Advisory Committee on Standards for Drinking Water Supplied to the Public by Common Carriers in Interstate Commerce

The task referred to this committee by the Surgeon General of the Public Health Service is to formulate definite specifications which may be used by the Public Health Service in the administrative action which it is required to take upon the supplies of drinking water offered by common carriers for the use of passengers carried in interstate traffic. The recommendations submitted apply, therefore, only to this special case, and are not proposed for more general application.

Since the purpose of the supervision which the Public Health Service exercises over these water supplies is to safeguard the health of the public, the examinations and specific requirements herein proposed have reference chiefly to forming a judgment of safety, and are designed especially to afford protection against the most serious danger which is associated with water supplies, namely, that of infection with typhoid fever and other diseases of similar origin and transmission. Less emphasis has been placed upon physical and chemical characteristics affecting the acceptability of water with respect to appearance, taste, and odor, because these are matters of less fundamental importance and because, in actual experience, the water supplies which come under consideration, if satisfactory from

[1] Public Health Reports, vol. 29, No. 45, Nov. 6, 1914. Reprint No. 232.

the standpoint of safety, will usually be found satisfactory with respect to physical and chemical characteristics.

The first step toward the establishment of standards which will insure the safety of water supplies conforming to them is to agree upon some criterion of safety. This is necessary because "safety" in water supplies, as they are actually produced, is relative and quantitative, not absolute. Thus, to state that a water supply is "safe" does not necessarily signify that absolutely no risk is ever incurred in drinking it. What is usually meant, and all that can be asserted from any evidence at hand, is that the danger, if any, is so small that it can not be discovered by available means of observation. Nevertheless, while it is impossible to demonstrate the absolute safety of a water supply, it is well established that the water supplies of many of our large cities are safe in the sense stated above, since the large populations using them continuously have, in recent years, suffered only a minimal incidence of typhoid fever and other potentially water-borne infections. Whether or not these water supplies have had any part whatsoever in the conveyance of such infections during the period referred to is a question that can not be answered with full certainty; but the total incidence of the diseases has been so low that even though the water supplies be charged with responsibility for the maximum share which may reasonably be suggested, the risk of infection through them is still very small compared to the ordinary hazards of everyday life.[1]

The committee has, therefore, taken this better class of municipal water supplies as its standard of comparison with respect to safety and proposes, as a fair objective, that the water supplies furnished by common carriers to passengers in interstate traffic be of comparable safety. As regards protection of the traveling public, such a standard is fair, since it implies that the use of the water supplied to them in travel shall not add to the almost negligible risk which is ordinarily incurred at home by those who habitually use water supplies of somewhat better than average quality. From the standpoint of the carriers also, this standard is believed to be fair and reasonable, since it refers to water supplies which are actually obtainable in all sections of the country and from a great variety of sources.

The next and principal task of the committee has been to set up objective requirements which will conform to this general standard of safety; that is, requirements which will ordinarily be fulfilled by the municipal supplies of epidemiologically demonstrated safety which constitute the standard of comparison, but will exclude supplies of less assured safety. Since there is no single and measurable charac-

[1] This evidence actually proves only that the water supplies in question have been generally "safe" in the past during the period of low prevalence of infection. The likelihood that they will continue to be equally or more safe in the future must, of course, be reckoned from other considerations, such as the probability of future change in the pollution of their watershed, the character and consistency of their protection, etc.

teristic of water supplies which bears any known and constant relation to actual safety, the standard recommended is composite, including certain requirements relative to the source and protection of the water supplies in question as indicated by a careful sanitary survey, and certain other requirements relative to bacterial content as shown by standard tests.

It is anticipated that little objection will be raised to the requirements laid down as to source and protection, at least to their general intent, because they are based upon well recognized principles of sanitary engineering, and because they are necessarily stated in general terms which imply a rather broad consideration of each supply from all angles and the exercise of discretion in forming an ultimate judgment of its fitness. The bacteriological standard, on the other hand, is stated in definite quantitative terms. This is unavoidable if such a standard be included at all, since the methods of bacteriological examinations are quantitative and yield results in the definite terms used in the standard. However, in view of the well-recognized principle that the significance of bacteriological examinations is variable, and must be interpreted with due regard to all other facts known about the particular water supply in question, the objection may be raised that a rigid application of this standard will arbitrarily exclude a considerable number of water supplies which conform to all other requirements and which competent opinion will consider to be quite safe. The validity of this criticism is recognized, but it is not considered of sufficient force to require or justify the lowering of the bacteriological standard proposed. This viewpoint appears proper when it is recognized that the definite terms of bacteriological quality in which this standard is expressed represent only agreement as to safety, and not as to limiting values beyond which demonstrable or even presumptive danger lies. Between the point on which the committee is in agreement as to the assured safety of water supplies and the point at which agreement could be reached as to their dangerous quality is a wide zone. Within this zone lie many water supplies which, if considered in the light of available evidence from all angles, are believed to be as safe as other supplies which conform to all the bacteriological requirements.

The committee, therefore, considers it preferable to recommend that in actual practice the bacteriological standard be applied, as are other requirements, with some latitude; in other words, that supplies which, on rigid inspection are found to be satisfactory in other respects but fail to meet the bacteriological standard, may be accepted in the discretion of the certifying authority. In view of the character of the personnel entrusted with the responsibility for investigation and administrative action, the committee feels assured that this procedure is preferable to the alternative of rigid and automatic application.

Proposed Standards

The requirements recommended are as follows:

I. AS TO SOURCE AND PROTECTION

(1) The water supply shall be—

(*a*) Obtained from a source free from pollution; or

(*b*) Obtained from a source adequately protected by natural agencies from the effects of pollution; or

(*c*) Adequately protected by artificial treatment.

(2) The water supply system, including reservoirs, pipe lines, wells, pumping equipment, purification works, distributing reservoirs, mains and service pipes, shall be free from sanitary defects.

NOTE: 1. *Natural agencies* affording more or less complete protection against the effects of pollution are, in surface waters: dilution, storage, sedimentation, the effects of sunlight and the associated biological processes tending to natural purification; and, in the case of ground waters, percolation through the soil. Important items in the natural purification of ground water are the character and depth of the strata penetrated.

2. *Adequate protection* by artificial treatment implies that the method of treatment is appropriate to the source of supply; that the works are of sufficient capacity, well constructed, skillfully and carefully operated. The evidence that the protection thus afforded is adequate must be furnished by frequent bacteriological examinations and other appropriate analyses, showing that the purified water is of good and reasonably uniform quality, a recognized principle being that irregularity in quality is an indication of potential danger.

3. *Sanitary defect* means faulty condition, whether of location, design, or construction of works, which may regularly or occasionally cause the water supply to be polluted from an extraneous source, or fail to be satisfactorily purified. (See examples cited in Appendix I.)

An outline of the scope of sanitary survey ordinarily required in the investigation of a water supply to determine whether or not it conforms to these requirements is given in Appendix I.

II. AS TO BACTERIOLOGICAL QUALITY

(1) Of all the standard (10 c. c.) *portions* examined in accordance with the procedure specified below, not more than 10 per cent shall show the presence of organisms of the *B. coli* group.

(2) Occasionally three or more of the five equal (10 c. c.) *portions* constituting a single standard *sample* may show the presence of *B. coli*. This shall not be allowable if it occurs in more than—

(*a*) Five per cent of the standard samples when twenty (20) or more samples have been examined;

(*b*) One standard sample when less than twenty (20) samples have been examined.

NOTE.—It is to be understood that in the examination of any water supply the series of samples must conform to *both the above*

requirements, (1) and (2). For example, where the total number of samples is less than six, the occurrence of positive tests in three or more of the five portions of any single sample, although it would be permitted under requirement (2), would constitute a failure to meet requirement (1).

Definition.

The B. coli group is defined, for the purposes of this test, as in Standard Methods of Water Analysis, American Public Health Association, New York, 1923, and the procedures for demonstration of organisms of this group shall conform to those of the "completed test" as therein specified.

The standard portion of water for this test shall be ten cubic centimeters (10 c. c.).

The standard sample for this test shall consist of five (5) standard *portions* of ten cubic centimeters (10 c. c.) each.

Some general considerations bearing upon the bacteriological standard adopted are discussed in Appendix II, and the quantitative interpretation of fermentation tests is discussed in Appendix III.

III. AS TO PHYSICAL AND CHEMICAL CHARACTERISTICS

The water should be clear, colorless, odorless, and pleasant to the taste, and should not contain an excessive amount of soluble mineral substances nor of any chemicals employed in treatment.

NOTE.—Appropriate tests for the quantitative determination of physical and chemical characteristics are given in Appendix IV of this report, together with the values which should ordinarily not be exceeded when these tests are applied. It is not intended, however, to imply that a complete chemical examination, including all these tests, is to be required in the case of every water supply offered. Under ordinary circumstances simple evidence that the water is generally acceptable in appearance, taste, and odor will be considered sufficient; and detailed analysis will be required only when there is some presumption of unfitness by reason of physical or chemical characteristics. Where such analysis shows the presence of lead (Pb), copper (Cu), or zinc (Zn) in excess of the limits specified in Appendix IV, this shall constitute ground for rejection of the supply. Failure of a supply to conform in other respects to the requirements proposed in Appendix IV need not be considered ground for rejection unless it be found, on inquiry, that another supply of equal safety and more acceptable physical and chemical characteristics is readily available.

Appendix I

SCOPE OF REQUISITE INFORMATION AS TO SOURCE AND PROTECTION

In order that the administrative authorities may have the necessary information upon which to base their action, it is requisite that each water supply coming under consideration should be carefully studied with reference to its source and protection. The precise scope of

such study and of the report thereon will vary according to the circumstances existing in each individual case, and can not be fully specified in any general terms. The general procedure should, however, be substantially as follows:

1. A sanitary survey of the water supply should be made by a competent person.—The reliability of the data collected will depend largely upon the competence of the person by whom the survey is made, and the careful selection of personnel for this duty is of primary importance. The qualifications which constitute "competence" can not be precisely defined; but, in general, the person making the survey should have received a technical education equivalent to that given in a course in sanitary engineering in a college of engineering or school of public health; should have a broad knowledge of the sanitary features and physical facts concerning water supplies for potable use; and should understand the essential features of water purification plants, their operation and methods of testing.

2. A brief general description of the water supply should be submitted.—This should include the name of the owner of the supply and a brief description of sources and catchment areas, of the storage available and of the plant, with date of installation of main works, and record of subsequent extensions or alterations.

3. A brief summary of the pertinent facts relating to the sanitary condition of the water supply, as revealed by the field survey, should be submitted.—The following paragraphs will serve to indicate the general scope of the survey. However, not all of the items would be pertinent to any one supply, and in some cases items not in the list would be important.

(A) SMALL GROUND WATER SUPPLIES

Nature of soil and underlying porous strata, whether of clay, sand, or gravel.

Nature of rock penetrated, noting especially existence of limestone.

Depth to strainers.

Slope of water table, as indicated presumptively but not certainly by slope of surface ground.

Nature, distance, and direction of sources of pollution.

Possibility of surface drainage entering the supply.

Methods of protection.

(B) LARGE GROUND WATER SUPPLIES

General character of local geology.

Extent of drainage area likely to contribute water to the supply.

Size and topography of catchment area.

Nature of soil and underlying strata, whether clay, sand, gravel, rock (especially limestone).

Depth to strainers.

Population on the drainage area.

Nature, distance, and direction of local sources of pollution.

Possibility of surface drainage entering the supply; methods of protection.

Methods employed for protecting the supply against pollution, by sewage treatment, waste disposal, and the like.

Protection of collecting well at top and on sides; protection other than check valve or gate against back flow of drain, etc.

Availability of an impure emergency supply.

Use of tile pipes or other conduits not tight, where ground water may be contaminated.

Examples of sanitary defects in ground water supplies, are—caves, sink holes or abandoned borings used for surface drainage or sewage disposal in vicinity of the source. Casing of tubular wells leaky or not extended to sufficient depth, or not extended above ground or floor of pump room, or not closed at top; or casing improperly used as suction pipe. Collecting well or reservoir subject to back-flow of polluted water through improper drain.

Source of supply or structures subject to flooding.

(C) SURFACE WATER SUPPLIES, UNFILTERED

Nature of surface geology; character of soils and rocks.

Character of vegetation; forests; cultivated land, etc.

Population and sewered population per square mile of catchment area.

Methods of sewage disposal, whether by diversion from watershed or by treatment.

Character and efficiency of sewage treatment works.

Proximity of sources of fecal pollution to intake of water supply.

Proximity of sources and character of industrial wastes.

Nominal period of detention in reservoir or storage basin.

Probable minimum time required for water to flow from sources of pollution to reservoir and through reservoir to intake.

Shape of reservoir, with reference to possible currents of water, induced by wind, from inlet to water-supply intake.

Measures taken to prevent fishing, boating, swimming, ice cutting, etc.

Efficiency and constancy of policing.

Disinfection of water; kind and adequacy of equipment; duplication of parts; effectiveness of treatment.

Examples of sanitary defects, are—

Improper location of intake with respect to bottom of reservoir and current.

Intake exposed and accessible to trespassers.

(D) SURFACE WATER SUPPLIES, FILTERED

Size, topography, and surface geology of catchment area.

Population per square mile of catchment area.

Nature of principal sources of pollution, and distance from intake in miles and in time of travel, with special reference to sewered population.

Methods of sewage treatment; effectiveness of process, and uniformity of results.

Character of raw water as to turbidity, color, alkalinity, hardness, iron, etc., and as to variations in quality from time to time.

Rated capacity of filter plant in M̄gd., average water consumption in M̄gd., rated capacity of pumps.

Capacity of sedimentation or coagulation basins, in M̄gd.

Number of filter beds, net area of sand surface, effective size of sand, etc.

Coagulation, if any; kind and amount of chemical used.

Aeration, if any; at what point in purification system.

Disinfection, if any; kind and adequacy of equipment.

Storage of filtered water, whether in open or closed basin.

Adequacy of filter control; continuous or part time attendance.

Frequency and character of analyses of samples of water.

Examples of sanitary defects are—

Existence of by-passes through which unfiltered water may be delivered to the distribution system without proper supervision.

Inadequacy of works, necessitating excessive overloading or by-passing.

Inadequate protection of purified water.

(E) PUMPING STATION

Number and capacity of pumps, including reserve; condition of equipment and method of operation.

Examples of sanitary defects are—

Leaky suction pipe.

Pump not self-priming; unsafe water used for priming.

Suction well unprotected from surface or subsurface pollution.

Suction well subject to pollution through back-flow of polluted water through drain.

(F) DISTRIBUTION SYSTEM

Area and population supplied.

Type of distribution system; whether by gravity, direct pumping indirect pumping, etc.

Use, location and capacity of reservoirs and standpipes.

Adequacy of distribution system.

Examples of sanitary defects, are—

Existence of cross-connections between primary supply and secondary supply of unsafe quality, for fire protection, emergency or industrial supply.

Return to the system of any water used for cooling, hydraulic operations, etc.

Inadequate protection of distribution reservoir.

Intermittent service, resulting in reduced or negative pressure in distribution system.

New connections of pipe lines joined to the system without prior disinfection of pipes.

Existence of tile or other leaky pipe in distribution system.

Use of lead pipe for house services with water of corrosive quality.

4. The agent who makes the sanitary survey should submit his personal opinion as to the sanitary character of the supply based on his field survey.

Appendix II

THE BACTERIOLOGICAL STANDARD

The bacteriological examinations which have come to be generally recognized as of most value in the sanitary examination of water supplies, are—

(1) The count of total colonies developing from measured portions planted on gelatin plates and incubated for 48 hours at 20°C.

(2) A similar count of total colonies developing on agar plates incubated for 24 hours at 37°C (or in some laboratories incubated 48 hours at 20°C).

(3) The quantitative estimation of organisms of the *B. coli* group by applying specific tests to multiple portions of measured volume.

Of these three determinations, the test for organisms of the *B. coli* group is almost universally conceded to be the most significant, because it affords the most nearly specific test for the presence of fecal contamination. The committee has, therefore, agreed, after full consideration, to include only this test in the bacteriological standard recommended, believing that neither the 37°C nor the 20°C plate count would add information of sufficient importance to warrant complicating the standard by including them in the required examination. The omission of plate counts from the standard is not to be construed, however, as denying or minimizing their importance in routine examinations made in connection with the control of purification processes. On the contrary, the committee wishes to record its opinion that one or both plate counts are of definite value in such examinations, and to emphasize that it is chiefly in the interest of simplicity that they have been omitted from the standard here proposed.

For the purposes of this standard the *B. coli* group is defined as in the Standard Method of Water Analysis issued by the American Public Health Association, 5th edition, 1923, p. 100, namely, "as including all nonspore-forming bacilli which ferment lactose with gas formation and grow aerobically on standard solid media."

In accordance with this definition, it is recommended that the procedure required for demonstration of the *B. coli* group be that prescribed in Standard Methods of Water Analysis (5th ed., 1923) for the so-called "completed test," and that this reference be considered to apply to all details of technique, including the selection and preparation of apparatus and culture media, the collection and handling of samples, and allowable intervals between collection and examination. Since the standard procedure cited in this reference does not require differentiation between the various forms or types which are included under the general definition of the *B. coli* group as given above, it has not seemed advisable, in the present state of knowledge, to require such differentiation in the application of this standard.

The principles involved in the quantitative interpretation of fermentation test in multiple portions of equal volume and in portions constituting a geometric series (e. g., 10 c. c., 1 c. c., 0.1 c. c., etc.) are fully discussed in Appendix III. As is therein demonstrated, the testing of multiple portions of equal volume affords a more precise measure of the density of *B. coli* within a relatively narrow range of variation than does the testing of portions in geometric series. Therefore, since the waters which will be offered for certification will, for the most part, represent only a narrow range of moderate pollution, it is required that the examination of each sample shall consist of the separate testing of five equal portions of 10 c. c. each.[2] There is, of course, no essential reason why the number of portions tested should be five, rather than some larger number, except that it is necessary to limit the labor and materials required, and five portions are considered sufficient for such precision as is ordinarily requisite.

With reference to the total number of samples which must be submitted for examination, and the intervals at which they must be collected, it has not seemed practicable to lay down any hard and fast requirements. It is obviously desirable, from the standpoint of precision and significance of results, to examine a large number of samples collected at frequent, and preferably at regular intervals. But against the advantages of frequent and regular sampling must be balanced its practical difficulties and the consideration that the number and spacing of samples required depend upon the quality of the supply in question, the nature of its source, and the character and consistency of its protection. For example, less frequent examinations would be required in the case of water from a deep well, apparently exposed to no dangerous pollution and showing no evidence of contamination on occasional examination, than

[2] It is, however, advisable, especially in the examination of waters of unknown quality, or which may be suspected to be highly polluted, to make simultaneous tests in portions of a geometric series, ranging from 10 c. c. to 0.1 c. c. or less.

in the case of a supply drawn from a dangerously polluted stream and depending upon consistently maintained artificial treatment for its protection. All that it is considered proper to require, then, as to the number and spacing of samples examined is that they shall be sufficient, in the judgment of the certifying authority, to indicate the quality of the supply, with due regard to all facts known as to its source and protection.

In accordance with these principles, the first requirement stated in the standard, namely, that "not more than 10 per cent of all the 10 c. c. portions tested shall show the presence of *B. coli*" may be interpreted as implying that the mean density of *B. coli* shall not exceed about 1 per 100 c. c. The second clause of the standard, which specifies that not more than 5 per cent of samples tested (or not more than one sample if the whole number tested be less than twenty) shall show the presence of *B. coli* in three or more of the five 10 c. c. portions, is more complex in its implications and more difficult to explain. It recognizes that, according to the laws of chance, this result would occur in a certain small proportion of the samples tested, even though the mean density of *B. coli* in the whole body of water tested actually remained constant at about 1 per 100 c. c. or less, and consequently that it warrants no inference of actual fluctuations in density unless it occurs with considerably greater frequency than would be expected according to the theory of chance occurrences. A much more frequent occurrence, sufficient to indicate occasional high pollution, is believed, however, to be an omen of potential danger, even though the average quality of the water should be satisfactory (that is, in conformity to the first provision of the standard). This clause of the standard undertakes, therefore, to set a limit to the allowable frequency of positive results in three or more portions of any sample. It is necessary, in so doing, to recognize that water supplies actually do vary in pollution from day to day, and that in many instances the series of tests which will be considered may be small, hence the limit (5 per cent) is set at a frequency which is much higher than might reasonably be expected in a large series of samples from a water in which the actual density of *B. coli* never greatly exceeded 1 per 100 c. c.

In the bacteriological standard which is proposed the committee has undertaken to establish two limiting values to the density of *B. coli*, one limit applying to the mean density as calculated from the entire series of tests made and one to the range and frequency of occasional deviations from this mean. The mathematical principles applied to the interpretation of fermentation tests with reference to these two limits are discussed in Appendix III, where it is demonstrated:[3]

[3] These demonstrations are, of course, subject to the assumption that the distribution of B. coli in the water tested is random, which is an entirely reasonable assumption.

1. That where 10 per cent of the 10 c. c. portions tested are positive, the most probable density of *B. coli* is about 1 per 100 c. c., subject to a probable error which is proportionate to the number of portions tested.

2. That given this or a lesser mean density, consistently maintained in the water from which the samples are drawn, less than 1 per cent of the samples in a large series would be expected to show *B. coli* in three or more of the five 10 c. c. portions tested.

As to the reasons for specifying these particular limiting values rather than some other values, either higher or lower, it is obvious that the assignment of any definite limits of bacterial content as a criterion of the safety of water supplies of diverse origin and history must necessarily be an arbitrary procedure, because the relation which the determinable bacterial content bears to the actual safety of a water supply is variable and to some extent indeterminate. Therefore, all that may be claimed for the standards proposed is that, in the judgment of this committee, they are reasonable; that is, are consistent with the other requirements specified as to source and protection of the water supplies in question, afford an ample guarantee of safety, and can be met without too costly and burdensome effort.[4]

Appendix III

B. COLI DENSITIES AS DETERMINED FROM VARIOUS TYPES OF SAMPLES

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(Prepared by request of the committee in connection with the work of the Subcommittee on Bacteriological Standards)

The fundamental formula for the determination of the probabilities of occurrence of different densities of *B. coli* from the results of any of the usual sampling procedures has been clearly developed in an article by Greenwood and Yule (1) on bacteriological water analysis.[5] The following quotation from this article gives the derivation of this basic formula:

"If in the water from which samples of, say, 1 c. c. each are drawn, there exist *B.* bacilli in all in a total volume of *W.* c. c. of water, then, the distribution of bacilli being assumed to be random, the probably numbers of c. c. with 0, 1, 2, 3, — bacilli in each are given by the binomial expansion of

$$\left(\frac{W-1}{W}+\frac{1}{W}\right)^{B} \qquad (1)$$

[4] In connection with this last consideration, the committee has analyzed the records of daily examinations of a considerable number of municipal water supplies for the years 1919 to 1922 and finds that a substantial majority of them conform to both requirements of the standard.

[5] A previous treatment of this problem is that of McCrady (1915). See reference (2) in appended bibliography.

Since B and W are both very large indeed, (1) becomes, by a well-known transformation originally given by Poisson:

$$e^{-\lambda}\left(1+\lambda+\frac{\lambda^2}{\underline{|2}}+\frac{\lambda^3}{\underline{|3}}+\text{----}\right) \tag{2}$$

where $\lambda=\frac{B}{W}$. The problem then reduces itself to that of determining the appropriate value of λ and the probable reliability of its determination."

Examination of equation (2) shows that the probability of a sample of 1 c. c. being found to be negative is $e^{-\lambda}$. The probability that a sample of N c. c. will be negative is therefore $e^{-N\lambda}$, and that it will be positive is $1-e^{-N\lambda}$. These probabilities must furnish the basis for the solution of any problem of determining *B. coli* densities from the results of sampling processes.

SAMPLES IN GEOMETRIC SERIES

The usual test in this country in water examination consists in taking a series of samples the sizes of which run in geometric progression as, for example, 100 c. c., 10 c. c., 1 c. c., 0.1 c. c., and 0.01 c. c. We shall now examine the probable densities of *B. coli* arising from the different cases which may occur in this sampling procedure.

The following solution for the case where the sample shows 100+, 10+, 1−, 0.1−, 0.01−, will illustrate the method of determining the probabilities in any case. For this particular result the probability that the density of *B. coli* falls between the values 0 and k is given by

$$P=\frac{\int_0^K (1-e^{-100\lambda})\ (1-e^{-10\lambda})\ e^{-\lambda}\ e^{-.1\lambda}\ e^{-.01\lambda}\ d\lambda}{\int_0^\infty (1-e^{-100\lambda})\ (1-e^{-10\lambda})\ e^{-\lambda}\ e^{-.1\lambda}\ e^{-.01\lambda}\ d\lambda}$$

$$\text{Now}\int_0^\infty (1-e^{-100\lambda})\ (1-e^{-10\lambda})\ e^{-\lambda}\ e^{-.1\lambda}\ e^{-.01\lambda}\ d\lambda=.8100018$$

Therefore the probability curve of densities is

$$y=1.234565\ (e^{-1.11\lambda}-e^{-11.11\lambda}\ e^{--101.11\lambda}+e^{-111.11\lambda})$$

The cases likely to arise in using the geometric series are as follows:

	100 c. c.	10 c. c.	1 c. c.	0.1 c. c.	0.01 c. c.
(a)	+	−	−	−	−
(b)	+	−	+	−	−
(c)	+	+	−	−	−
(d)	+	+	−	+	−
(e)	+	+	+	−	−

The above cases are listed in order according to the sizes of the most probable density. Cases (b) and (d) are commonly called

inconsistences, but, as will be seen in the following discussion, they lead to as logical curves as do the other cases.

The equations of the probability curves for these cases are as follows:

(a) $y = 12.344331\ (e^{-11.11\lambda} - e^{-111.11\lambda})$.

(b) $y = 113.36297\ (e^{-10.11\lambda} - e^{-11.11\lambda} - e^{-110.11\lambda} + e^{-111.11\lambda})$.

(c) $y = 1.234565\ (e^{-1.11\lambda} - e^{-11.11\lambda} - e^{-101.11\lambda} + e^{-111.11\lambda})$.

(d) $y = 12.470554\ (e^{-1.01\lambda} - e^{-1.11\lambda} - e^{-11.01\lambda} + e^{-11.11\lambda} - e^{-101.01\lambda} + e^{-101.11\lambda} + e^{-111.01\lambda} - e^{-111.11\lambda})$.

(e) $y = 0.1222331\ (e^{-.11\lambda} - e^{-1.11\lambda} - e^{-10.11\lambda} + e^{-11.11} - e^{-100.11\lambda} + e^{-101.11\lambda} + e^{-110.11\lambda} - e^{-111.11\lambda})$.

The curves of these equations are shown on Graph I. The modes for the curves are as follows:

Curve	Mode	Most probable number of B. coli per 1,000 c. c. of water
(a)	0.023	23
(b)	0.094	94
(c)	0.230	230
(d)	0.944	944
(e)	2.312	2,312

The rapid change in the modes of these curves shows that the yardstick employed in the case of the geometric series, for measuring the extent of *B. coli* pollution, has very coarse divisions. For this reason the series is suitable for grading waters that vary widely in the extent of pollution.

Another feature of interest in the geometric series is that the form of the probability curve of densities of *B. coli*, and the mode of the curve, are almost entirely determined by the two tubes where the results change from + to −. For example, if we have a sample showing 100+, 10+, 1−, 0.1−, 0.01−, and another sample about which our only information is that 10 c. c. is positive and 1 c. c. is negative, curves for the two cases are—

$y = 1.234565\ (e^{-1.11\lambda} - e^{-11.11\lambda} - e^{-101.11\lambda} + e^{-111.11\lambda})$.

$y = 1.1\ (e^{-\lambda} - e^{-11\lambda})$.

The forms of these curves are shown on Graph II, in which we see that the curves are not significantly different. The mode of the first one is at 0.23027, and of the second at 0.23979. Thus the additional information given by the terms 100+, and 0.1−, 0.01−, has no effect in determining the value of the mode and of its probable error in the case here considered. The same fact holds for all of the consistent cases, and is in harmony with the usual method of interpreting the results of the consistent cases. In the inconsistent cases, however, both changes of sign play a part in determining the most probable pollution and its probable error. These cases are shown

on Graph I as intermediate curves between two of the consistent cases, and it would be better to regard them as further subdivisions of the yardstick, having their own appropriate probabilities, than to treat them as inconsistencies.

CURVES ARISING FROM FIVE PORTIONS OF 10 C. C. EACH

The proposed standard involves a procedure wherein five tubes of 10 c. c. each are tested. The different types of single samples that may arise are given, with their equations and modes, in the following table:

Case	Number of tubes		Equation of probability curve	Mode	Most probable number of B. coli in 1,000 c. c.
	Negative	Positive			
a	5	0	$y=50\ e^{-30\lambda}$	0.000	0
b	4	1	$y=200\ e^{-40\lambda}\ (1-e^{-10\lambda})$	0.022	22
c	3	2	$y=300\ e^{-30\lambda}\ (1-e^{-10\lambda})^2$	0.051	51
d	2	3	$y=200\ e^{-20\lambda}\ (1-e^{-10\lambda})^3$	0.092	92
e	1	4	$y=50\ e^{-10\lambda}\ (1-e^{-10\lambda})^4$	0.161	161

The case of 5 positive portions out of 5 ten-c. c.'s tested leads to no determination of the probable pollution of the water.

The curves for these equations are shown on Graph III.

A comparison of the most probable number of *B. coli* per 1,000 c. c. for the above cases with the corresponding terms for the cases that arise in the geometric series method shows that we have in the proposed test a finer subdivision of the scale of pollution. We have, however, shortened our yardstick, so that it is not as suitable for measuring a wide range of pollution as is the geometric series of tests.

A question of greatest importance in determining the method to be used is that of the probable error of the results. In testing tubes of equal size, the most probable pollution and its probable error are easily determined by using the formulae below. If N tubes of 10 c. c. each are tested, n of these tubes giving negative results and m giving positive results, then the most probable number of *B. coli* per 10 c. c. is given by

$$\lambda=2.302585\ \log\frac{N}{N-m}$$

and the probable error of λ is given by

$$\text{P. E.}_{\lambda}=1.553068\sqrt{\frac{m}{N-n}}$$

These formulae are given by Greenwood and Yule in the article previously mentioned. Variations of them have been stated by several other writers.

Expressions for the most probable number of *B. coli* per unit of water, and for its probable error, can not be easily obtained in the case of the geometric series. We may, however, obtain some idea of the relative variability of the two methods of sampling by comparing single samples in two similar cases. In the case of 1 tube of 10 c. c. positive and 4 tubes of 10 c. c. each negative, the most probable pollution is 22 *B. coli* per 1,000 c. c. When, in testing by the geometric series, we have 100 c. c. positive and the remainder of the portions negative, the most probable number of *B. coli* per 1,000 c. c. is 23. Since the densities are practically identical in these two cases, we may compare their probability curves to determine which one has the greater variability. Turning to Graph IV, we see that the two curves have their modes, as stated, at 22 and 23. The curve for the samples taken according to the proposed method is much higher at its mode, and is much less broad in general than is the curve for the samples taken by the geometric series method. Thus the two samples indicate equal degrees of pollution, but the probable error to be ascribed to this degree of pollution is much less in the case of the proposed standard of five 10-c. c. portions than in the case of the more commonly used geometric series. This fact may also be brought out by deriving from each curve the probability that the number of *B. coli* per 1,000 c. c. is not greater than 80. For the proposed standard this probability is 0.869, whereas for the geometric series it is only 0.543.

THE PROPOSED STANDARD

The proposed standard places a limit on the mean pollution and also on the variability. It will, therefore, be of interest to examine both of these factors from the mathematical point of view.

Concerning the mean pollution the standard specifies that not more than 10 per cent of all the 10-c. c. standard portions examined shall show the presence of organisms of the bacillus coli group. For this limiting value we have the following equation expressing the probability that the water is polluted to any specified degree.

$$Y = A\ (e^{-90\lambda} - e^{-100\lambda})\ \frac{N}{10}$$

where

$$A = \frac{1}{\int_0^\infty (e^{-90\lambda} - e^{-100\lambda})\ \frac{N}{10}\, d\lambda}$$

and N is the total number of portions tested. The curves for the cases, $N = 10$, and $N = 50$, are plotted in Graph V. Most of the characteristics of this probability curve depend upon N. The position of the mode, that is, the most probable value of the pollution, is, however, independent of N, with a value of 10.5 *B. coli* per 1,000

c. c. This means that, when 10 per cent of the portions tested are positive the most likely pollution of the water is that expressed by a density of 10.5 *B. coli* per 1,000 c. c., or 1.05 per 100 c. c.

Although the position of the mode is independent of N, the height of the ordinate at the mode is not. This ordinate is a measure of the reliability of the predicted value of the density, the reliability increasing as the ordinate increases. The relationship between this ordinate and N, the number of portions, is shown in Graph VI. The curve indicates that it is well to have at least 100 portions in order that we may be out of the region of sharpest increase on this curve.

Another view of the increase in the reliability of the determination of the pollution with increasing N may be obtained by examining the distributions for the two cases shown on Graph V. It will be seen that the curve for $N=10$ is much more widely spread than is that for $N=50$.

Considering variability from another point of view, we may ask the following question: Assuming that the density of *B. coli* remains constant at the maximum limit set by the standard (10.5 *B. coli* per 1,000 c. c.), with what frequency should we expect to obtain, on the basis of simple sampling, the different results which may arise in a sample consisting of 5 portions of 10 c. c. each? Since the probability that a portion of 10 c. c. will be negative is given by $e^{-10\lambda}=0.9$, the required frequencies are given by the expansion of the binomial $(0.9+0.1)^5$. These frequencies are shown in the following table:

Number of + portions in sample (5 portions)	Per cent of samples having specified number of + portions	Per cent of samples having specified number of + portions or more
0	59.049	100.000
1	32.805	40.951
2	7.290	8.146
3	0.810	0.856
4	0.045	0.046
5	0.001	0.001

This table furnishes the basis of the second part of the proposed standard. We see that under the above assumption only 0.856 per cent of a given series of samples should by chance show three or more positive portions. The proposed standard specifies 5 per cent for this condition, thus allowing more variability than would be expected to arise from simple sampling.

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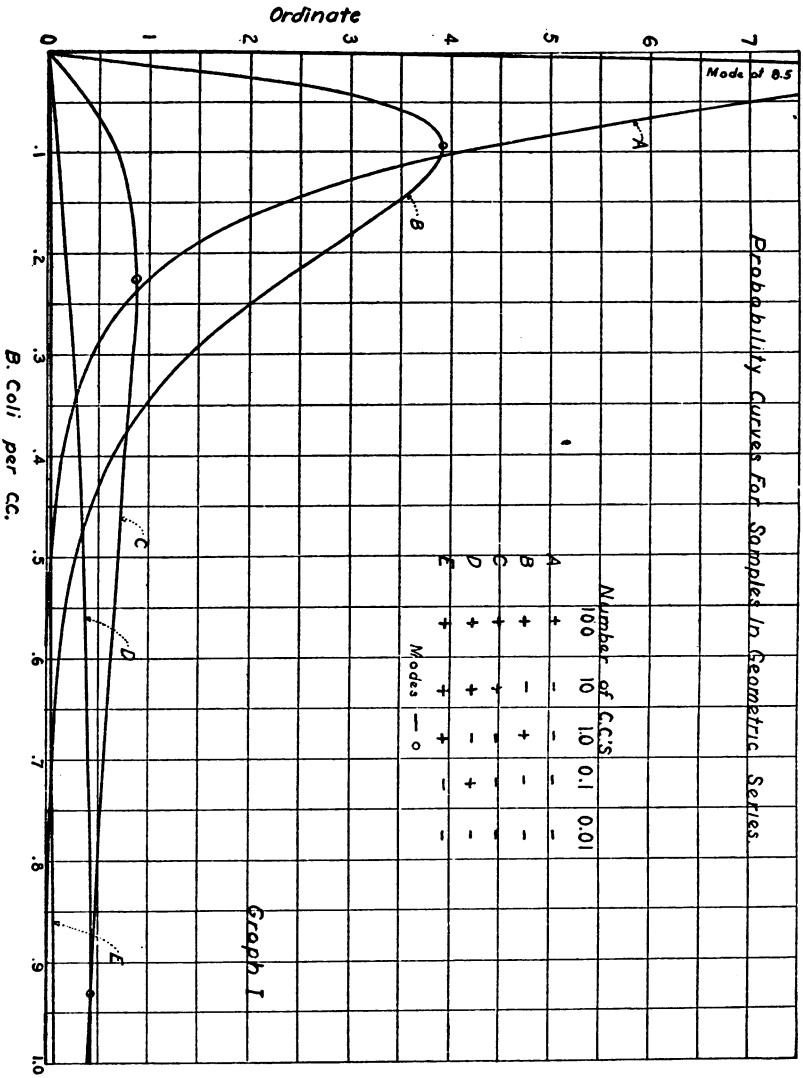
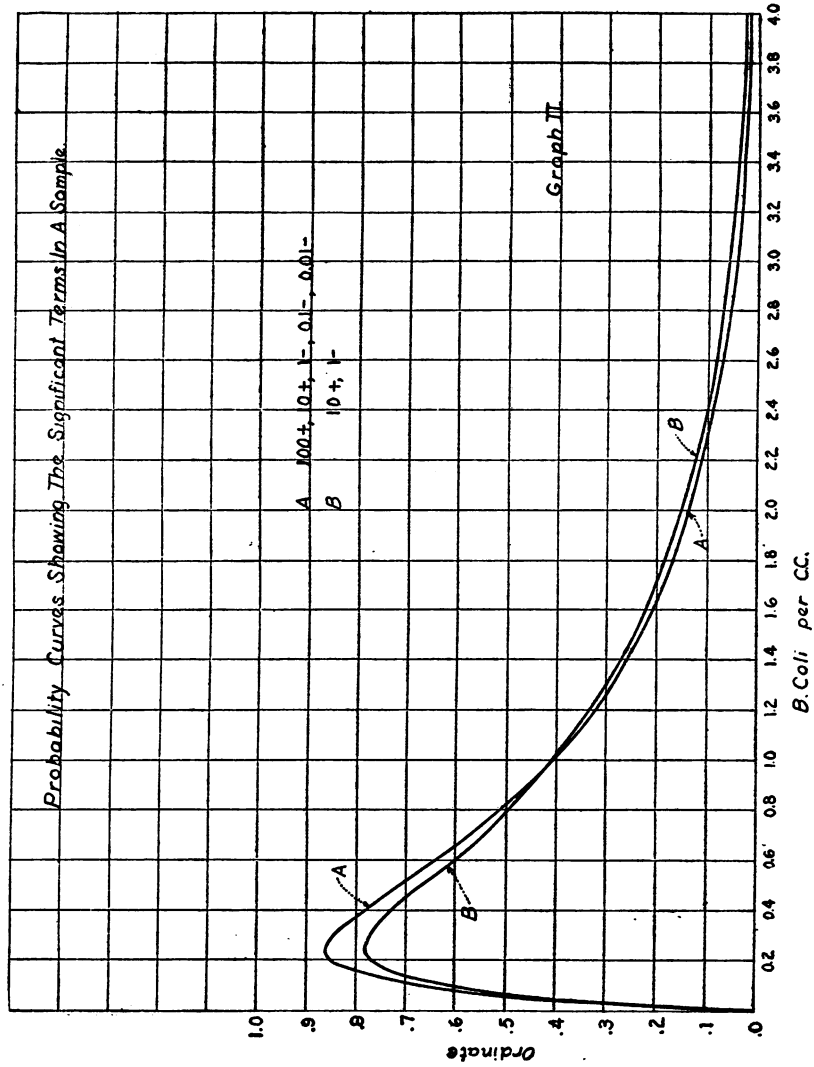
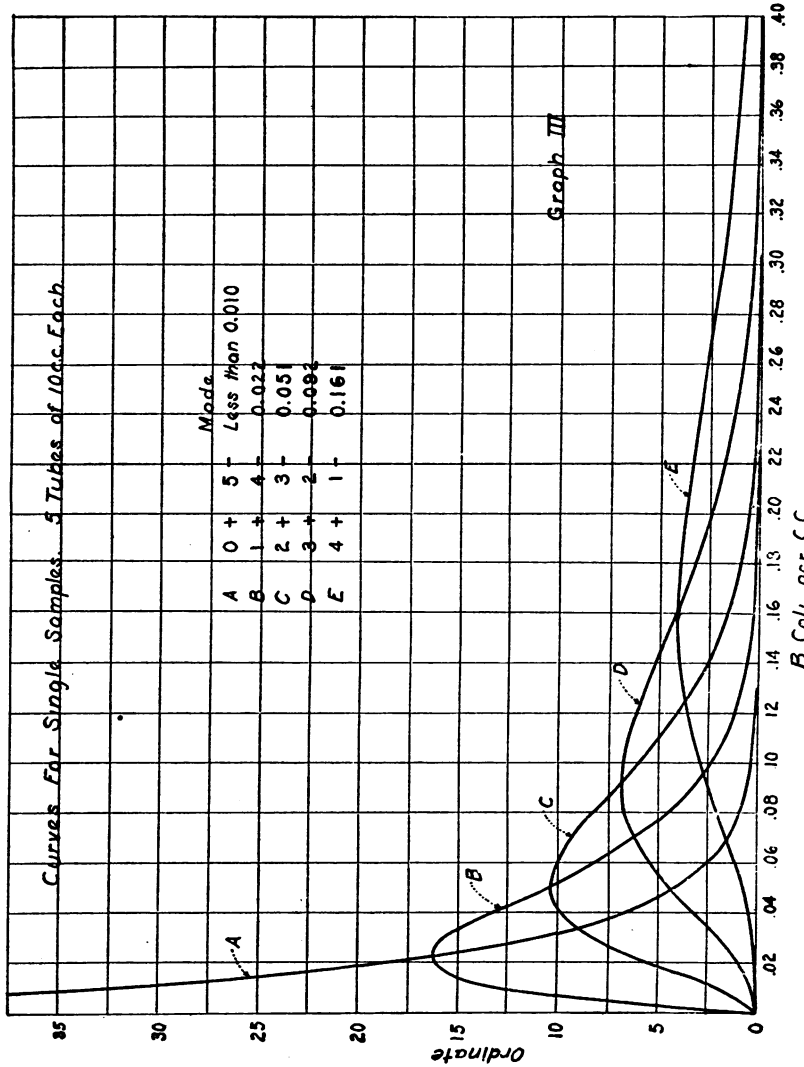

Probability Curves For Samples In Geometric Series.
Mode of 8.5
Ordinate
B. Coli per CC.
Number of C.C.'s
100 10 1.0 0.1 0.01
A + + + + +
B + - + - -
C + + - + -
D + + + - +
E + + + + -
Modes — 0
A
B
C
D
E
Graph I


Probability Curves Showing The Significant Terms In A Sample.
A 100+, 10+, 1-, 0.1-, 0.01-
B 10+, 1-
Graph III.
Ordinate
B. Coli per CC.
A
B
.0 .1 .2 .3 .4 .5 .6 .7 .8 .9 1.0
0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.2 2.4 2.6 2.8 3.0 3.2 3.4 3.6 3.8 4.0


Curves For Single Samples. 5 Tubes of 10cc. Each
Mode
A 0 + 5 - Less than 0.010
B 1 + 4 - 0.022
C 2 + 3 - 0.051
D 3 + 2 - 0.092
E 4 + 1 - 0.161
Graph III
Ordinate
B. Coli per C C
A
B
C
D
E
0
5
10
15
20
25
30
35
.02
.04
.06
.08
.10
.12
.14
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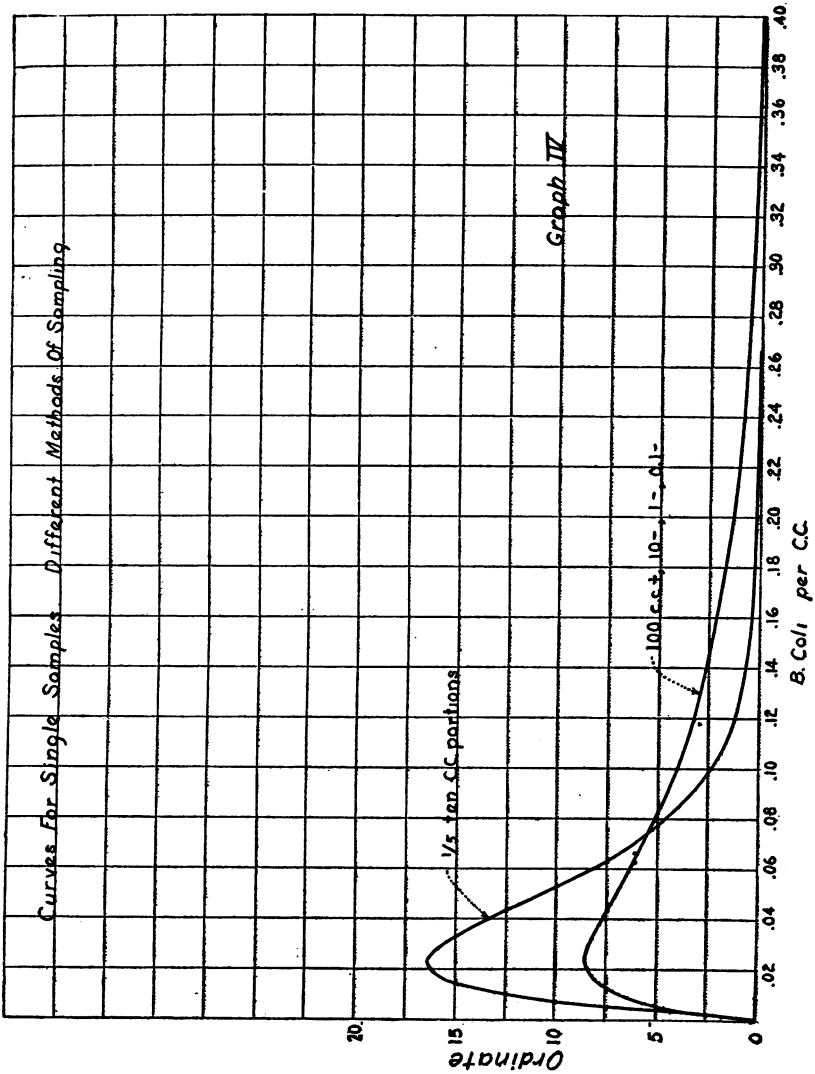
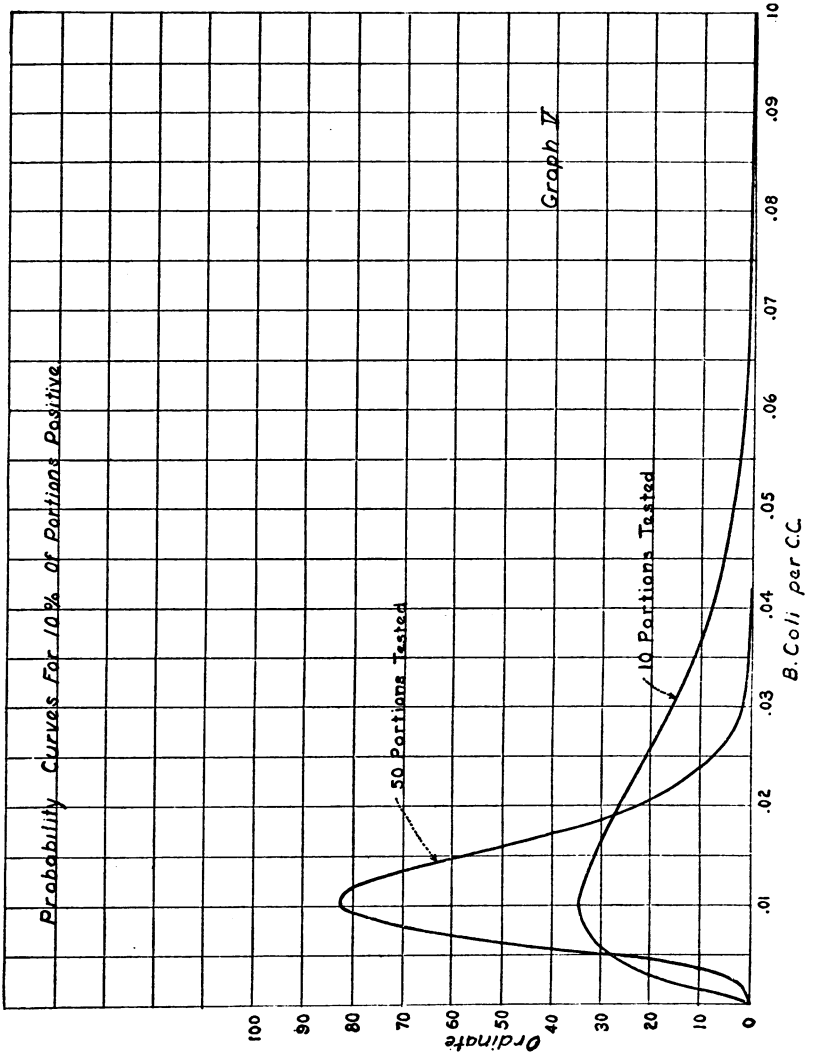
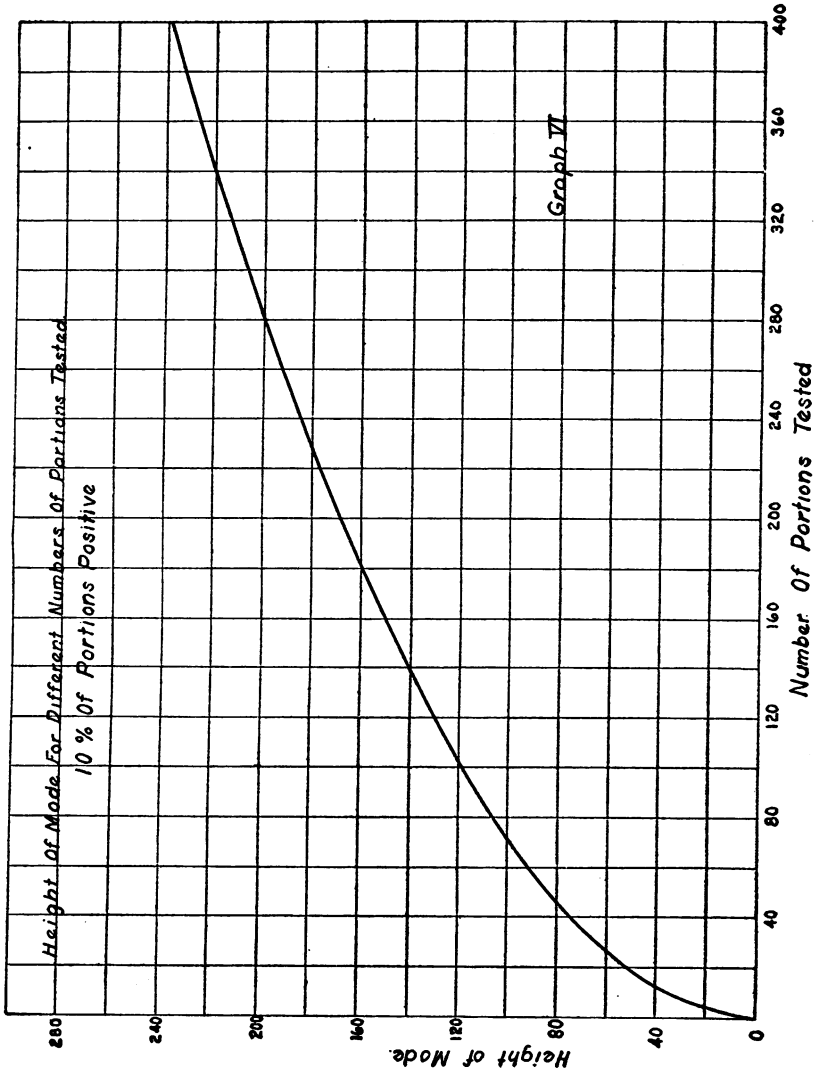
.18
.20
.22
.24
.26
.28
.30
.32
.34
.36
.38
.40


Curves For Single Samples Different Methods Of Sampling
Graph IV
Ordinate
20
15
10
5
0
.02
.04
.06
.08
.10
.12
.14
.16
.18
.20
.22
.24
.26
.28
.30
.32
.34
.36
.38
.40
B. Coli per C.C.
1/5 ten CC portions
100 c.c. 10- 1- 0.1-


Probability Curves For 10% of Portions Positive
Graph V
50 Portions Tested
10 Portions Tested
Ordinate
0
10
20
30
40
50
60
70
80
90
100
.01
.02
.03
.04
.05
.06
.07
.08
.09
.10
B. Coli per C.C.


Graph VI
Height Of Mode For Different Numbers Of Portions Tested
10 % Of Portions Positive
Height of Mode.
Number Of Portions Tested
0
40
80
120
160
200
240
280
40
80
120
160
200
240
280
320
360
400

Appendix IV

THE PHYSICAL AND CHEMICAL CHARACTERISTICS OF ACCEPTABLE WATER SUPPLIES

DEFINITION OF A SATISFACTORY WATER

With respect to chemical and physical characteristics a water, to be suitable for drinking and culinary purposes on common carriers engaged in interstate traffic, should be clear, colorless, odorless, pleasant to the taste, should be free from toxic salts, and should not contain an excessive amount of soluble mineral substances, nor of any chemicals employed in treatment.

QUANTITATIVE DESCRIPTION

In the quantitative description of acceptable supplies which follows, the values given are intended to represent the maximum which is considered to be ordinarily allowable in the water supplies to which this report refers. It is realized that in many localities supplies of water are available which do not approach the limits allowed here; and in such cases the best available supply should be used.

All values given in the following descriptions are in terms of parts per million, by weight, excepting values for turbidity and color, which are expressed in the arbitrary scales which are in general use. A statement of the methods of analysis recommended for the determination is given in each instance.[6]

PHYSICAL CHARACTERISTICS

1. *Turbidity* should not exceed 10 (silica scale) and in general it should not be more than 5.

Methods: Standard Methods of Water Analysis, American Public Health Association, 1923, p. 4.[6]

2. *Color* should not exceed 20 (standard cobalt scale) and preferably should be less than 10.

Methods: Standard Methods of Water Analysis, American Public Health Association, 1923, p. 8.[6]

3. There should be *no odor* of hydrogen sulphide, chlorine, or other substance; and the water should be free from odors caused by the presence of microscopic organisms.

CHEMICAL SUBSTANCES WHICH MAY BE PRESENT IN NATURAL WATERS

1. *Lead* (*Pb*) shall not exceed 0.1 p. p. m., and *Copper* (*Cu*) shall not exceed 0.2 p. p. m.

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[6] For the chemical determinations referred to in this report, the methods of analysis recommended by the Association of Official Agricultural Chemists are satisfactory and may be substituted for those recommended by the American Public Health Association, which are specifically cited.

Preliminary test (Hanford and Bartow's Method):

To 100 c. c. of the water add 2.0 gms. of pure crystalline ammonium chloride, 2 c. c. of acetic acid, and 2 or 3 drops of a 10 per cent solution of sodium sulphide. One or two c. c. of hydrogen sulphide water may be substituted for the sodium sulphide solution if desired. Compare immediately in nessler jars with standards prepared by adding known amounts lead nitrate to distilled water diluting to 100 c. c. and treating as directed for the sample. Standards should contain 0.01, 0.02, 0.03 mg. of lead (Pb). The method is sufficiently accurate when less than 0.3 p. p. m. lead or copper are represented.

If it is desirable to determine the amount of the metals with greater accuracy, the following methods are recommended:

Lead (Pb): Standard Methods of Water Analysis, American Public Health Association, 1923, p. 53.[7]

Copper (Cu): Standard Methods of Water Analysis, American Public Health Association, 1923, p. 55.[7]

2. *Zinc* (*Zn*) shall not exceed 5.0 p. p. m.

Methods: Standard Methods of Water Analysis, American Public Health Association, 1923, p. 54.[7]

3. *Sulphate* (SO_4) should not exceed 250 p. p. m.

Methods: Standard Methods of Water Analysis, American Public Health Association, 1923, p. 65.[7]

4. *Magnesium* (*Mg*) should not exceed 100 p. p. m.

Methods: Standard Methods of Water Analysis, American Public Health Association, 1923, p. 65.[7]

5. *Total Solids* should not exceed 1,000 p. p. m.

Methods: Standard Methods of Water Analysis, American Public Health Association, 1923, p. 25.[7]

6. *Chlorides* (*Cl*) should not exceed 250 p. p. m.

Methods: Standard Methods of Water Analysis, American Public Health Association, 1923, p. 42.[7]

7. *Iron* (*Fe*) should not exceed 0.3 p. p. m.

Methods: Standard Methods of Water Analysis, American Public Health Association, 1923, p. 46.[7]

CHEMICAL SUBSTANCES WHICH MAY BE PRESENT IN OVERTREATED WATERS

1. The water should contain *no caustic alkalinity.*

Methods: Based on determination of alkalinity, Standard Methods of Water Analysis, American Public Health Association, 1923, p. 34.[7]

2. The water should have *no odor or taste of free chlorine.*

3. The water should contain a residual alkalinity of at least 10 p. p. m. if it has been treated with sulphate of aluminium or other aluminium compound.

[7] See footnote p. 717.

Methods: Standard Methods of Water Analysis, American Public Health Association, 1923, p. 32.[7]

4. *The carbonates of sodium and potassium*, taken together and calculated as normal calcium carbonate, should not exceed 50 p. p. m.

Methods: Based on determination of alkalinity, Standard Methods of Water Analysis, American Public Health Association, 1923, p. 34.[7]

DISCUSSION

It is obvious that a water which is turbid, or colored to a degree which is easily noticeable, or which has an unpleasant or unusual odor or taste, will be looked upon with suspicion by the passengers and employees to whom it is served for drinking purposes, and that for this reason its use should not be permitted where clarification is practicable or where a more acceptable supply is available.

The presence of considerable amounts of calcium and magnesium salts makes the water unpleasant to use for washing, and also for drinking, to persons who have been accustomed to softer water, although, on the other hand, persons who are accustomed to the harder waters may find the softer waters less agreeable to their taste. While it is open to question whether it would be justifiable to require the dilution of hard water by distilled water in order to keep within the limits specified herein, it would be proper to require carriers to select the local supplies which most nearly fulfill the requirements of the standards with respect to mineral content.

In so far as the chemical composition of the water may cause inconvenience by its irritating effect upon the intestinal canal, or by any more serious effect upon well-being, the certifying authority will be justified in demanding that due regard be paid to the matter by common carriers. Unfortunately, it is difficult to secure reliable information concerning the physiological activity of salts as found in waters. Idiosyncracy is important. It is universally admitted, of course, that poisonous metals such as lead and copper should not be allowed in water for drinking or culinary purposes, but the difficult points are concerned with the less poisonous substances, or salts which are normally present. The effect of sulphates, especially of magnesium sulphate, is, however, well recognized, and it would be desirable to avoid the use of waters in which the concentration of these salts is sufficiently high to be annoying.

Where waters are treated with chemicals in order to soften them, or to purify them in any way, it is desirable that any excess of the chemicals used shall be avoided. Caustic alkalinity from excess of lime, more than a trace of the aluminium compounds added, or free chlorine, are objectionable in the effluent from a purification plant.

[7] See footnote p. 717.

In general, it is considered proper to insist that the effort should be made to find waters which are as satisfactory as possible from the standpoint of chemical characteristics but with due regard to the region within which the supply must be obtained.

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DIVISION OF VENEREAL DISEASES, JULY 1–DECEMBER 31, 1924

The accompanying tables present a summary of the activities of the venereal disease clinics and the number of cases of venereal diseases reported to State boards of health during the six months ended December 31, 1924.

A semiannual summary of the activities of 502 venereal disease clinics during the latter half of 1924 is presented in Table 1. During this period 32,592 cases of syphilis were admitted to the clinics, that disease constituting slightly more than half the total number of cases. The ratios were as follows: Syphilis, 54 per cent; gonococcus infection, 43.2 per cent; chancroid, 2.8 per cent. During the half year 1,202,609 treatments were given, including 278,398 doses of arsphenamine. The clinics discharged as noninfectious 26,916 patients.

Table 2 shows that a total of 183,726 cases of syphilis, gonorrhea, and chancroid were reported to State boards of health during the last six months of 1924. The proportions of these diseases reported are: Syphilis, 52.8 per cent; gonorrhea, 45.2 per cent; chancroid, 2.0 per cent.

TABLE 1.—*Summary of reports of venereal disease clinics, including those operating under the joint control of the United States Public Health Service and State boards of health, for the six months, July 1–December 31, 1924*[1]

State	Total number of clinics reporting	Total number of reports received	Patients admitted				Patients discharged as non-infectious	Treatments given	Doses of arsphenamin given	Wassermann tests made	Microscopic examinations (gonococcus)
			Total	Syphilis	Gonorrhea	Chancroid					
United States	502	2,803	60,401	32,592	26,120	1,689	26,916	1,202,609	278,398	166,888	109,612
Alabama	14	81	3,903	2,643	1,151	109	2,323	57,166	22,029	6,727	1,261
Arizona[2]											
Arkansas	10	55	1,716	1,189	505	22	1,244	31,374	6,954	4,294	1,428
California	11	66	3,597	1,945	1,612	40	555	54,775	19,292	10,420	3,271
Colorado	9	54	587	292	283	12	366	9,698	2,048	815	721
Connecticut	6	36	464	200	251	13	240	7,781	1,866	827	819
Delaware	2	12	159	86	63	10	70	1,447	552	107	54
Florida	10	55	862	517	286	59	451	6,837	2,431	1,308	451
Georgia	6	36	1,419	1,119	239	61	183	18,368	7,195	4,524	537
Idaho[2]											
Illinois	27	160	6,060	2,508	3,388	164	2,267	208,260	20,776	22,891	21,313
Indiana	19	114	2,235	886	1,273	76	563	65,684	9,880	4,149	1,703
Iowa[3]	10	44	619	381	238		195	11,810	4,761	1,440	1,034
Kansas	9	43	492	300	191	1	381	19,253	2,797	1,474	905
Kentucky	17	91	2,838	1,262	1,517	59	1,273	28,890	8,093	3,141	1,917
Louisiana	6	27	1,971	1,198	708	65	1,201	15,899	7,050	2,154	981
Maine	4	21	129	84	40	5	94	2,034	1,097	354	220
Maryland	15	81	1,358	550	695	113	123	25,094	6,683	1,871	2,194
Massachusetts	46	255	3,231	1,686	1,544	1	1,000	96,694	25,079	14,624	11,293
Michigan	17	98	3,750	1,931	1,803	16	724	68,439	13,627	14,624	13,180
Minnesota	4	24	420	172	247	1	244	13,051	3,190	1,193	612
Mississippi	2	12	156	103	43	10	61	1,377	822	81	155
Missouri	15	73	1,089	696	386	7	453	18,817	4,109	2,608	816
Montana	2	11	27	7	17	3	23	144	35	15	49
Nebraska	6	34	637	302	304	31	257	18,228	3,822	1,933	2,667
New Hampshire	4	23	64	22	42		10	3,569	962	213	137
New Jersey	19	109	1,077	638	432	7	287	25,087	6,118	2,726	1,811
New Mexico[4]	2	8	27	20	7		19	474	260	82	44
New York	43	250	2,430	1,511	887	32	2,385	62,427	17,608	5,126	2,715
North Carolina	6	32	1,095	666	369	60	417	6,710	4,221	1,533	189
North Dakota	2	12	24	9	15		21	244	30	38	88
Ohio	45	259	4,877	2,528	2,248	101	2,822	96,433	18,196	15,283	9,386
Oklahoma	3	15	443	273	160	10	244	11,171	2,453	620	453
Oregon	1	6	237	144	93		15	3,265	881	499	426
Pennsylvania	46	258	2,482	1,279	1,144	59	2,019	67,015	13,511	5,707	2,423
Rhode Island	5	30	345	160	184	1	125	6,543	2,707	2,735	1,328
South Carolina	3	18	1,256	647	557	52	738	20,727	4,831	1,185	3,106
South Dakota	2	12	34	9	23	2	12	413	78	61	63
Tennessee	5	27	2,612	1,527	838	247	1,222	41,191	9,680	10,513	3,888
Texas	4	20	1,826	915	752	159	922	27,793	6,312	3,575	6,430
Utah	2	11	196	86	102	8	95	2,593	621	360	323
Vermont	4	24	30	20	10		10	606	471	132	63
Virginia	9	51	1,450	934	466	50	485	13,438	6,581	5,526	1,720
Washington	3	18	697	304	388	5	373	13,475	2,236	3,016	2,662
West Virginia	13	53	715	463	239	13	229	11,199	3,467	1,163	909
Wisconsin	13	78	673	337	334	2	153	6,504	2,790	4,808	2,701
Wyoming	1	6	92	43	46	3	22	522	196	415	1,166

[1] Includes correctional and penal institutions.
[2] No clinics.
[3] For five months.
[4] For four months.

TABLE 2.—*Cases of venereal diseases reported to State boards of health, July 1, 1924, to December 31, 1924*

State	Total	Syphilis	Gonorrhea	Chancroid
United States	183,726	97,007	83,097	3,622
Alabama	6,023	3,512	2,338	173
Arizona	179	101	75	3
Arkansas	2,272	1,415	825	32
California	9,393	5,146	4,134	113
Colorado	1,236	442	761	33
Connecticut	1,216	622	593	1
Delaware	298	86	177	35
Florida	3,800	2,492	1,204	104
Georgia	4,940	2,657	2,069	214
Idaho	133	39	93	1
Illinois	15,862	5,136	10,403	323
Indiana	2,288	937	1,277	74
Iowa	1,737	1,019	712	6
Kansas	1,003	353	647	3
Kentucky	21,640	14,898	6,563	179
Louisiana	3,890	2,002	1,644	244
Maine	611	223	383	5
Maryland	2,939	1,356	1,386	197
Massachusetts	7,144	2,818	4,325	1
Michigan	12,365	6,693	5,595	77
Minnesota	5,050	2,336	2,679	35
Mississippi	12,763	5,216	7,537	10
Missouri	4,091	1,543	2,038	510
Montana	310	195	113	2
Nebraska	1,782	560	1,167	55
New Hampshire	240	90	149	1
New Jersey	3,186	1,767	1,381	38
New Mexico [1]	131	30	100	1
New York	18,854	13,396	5,423	35
North Carolina	3,055	1,573	1,392	90
North Dakota	563	100	463	
Ohio	4,877	2,528	2,248	101
Oklahoma	1,926	1,223	691	12
Oregon	920	228	688	4
Pennsylvania	2,483	1,280	1,144	59
Rhode Island	561	229	331	1
South Carolina	2,302	1,459	779	64
South Dakota	403	55	340	8
Tennessee	3,576	1,989	1,318	269
Texas	8,361	4,603	3,442	316
Utah	196	86	102	8
Vermont	316	126	190	
Virginia	1,710	1,023	635	52
Washington	914	402	502	10
West Virginia	4,259	2,649	1,539	71
Wisconsin	1,854	334	1,471	49
Wyoming	74	40	31	3

[1] For three months.

PUBLIC HEALTH SERVICE PUBLICATIONS

A List of Publications Issued During the Period April, 1924, to March, 1925

Below is given a list of publications of the United States Public Health Service issued during the period April, 1924, to March, 1925.

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

All of the publications listed, except those marked with an asterisk (*), are available for free distribution and, as long as the supply lasts, may be obtained by addressing the Surgeon General, United States Public Health Service, Washington, D. C. Those publications

marked with an asterisk are not available for free distribution, but may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D. C., *at the prices noted.* (Send no remittances to the Public Health Service.)

Reprints from the Public Health Reports

911. Outbreaks of Botulism at Albany, Oregon, and Sterling, Colo., February, 1924. By Frederick D. Stricker and J. C. Geiger. April 4, 1924. 11 pages.
*912. Some Tendencies Indicated by the New Life Tables. By Rollo H. Britten. April 11, 1924. 13 pages, 5 cents.
913. A Method for the Estimation of Total Sulphur in Neoarsphenamine and Sulpharsphenamine. By Elias Elvove. April 11, 1924. 5 pages.
914. Sickness Among 21,000 Automobile Workers. Morbidity Experience of the Flint and Pontiac (Michigan) Sick Benefit Associations in 1921 and 1922. By Dean K. Brundage. April 18, 1924. 13 pages.
*915. Studies on Oxidation-Reduction. VI. A preliminary Study of Indophenols: (A) Dibromo Substitution Products of Phenol Indophenol; (B) Substituted Indophenols of the Ortho Type; (C) Miscellaneous. By Barnett Cohen, H. D. Gibbs, and W. Mansfield Clark. April 18, 1924. 20 pages. 5 cents.
916. Spontaneous Hatching of Clonorchis Ova. By N. E. Wayson. April 25, 1924. 2 pages.
*917. Factors in the Mental Health of Boys of Foreign Parentage. A Study of 240 Boys of Foreign Parentage Known to a Child Welfare Agency 1916–1923. By Mary C. Jarrett. April 25, 1924. 21 pages. 5 cents.
918. Relative Efficiency of Methods of Sterilization of Milk Bottles at Pasteurization Plants in Minnesota. By H. A. Whitaker, R. W. Archibald, and L. Shere. May 2, 1924. 8 pages.
919. The Notifiable Diseases. Prevalence in Small Cities, 1922. May 2, 1924. 93 pages.
920. Epidemiological Principles Affecting the Distribution of Malaria in Southern United States. By Kenneth F. Maxcy. May 16, 1924. 16 pages.
921. Extent of Rural Health Service in the United States, 1920–1924. By L. L. Lumsden. May 16, 1924. 10 pages.
922. Whole-Time County Health Officers, 1924. May 16, 1924. 4 pages.
923. Public Health Service Publications. A List of Publications Issued Between October, 1923, and April, 1924. April 25, 1924. 4 pages.
924. The Prevalence and Trend of Drug Addiction in the United States and Factors Influencing It. By Lawrence Kolb and A. G. DuMez. May 23, 1924. 26 pages.
925. Some Experiments on the Antigenic Principles of Ragweed Pollen Extract (*Ambrosia elatior* and *Ambrosia trifida*). By W. T. Harrison and Charles Armstrong. May 30, 1924. 6 pages.
926. Health by Radio. Vitamins. May 30, 1924. 5 pages.
927. Some Publications Suitable For General Distribution. May 30, 1924. 10 pages.
928. Absenteeism Because of Sickness in Certain Schools in Cleveland, 1922–23. By G. E. Harmon and G. E. Whitman. June 6, 1924. 8 pages.

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929. Disabling Sickness in Cotton Mill Communities of South Carolina in 1917. A Study of Sickness Prevalence and Absenteeism, as Recorded in Repeated Canvasses in Relation to Seasonal Variation, Duration, Sex, Age, and Family Income. By Dorothy Wiehl and Edgar Sydenstricker. June 13, 1924. 27 pages.
930. City Health Officers, 1924. Directory of Those in Cities of 10,000 or More Population. June 13, 1924. 11 pages.
931. The Prevention and Treatment of Hay Fever. By William Scheppegrell. June 20, 1924. 12 pages.
932. Adsorption by Aluminium Hydrate Considered as a Solid Solution Phenomenon. By Lewis B. Miller. June 20, 1924. 14 pages.
933. Past Incidence of Certain Communicable Diseases Common Among Children. Occurrence of Measles, Whooping Cough, Mumps, Chicken Pox, Scarlet Fever, and Diphtheria, Among School Children in Various Localities in the United States. By Selwyn D. Collins. June 27, 1924. 16 pages.
934. The Alabama System of Notifiable Disease Reports. By Kenneth F. Maxcy. July 4, 1924. 10 pages.
935. Safeguarding the Sanitary Quality of Drinking and Culinary Water Supplied on Interstate Carriers. By E. C. Sullivan. July 4, 1924. 16 pages.
936. Effect of Oil Pollution of Coast and Other Waters on the Public Health. By Committee Consisting of F. W. Lane, A. D. Bauer, H. F. Fisher, and P. N. Harding. July 11, 1924. 6 pages.
937. The Notifiable Diseases. Prevalence During 1923 in Cities of Over 100,000. July 11, 1924. 32 pages.
938. A Study of the Incidence of Disabling Sickness in a South Carolina Cotton Mill Village in 1918. Based on Records of a Continuous Canvass of Households During the Period March 1 to November 30, 1918. By Edgar Sydenstricker and Dorothy Wiehl. July 18, 1924. 16 pages.
939. The legal Aspects of Milk Control. By James A. Tobey. July 18, 1924. 8 pages.
940. Cancer and Proprietary Cures. July 18, 1924. 8 pages.
941. Thyroid Survey of 47,493 Elementary-School Children in Cincinnati. By Robert Olesen. July 25, 1924. 26 pages.
942. A Note on the Relationship of Tonsillectomy to the Occurrence of Scarlet Fever and Diphtheria. By James A. Doull. August 1, 1924. 8 pages.
943. The Biological Standardization of Insulin. II. The Mortality and Glucose-Protective Test in Rats as a Method for the Bio-Assay of Insulin. By Carl Voegtlin, Edith R. Dunn, and J. W. Thompson. August 8, 1924. 24 pages.
944. The Present Status of the Parasitic Nematode Family Ascaridæ. By C. W. Stiles and Gertrude Brown. August 8, 1924. 6 pages.
945. Sanitary Engineering Courses of Engineering Colleges in the United States. By Isador W. Mendelsohn. August 15, 1924. 8 pages.
946. The Notifiable Diseases. Prevalence in Small Cities, 1923. August 15, 1924. 107 pages.
947. The Income Cycle in the Life of the Wage Earner. By Edgar Sydenstricker, Wilford I. King, and Dorothy Wiehl. August 22, 1924. 8 pages.
948. Correspondence and Reading Courses in Public Health. August 22, 1924. 8 pages.
949. State and Insular Health Authorities, 1924. Directory, with Data as to Appropriations and Publications. August 22, 1924. 23 pages.
950. Pellagra in Relation to Milk Supply in the Household. By G. A. Wheeler. August 29, 1924. 4 pages.

951. A Plea for More Attention to the Nutrition of the School Child. By Taliaferro Clark. August 29, 1924. 9 pages.
952. Protection of Small Water Supplies Used by Railroads. By O. E. Brownell. September 5, 1924. 10 pages.
953. The Kata Thermometer: Its Value and Defects. By W. J. McConnell and C. P. Yagloglou. September 5, 1924. 16 pages.
954. Causes of Absences in One Grade of Fifteen Public Schools in Washington, D. C. By Louise Tayler-Jones. September 12, 1924. 10 pages.
955. Thyroid Enlargement Among Montana School Children. With Notes on the Possible Influence of the Place of Residence and the Use of Vegetables and Drinking Water Upon the Condition. By Fred T. Foard. September 12, 1924. 5 pages.
956. Per Capita Medicinal Requirements of Narcotics. Data Secured in a Narcotic Survey of Allgheny County, Md. By A. G. DuMez. September 12, 1924. 4 pages.
957. Morbidity Among School Children in Hagerstown, Md. Cases of Illness and Days Lost From School on Account of Illness Among White School Children During the School Months December, 1921, to May, 1923, inclusive. By Selwyn D. Collins. September 19, 1924. 32 pages.
958. A Study of Ragweed Pollen Extracts for Use in the Treatment of Ragweed Pollen Hypersensitiveness. By Charles Armstrong and W. T. Harrison. September 19, 1924. 8 pages.
959. Public Health Administration in Foreign Countries. Organization of the Public Health Service in Hungary. By George Gortvay, M. D. Public Health Administration in Poland. By Karl Ryder, M. D. September 26, 1924. 8 pages.
960. Child Hygiene and Related Publications Issued by the Public Health Service. September 26, 1924. 4 pages.
961. Developments in the Field of Mental Testing. By Helen H. Dolan. October 3, 1924. 18 pages.
962. Mortality from malaria 1919–1923. By Kenneth F. Maxcy. October 10, 1924. 4 pages.
963. Thyroid Enlargement Among Minnesota School Children. Prevalence as Shown by a Survey of 4,061 Childern in 13 Localities in 1923. By Robert Olesen and Taliaferro Clark. October 10, 1924. 14 pages.
*964. Cooperative Rural Work of the Public Health Service in the Fiscal Year 1924. By L. L. Lumsden. October 17, 1924. 25 pages. 5 cents.
965. Outbreak of Scarlet Fever Caused by Milk-Borne Infection. By Arthur Jordan. October 17, 1924. 7 pages.
966. Epidemiological Study of the Minor Respiratory Diseases by the Public Health Service. (Preliminary and Progress Report.) By J. G. Townsend. October 24, 1924. 12 pages.
967. Apparent Arrest of Leprosy by Early Surgical Treatment. Report of Reexamination of a Child in Whom Leprosy Developed at Ninteen Months of Age. By William J. Goodhue and H. E. Hasseltine. October 24, 1924. 4 pages.
968. A Comparative Study of the Schulte-Tigges and the Ziehl-Neelsen Methods of Staining *B. leprae*. By H. E. Hasseltine and P. J. Gorman. October 24, 1924. 3 pages.
969. Frequency of Disabling Illnesses Among Industrial Employees. Incidence of Illnesses from Important Causes Lasting Longer Than One Week Among 100,000 Persons in 1923, and a Summary of the Experience for 1920–1923. October 31, 1924. 10 pages.

970. Importation of Dead Bodies at the Port of New York. Requirements of the Various Governmental Agencies Concerned Regarding Importation and Transportation. October 31, 1924. 2 pages.
971. A Statewide Milk Sanitation Program. By Leslie C. Frank. November 7, 1924. 23 pages.
972. Some Specific Factors Responsible for Pollution or Affecting Analyses of Water Supplies. November 7, 1924. 4 pages.
973. Study of the Effect of Degree of Illumination on Working Speed of Letter Separators in a Post Office. By James E. Ives. November 14, 1924. 27 pages.
974. The Notifiable Diseases. Prevalence During 1923 in States. November 21, 1924. 96 pages.
975. The Eyesight of the School Child as Determined by the Snellen Test. A Statistical Study of the Results of Vision Tests of 9,245 Native White Children in New York State, Delaware, South Carolina, and Frederick County, Md., and of 2,636 White Children in Cecil County, Md. By Selwyn D. Collins. November 28, 1924. 15 pages.
976. Rocky Mountain Spotted Fever: Experimental Studies on Tick Virus. By R. R. Spencer and R. R. Parker. November 28, 1924. 13 pages.
977. Basal Metabolism Before and After Exposure to High Temperatures and Various Humidities. By W. J. McConnell and C. P. Yagloglou. December 5, 1924. 14 pages.
978. A Survey of Public Health Nursing in the State Departments of Health. Compiled by Lucy Minnigerode. December 12, 1924. 27 pages.
979. Variation in Eyseight at Different Ages, as Determined by the Snellen Test. A Statistical Study of the Results of Vision Tests of 4,862 Native White School Boys and 6,479 Male White Industrial Workers in the United States. By Selwyn D. Collins and Rollo H. Britten. December 19,1924. 6 pages.
980. Oil Pollution at Bathing Beaches. Prepared by a Committee Consisting of F. W. Lane, A. D. Bauer, H. F. Fisher, and P. N. Harding. December 19, 1924. 14 pages.
981. Cooperative Relations Between Official and Unofficial Health Agencies. By S. W. Welch. December 26, 1924. 9 pages.
982. Rocky Mountain Spotted Fever: Non-Filterability of Tick and Blood Virus. By R. R. Spencer and R. R. Parker. December 26, 1924. 5 pages.
983. Epidemic Goiter in Colorado. By Robert Olesen. January 2, 1925. 22 pages.
984. A Study of the Pellagra-Preventive Action of Dried Beans, Casein, Dried Milk, and Brewer's Yeast, with a Consideration of the Essential Preventive Factors Involved. By Joseph Goldberger and W. F. Tanner. January 9, 1925. 27 pages.
985. The Significance of the Proportion of Sexes Found Among Anopheles in Various Resting Places. By M. A. Barber, W. H. W. Komp and T. B. Hayne. January 16, 1925. 6 pages.
986. Studies on the Permeability of Living and Dead Cells. V. The Effects of $NaHCO_3$ and NH_4Cl Upon the Penetration into Valonia of Trivalent and Pentavalent Arsenic at Various H Ion Concentrations. By Matilda Moldenhauer Brooks. January 23, 1925. 23 pages.
987. Some Preliminary Observations from a Study of Water Filtration Plants Along the Ohio River. By H. W. Streeter. January 30, 1925. 11 pages.
988. Mild Typhus (Brill's Disease) in the Lower Rio Grande Valley. By Charles G. Sinclair and Kenneth F. Maxcy. February 6, 1925. 8 pages.

989. The Incidence of Illness in a General Population Group. General Results of a Morbidity Study from December 1, 1921, through March 31, 1924, in Hagerstown, Md. By Edgar Sydenstricker. February 13, 1925. 13 pages.
990. Studies on the Industrial Dust Problem. I. Dust Inhalation and its Relation to Industrial Tuberculosis. By Leonard Greenburg. February 13, 1925. 18 pages.
991. The Vacuum-Cyanide Method of Delousing Clothing and Baggage. Experimental Data upon Which the Procedure at the New York Quarantine Station is Based. By H. E. Trimble. February 20, 1925. 21 pages.
992. A Study of the Effects of Anions upon the Properties of "Alum Floc." By Lewis B. Miller. February 20, 1925. 17 pages.
993. Incidence of Sickness Among White School Children in Hagerstown, Md. Frequency of Illnesses During the School Year 1923–24 and a Summary of the Experience for 1921–1924. By Selwyn D. Collins. February 27, 1925. 14 pages.
994. The Pan American Sanitary Code. International Sanitary Convention signed at Habana, Cuba, November 14, 1924. March 13, 1925. 26 pages.
995. Drainage Ditches Covered Economically. Concrete Pipe Manufactured and Laid Cheaply in Emporia, Va. March 13, 1925. 8 pages.
996. Eight Weeks' Quinine Treatment for Malaria. A report of results as observed in a community with a high malaria incidence, in Dale County Ala. By T. H. D. Griffitts. March 20, 1925. 10 pages.
997. Absence of Transferable Immunizing Substances in the Blood of Morphine and Heroin Addicts. By A. G. Du Mez and Lawrence Kolb. March 20, 1925. 12 pages.
998. Results Obtained with the Dick Test Before and After Immunization with the Toxin of the Hemolytic Streptococcus of Scarlet Fever. By R. E. Dyer and B. T. Sockrider. March 27, 1925. 14 pages.
999. Foot Defectiveness in School Children. March 27, 1925. 4 pages.

Supplements to the Public Health Reports

45. State Laws and Regulations Pertaining to Public Health, 1921. Compiled by Jason Waterman, LL. B., and William Fowler, LL. B. 1924. 746 pages.
46. Standard Railway Sanitary Code. Approved by the conference of State and Provincial officers of health, and recommended to the several States for adoption May 25, 1920, and amended June 2, 1921. May 16, 1924. 13 pages.
47. State Laws and Regulations Pertaining to Public Health, 1922. Compiled by Jason Waterman, LL. B., and William Fowler, LL. B. 1925. 224 pages.
48. A Review of the Literature on Influenza and the Common Cold. By J. G. Townsend. 1924. 63 pages.
50. A Typhoid Fever Epidemic Caused by Oyster-borne Infection. By L. L. Lumsden, H. E. Hasseltine, J. P. Leake, and M. V. Veldee. 1925. 102 pages.

Public Health Bulletins

140. Studies in Illumination. I. The Hygienic Conditions of Illumination in Certain Post Offices, Especially Relating to Visual Defects and Efficiency. By Lewis R. Thompson, Louis Schwartz, James E. Ives, and Norris P. Bryan. July, 1924. 118 pages.

141. Studies Upon Leprosy. XXXVI. The Treatment of Leprosy with Derivatives of Chaulmoogra Oil. By H. E. Hassletine. XXXVII. (I) Fractionation of Chaulmoogra Oil. (II) Evidence of the Existence of a Highly Unsaturated Optically Active Acid. By Richard Wrenshall and Arthur L. Dean. XXXVIII. The Catalytic Reduction of Chaulmoogra and Hydnocarpic Acids. By Arthur L. Dean, Richard Wrenshall, and G. Fujimoto. XXXIX. The Treatment of Leprosy with Compounds of Antimony. By H. E. Hasseltine and P. J. Gorman. XL. The Formol-Gel Reaction in Leprosy. By H. E. Hasseltine. XLI. The Wassermann Reaction, Kolmer's New Complement Fixation Test, and the Kahn Precipitation Test in Leprosy. By H. E. Hasseltine. XLII. Results of the Removal of Children Born of Leprous Parents to Clean Environment and their Maintenance Therein. By H. E. Hasseltine. Appendix: Proctocol of Serum Tests in Leprosy. July, 1924. 72 pages.

*142. Transactions of the Fourth Annual Conference of State Sanitary Engineers, held at Washington, D. C., May 16 and 17, 1923. April, 1924. 82 pages. 15 cents.

*143. I. A Study of the Pollution and Natura Purification of the Ohio River. II. Report on Surveys and Laboratory Studies. By W. H. Frost, J. K. Hoskins, R. E. Tarbett, and H. W. Streeter. July, 1924. 343 pages. 60 cents.

144. Comparative Tests of Instruments for Determining Atmospheric Dusts. By S. H. Katz, E. W. Smith, W. M. Myers, L. T. Tronstel, Margaret Ingels, and Leonard Greenburg. December, 1924. 69 pages.

145. Biological Investigation of California Rice Fields and Attendant Waters, with Reference to Mosquito Breeding. By W. C. Purdy. December, 1924. 61 pages.

151. The Determination of Dissolved Oxygen by the Winkler Method. By Emery J. Theriault. March, 1925. 43 pages.

Hygienic Laboratory Bulletins

138. I. Studies on the Bio-Assay of Pituitary Extracts: Concerning the Use of a Desiccated Infundibular Powder as a Standard in the Physiological Evaluation of Pituitary Extracts. By Maurice I. Smith and Wm. T. McClosky. II. Some Factors Concerned in the Deterioration of Pituitary Extracts. By Maurice I. Smith and Wm. T. McClosky. April, 1924. 54 pages.

139. I. The Use of Cooked Meat Medium for the Detection of *C. tetani*. By Ida A. Bengtson. II. Studies on the Potency Testing of Pneumococcus Vaccines. By Ida A. Bengtson. III. The Adaptability of Various American Peptones for Use in Cholera Media. By Ida A. Bengtson. November, 1924. 60 pages.

Annual Report

Annual Report of the Surgeon General of the United States Public Health Service for the fiscal year 1924. 310 pages. Cloth.

Miscellaneous Publications

11. Official List of Commissioned and Other Officers of the United States Public Health Service; also List of United States Marine Hospitals, Quarantine, Immigration, Relief Stations, and Quarantine Vessels. July 1, 1924. 67 pages. Cloth.

Venereal Disease Publications

Venereal Disease Bulletin No. 77. Transactions of the Conference of Venereal Disease Control Officers of the State Health Departments and the United States Public Health Service, 1924.

Venereal Disease Information No. 1. Enforcement of Regulations Relating to Interstate Travel of Venereally Infected Persons.

Venereal Disease Information No. 2. Syphilis in Industry.

Venereal Disease Information No. 3. Workmen's Compensation Acts as Related to Syphilis.

DEATHS DURING WEEK ENDED MARCH 28, 1925

Summary of information received by telegraph from industrial insurance companies for week ended March 28, 1925, and corresponding week of 1924. (From the Weekly Health Index, April 1, 1925, issued by the Bureau of the Census, Department of Commerce.)

	Week ended Mar. 28, 1925	Corresponding week, 1924
Policies in force	59, 188, 650	55, 444, 579
Number of death claims	12, 662	11, 757
Death claims per 1,000 policies in force, annual rate	11. 2	11. 1

Deaths from all causes in certain large cities of the United States during the week ended March 28, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, April 1, 1925, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Mar. 28, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended Mar. 28, 1925 [2]
	Total deaths	Death rate [1]		Week ended Mar. 28, 1925	Corresponding week, 1924	
Total (64 cities)	7,791	14.8	[3] 14.9	896	[3] 987	
Akron	47			7	10	77
Albany [4]	46	20.0	18.9	2	3	44
Atlanta	69	15.5	20.4	10	11	
Baltimore [4]	236	15.5	18.2	28	28	82
Birmingham	86	21.8	16.4	7	7	
Boston	258	17.2	15.5	34	32	90
Bridgeport	45			5	4	79
Buffalo	159	15.0	13.7	19	33	77
Cambridge	30	13.9	12.1	5	3	86
Camden	37	15.0	17.3	8	4	131
Chicago [4]	780	13.6	13.3	94	99	83
Cincinnati	167	21.3	17.8	14	18	83
Cleveland	216	12.0	13.0	20	31	50
Columbus	119	22.7	17.3	16	5	150
Dallas	64	17.3	15.3	13	12	
Dayton	54	16.3	12.3	3	8	48
Denver	86			9	12	
Des Moines	35	12.2	14.0	3	5	51
Detroit	268			56	70	95
Duluth	25	11.8	13.5	6	3	127
Erie	26			4	4	78
Fall River [4]	43	18.5	11.6	0	8	144
Flint	20			4	5	66
Fort Worth	24	8.2	8.1	2	2	
Grand Rapids	39	13.5	12.7	6	6	93

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1924. Cities left blank are not in the registration area for births.
[3] Data for 63 cities.
[4] Deaths for week ended Friday, Mar. 27, 1925.

Deaths from all causes in certain large cities of the United States during the week ended March 28, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, April 1, 1925, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended Mar. 28, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended Mar. 28, 1925
	Total deaths	Death rate		Week ended Mar. 28, 1925	Corresponding week, 1924	
Houston	43			7	6	
Indianapolis	120	17.4	16.0	15	18	103
Jacksonville, Fla	39	19.4	20.9	5	3	111
Jersey City	92	15.2	14.2	15	15	105
Kansas City, Kans	52	21.9	15.8	9	3	190
Kansas City, Mo	130	18.4	15.1	16	22	
Los Angeles	243			27	28	75
Louisville	104	20.9	16.1	9	10	79
Lowell	31	13.9	14.0	4	6	70
Lynn	18	9.0	11.1	2	1	53
Memphis	60	17.9	21.2	9	10	
Milwaukee	106	11.0	10.1	18	11	82
Minneapolis	113	13.8	12.0	12	12	64
Nashville [4]	41	17.2	18.2	5	4	
New Bedford	29	11.2	13.0	6	6	100
New Haven	49	14.3	15.1	4	11	52
New Orleans	151	19.0	24.3	11	24	
New York	1,565	13.4	14.7	177	231	71
Bronx Borough	166	9.6	12.4	14	19	48
Brooklyn Borough	550	12.8	13.8	70	81	73
Manhattan Borough	670	15.5	17.1	75	115	75
Queens Borough	128	11.6	11.5	14	12	69
Richmond Borough	51	19.9	18.4	4	4	72
Newark, N. J	117	13.5	14.2	12	19	55
Norfolk	37	11.4	15.6	1	2	18
Oakland	39	8.0	11.2	2	6	23
Oklahoma City	19	9.3	13.0	1	2	
Omaha	76	18.7	17.0	7	4	67
Paterson	52	19.1	12.2	7	4	117
Philadelphia	543	14.3	16.0	58	58	73
Pittsburgh	220	18.2	22.2	29	52	102
Portland, Oreg	71	13.1	13.5	3	7	31
Providence	88	18.7	15.0	19	10	152
Richmond	46	12.9	15.0	6	5	73
Rochester	86	13.5		9		71
St. Louis	311	19.7	16.4	24	19	
St. Paul	64	13.6	13.0	4	5	34
Salt Lake City [4]	30	12.0	14.6	6	3	94
San Antonio	75	19.7	15.8	12	5	
San Francisco	149	13.9	12.1	9	5	52
Schenectady	27	13.8	13.5	2	7	56
Seattle	72			6	6	61
Somerville	21	10.7	9.3	3	5	80
Spokane	28			1	2	22
Springfield, Mass	49	16.7	16.5	3	9	45
Syracuse	55	15.0	14.7	5	6	63
Tacoma	22	11.0	11.6	4	0	95
Toledo	90	16.3	14.9	9	12	81
Trenton	41	16.2	14.9	8	6	130
Washington, D. C	131	13.7	13.5	20	10	112
Waterbury	24			5	4	111
Wilmington, Del	25	10.7	13.0	2	3	46
Worcester	48	12.6	11.2	5	4	58
Yonkers	35	16.3	14.3	3	8	66
Youngstown	37	12.1	15.5	6	6	76

[4] Deaths for week ended Friday, Mar. 27, 1925.

PREVALENCE OF DISEASE

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

UNITED STATES

CURRENT WEEKLY STATE REPORTS

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

Reports for Week Ended April 4, 1925

ALABAMA	Cases
Cerebrospinal meningitis	8
Chicken pox	42
Diphtheria	8
Dysentery	3
Influenza	388
Malaria	22
Measles	36
Mumps	70
Pellagra	28
Pneumonia	159
Scarlet fever	29
Smallpox	148
Tuberculosis	39
Typhoid fever	8
Whooping cough	13

ARIZONA	
Chicken pox	12
Diphtheria	4
Influenza	7
Measles	92
Mumps	2
Ophthalmia neonatorum	2
Scarlet fever	24
Smallpox	4
Trachoma	1
Tuberculosis	8
Typhoid fever	2

ARKANSAS	
Cerebrospinal meningitis	1
Chicken pox	5
Diphtheria	5
Hookworm disease	2
Influenza	170
Malaria	22
Measles	19

ARKANSAS—continued	Cases
Mumps	26
Pellagra	10
Scarlet fever	3
Smallpox	6
Trachoma	2
Tuberculosis	10
Typhoid fever	14

CALIFORNIA	
Cerebrospinal meningitis—Los Angeles	1
Diphtheria	118
Influenza	122
Lethargic encephalitis—Berkeley	1
Measles	132
Poliomyelitis—Oakland	1
Scarlet fever	138
Smallpox:	
Los Angeles	50
Los Angeles County	16
San Diego	23
San Francisco	10
San Jose	8
Scattering	56
Typhoid fever	8

COLORADO (Exclusive of Denver)	
Anthrax	1
Chicken pox	37
Diphtheria	19
Influenza	7
Mumps	23
Pneumonia	6
Scarlet fever	39
Tuberculosis	30
Typhoid fever	2
Whooping cough	14

CONNECTICUT

	Cases
Cerebrospinal meningitis	4
Chicken pox	63
Conjunctivitis (infectious)	2
Diphtheria	36
German measles	48
Influenza	20
Lethargic encephalitis	2
Measles	235
Mumps	47
Paratyphoid fever	7
Pneumonia (all forms)	84
Scarlet fever	135
Trachoma	1
Tuberculosis (all forms)	44
Typhoid fever	3
Whooping cough	81

DELAWARE

Chicken pox	3
Diphtheria	1
Influenza	3
Measles	2
Mumps	5
Pneumonia	3
Scarlet fever	2
Smallpox	1
Tuberculosis	4
Whooping cough	2

FLORIDA

Chicken pox	5
Diphtheria	4
Malaria	10
Measles	2
Mumps	13
Pneumonia	2
Scarlet fever	2
Smallpox	10
Tuberculosis	17
Typhoid fever	11
Whooping cough	10

ILLINOIS

Diphtheria:	
Cook County	65
Scattering	38
Influenza	101
Lethargic encephalitis—Cook County	3
Measles	1,158
Pneumonia	370
Scarlet fever:	
Cook County	321
Kane County	8
Knox County	10
Madison County	8
Peoria County	10
St. Clair County	9
Schuyler County	12
Scattering	73
Smallpox:	
Ogle County	14
St. Clair County	34
Vermilion County	23
Scattering	
Typhoid fever	13

INDIANA

	Cases
Cerebrospinal meningitis	1
Chicken pox	62
Diphtheria	34
Influenza	270
Measles	167
Mumps	1
Ophthalmia neonatorum	2
Pneumonia	21
Scarlet fever:	
Allen County	9
Cass County	11
Delaware County	15
Elkhart County	18
Fulton County	11
Huntington County	18
St. Joseph County	31
Vanderburgh County	11
Vigo County	8
Scattering	82
Smallpox	83
Trachoma	1
Tuberculosis	30
Typhoid fever	8
Whooping cough	41

IOWA

Diphtheria	13
Poliomyelitis—Buffalo Center	2
Scarlet fever	35
Smallpox	16
Typhoid fever	1

KANSAS

Chicken pox	113
Diphtheria	20
German measles	2
Influenza	52
Measles	14
Mumps	354
Pneumonia	62
Scarlet fever	111
Smallpox	15
Trachoma	1
Tuberculosis	37
Typhoid fever	2
Whooping cough	56

LOUISIANA

Cerebrospinal meningitis	1
Diphtheria	13
Hookworm disease	9
Influenza	165
Leprosy	1
Malaria	12
Pellagra	7
Pneumonia	55
Scarlet fever	7
Smallpox	13
Tuberculosis	37
Typhoid fever	15
Whooping cough	15

MAINE

Chicken pox	20
Conjunctivitis	1

MAINE—continued

	Cases
German measles	1
Influenza	74
Measles	1
Mumps	105
Pneumonia	17
Scarlet fever	46
Septic sore throat	1
Tuberculosis	12
Typhoid fever	5
Whooping cough	2

MARYLAND [1]

Cerebrospinal meningitis	2
Chicken pox	79
Diphtheria	29
German measles	6
Influenza	40
Lethargic encephalitis	3
Measles	25
Mumps	137
Ophthalmia neonatorum	1
Pneumonia (all forms)	110
Scarlet fever	78
Septic sore throat	2
Tuberculosis	39
Typhoid fever	8
Whooping cough	80

MASSACHUSETTS

Cerebrospinal meningitis	4
Chicken pox	133
Conjunctivitis (suppurative)	7
Diphtheria	101
German measles	203
Influenza	84
Lethargic encephalitis	2
Measles	738
Mumps	86
Ophthalmia neonatorum	31
Pneumonia (lobar)	177
Scarlet fever	283
Trachoma	2
Trichinosis	2
Tuberculosis (all forms)	115
Typhoid fever	7
Typhus fever	2
Whooping cough	24

MICHIGAN

Diphtheria	64
Measles	174
Pneumonia	154
Scarlet fever	380
Smallpox	24
Tuberculosis	46
Typhoid fever	14
Whooping cough	78

MINNESOTA

Cerebrospinal meningitis	2
Chicken pox	106
Diphtheria	59
Influenza	1
Lethargic encephalitis	1
Measles	16
Pneumonia	6

MINNESOTA—continued

	Cases
Scarlet fever	249
Smallpox	12
Tuberculosis	86
Typhoid fever	1
Whooping cough	23

MISSISSIPPI

Diphtheria	4
Influenza	205
Scarlet fever	40
Smallpox	40
Typhoid fever	8

MISSOURI

(Exclusive of Kansas City)

Cerebrospinal meningitis	1
Chicken pox	96
Diphtheria	72
Influenza	139
Measles	21
Mumps	144
Pneumonia	89
Rabies	2
Scarlet fever	419
Smallpox	19
Tetanus	1
Trachoma	2
Tuberculosis	81
Typhoid fever	5
Whooping cough	25

MONTANA

Chicken pox	7
Diphtheria	10
German measles	33
Measles	9
Mumps	18
Rocky Mountain spotted fever—Lolo	1
Scarlet fever	39
Smallpox	4
Tuberculosis	7
Whooping cough	7

NEW JERSEY

Anthrax	2
Cerebrospinal meningitis	3
Chicken pox	149
Diphtheria	102
Influenza	26
Measles	246
Pneumonia	171
Poliomyelitis	1
Scarlet fever	310
Smallpox	25
Trachoma	2
Thphoid fever	6
Whooping cough	331

NEW MEXICO

Chicken pox	14
Conjunctivitis	1
Diphtheria	5
Favus	1
Influenza	4
Measles	68
Mumps	15

[1] Week ended Friday.

NEW MEXICO—continued

	Cases
Pneumonia	7
Scarlet fever	3
Smallpox	2
Tuberculosis	13
Typhoid fever	2
Whooping cough	5

NEW YORK

(Exclusive of New York City)

Diphtheria	83
Influenza	282
Lethargic encephalitis	3
Pneumonia	440
Measles	526
Poliomyelitis	1
Scarlet fever	375
Smallpox	4
Typhoid fever	21
Whooping cough	215

NORTH CAROLINA

Chicken pox	110
Diphtheria	34
German measles	4
Measles	43
Scarlet fever	23
Septic sore throat	1
Smallpox	56
Typhoid fever	1
Whooping cough	122

OREGON

Cerebrospinal meningitis	1
Chicken pox	11
Diphtheria:	
Portland	16
Scattering	9
Influenza	302
Lethargic encephalitis	1
Mumps	63
Pneumonia	12
Poliomyelitis	1
Rocky Mountain spotted fever	1
Scarlet fever:	
Portland	12
Clackamas County	9
Scattering	10
Smallpox:	
Columbia County	9
Scattering	5
Tuberculosis	22
Whooping cough	26

TEXAS

Cerebrospinal meningitis	1
Chicken pox	100
Diphtheria	33
Dysentery (epidemic)	5
Influenza	375
Lethargic encephalitis	1
Measles	93
Mumps	56
Ophthalmia neonatorum	1
Paratyphoid fever	1
Pellagra	27
Pneumonia	41

TEXAS—continued

	Cases
Scarlet fever	41
Smallpox	57
Trachoma	1
Tuberculosis	30
Typhoid fever	7
Typhus fever	2
Whooping cough	30

VERMONT

Chicken pox	14
Diphtheria	1
Measles	3
Mumps	75
Scarlet fever	1
Typhoid fever	1
Whooping cough	30

VIRGINIA

Smallpox—Fairfax County	1

WASHINGTON

Cerebrospinal meningitis—Spokane	3
Chicken pox	89
Diphtheria	80
German measles	138
Measles	17
Mumps	177
Scarlet fever	34
Smallpox	54
Tuberculosis	14
Typhoid fever	4
Whooping cough	75

WEST VIRGINIA

Diphtheria	3
Scarlet fever	9
Smallpox	5
Typhoid fever	2

WISCONSIN

Milwaukee:	
Chicken pox	33
Diphtheria	14
German measles	389
Influenza	1
Measles	269
Mumps	98
Ophthalmia neonatorum	2
Pneumonia	5
Scarlet fever	15
Smallpox	17
Tuberculosis	20
Whooping cough	55
Scattering:	
Cerebrospinal meningitis	1
Chicken pox	158
Diphtheria	19
German measles	242
Influenza	160
Lethargic encephalitis	1
Measles	292
Mumps	298
Pneumonia	32
Scarlet fever	163
Smallpox	22
Tuberculosis	21
Typhoid fever	6
Whooping cough	51

WYOMING	Cases
Cerebrospinal meningitis	1
Chicken pox	11
Diphtheria	2
German measles	1
Measles	16
Mumps	10

WYOMING—continued	Cases
Pneumonia	3
Rocky Mountain spotted fever	3
Scarlet fever	8
Typhoid fever	2
Whooping cough	6

Reports for Week Ended March 28, 1925

DISTRICT OF COLUMBIA	Cases
Chicken pox	33
Diphtheria	10
Measles	30
Pneumonia	27
Scarlet fever	27
Smallpox	3
Tuberculosis	25
Whooping cough	17

NORTH DAKOTA	Cases
Chicken pox	21
Diphtheria	5
Measles	1
Mumps	15
Pneumonia	12
Poliomyelitis	1
Scarlet fever	42
Smallpox	6
Tuberculosis	3
Typhoid fever	2
Whooping cough	8

SUMMARY OF MONTHLY REPORTS FROM STATES

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

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
January, 1925										
California	7	636	195	2	185	2	16	686	695	50
Nebraska		59	7					107		12
Tennessee	11	84	589	13	116	28	1	95	447	44
February, 1925										
Colorado	3	97	18		19			174	1	11
Georgia	2	70	3,388	69	12	20		34	61	41
Nebraska	2	41	34					112		11
Ohio	5	421	189	0	560	0	2	2,136	550	49
Oregon	4	101	17		17		4	115	114	15
Washington	1	211	0	0	39	0	2	201	262	20

PLAGUE-ERADICATIVE MEASURES IN THE UNITED STATES

The following items were taken from the reports of plague-eradicative measures from the cities named for the week ended March 21, 1925.

Los Angeles, Calif.

Week ended Mar. 21, 1925:	
Number of rats examined	3,831
Number of rats found to be plague infected	2
Number of squirrels examined	758
Number of squirrels found to be plague infected	0
Totals to Mar. 21, 1925:	
Number of rats examined	67,549
Number of rats found to be plague infected	152
Number of squirrels examined	5,435
Number of squirrels found to be plague infected	3

Oakland, Calif.

(Including other East Bay communities)

Week ended Mar. 21, 1925:	
Number of rats examined	3,123
Number of rats found to be plague infected	0
Totals to Mar. 21, 1925:	
Number of rats examined	26,912
Number of rats found to be plague infected	21

New Orleans, La.

Week ended Mar. 21, 1925:	
Number of vessels inspected	387
Number of inspections made	932
Number of vessels fumigated with cyanide gas	39
Number of rodents examined for plague	4,505
Number of rodents found to be plague infected	0
Totals to Mar. 21, 1925:	
Number of rodents examined for plague	60,223
Number of rodents found to be plague infected	12

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.—For the week ended March 21, 1925, 34 States reported 1,410 cases of diphtheria. For the week ended March 22, 1924, the same States reported 1,768 cases of this disease. One hundred and five cities, situated in all parts of the country and having an aggregate population of nearly 28,900,000, reported 925 cases of diphtheria for the week ended March 21, 1925. Last year for the corresponding week they reported 1,113 cases. The estimated expectancy for these cities was 1,011 cases. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Measles.—Thirty States reported 4,335 cases of measles for the week ended March 21, 1925, and 18,364 cases of this disease for the week ended March 22, 1924. One hundred and five cities reported 2,802 cases of measles for the week this year, and 7,026 cases last year.

Scarlet fever.—Scarlet fever was reported for the week as follows: 34 States—this year, 4,263 cases; last year, 4,179; 105 cities—this year, 2,369; last year, 1,928; estimated expectancy, 1,099 cases.

Smallpox.—For the week ended March 21, 1925, 34 States reported 995 cases of smallpox. Last year, for the corresponding week, they reported 1,281 cases. One hundred and five cities reported smallpox for the week as follows: 1925, 351 cases; 1924, 565 cases; estimated expectancy, 114 cases. These cities reported 12 deaths from smallpox for the week this year; 3 at Camden, N. J.; 1 at Chicago; 3 at Milwaukee; 3 at Minneapolis; 1 at St. Paul, and 1 at San Francisco.

Typhoid fever.—On hundred and seventy-nine cases of typhoid fever were reported for the week ended March 21, 1925, by 33 States. For the corresponding week of 1924 the same States reported 236 cases. One hundred and five cities reported 65 cases of typhoid fever for the week this year, and 60 cases for the corresponding week last year. The estimated expectancy for these cities was 48 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia (combined) were reported for the week by 105 cities as follows: 1925, 1,395 deaths; 1924, 1,258 deaths.

City reports for week ended March 21, 1925

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

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1923, estimated	Chickenpox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	73,129	18	2	1	2	0	1	38	4
New Hampshire:									
Concord	22,408	0	0	0	0	0	0	0	2
Manchester	81,383	----	2	1	----	2	6	----	6
Vermont:									
Barre	[1] 10,008	2	0	0	----	2	0	8	0
Massachusetts:									
Boston	770,400	29	62	30	8	1	220	1	25
Fall River	120,912	6	4	1	3	3	0	0	8
Springfield	144,277	6	4	2	4	2	35	7	3
Worcester	191,927	37	4	3	0	0	6	1	10
Rhode Island:									
Pawtucket	68,799	3	1	1	0	0	0	0	6
Providence	242,378	0	11	6	4	1	1	0	13
Connecticut:									
Bridgeport	[1] 143,555	0	7	5	2	0	0	0	3
Hartford	[1] 138,036	7	9	8	3	1	1	2	6
New Haven	172,967	18	4	2	2	2	28	1	5
MIDDLE ATLANTIC									
New York:									
Buffalo	536,718	0	16	0	----	2	108	9	21
New York	5,927,625	165	233	211	83	26	121	35	237
Rochester	317,867	6	7	16	----	2	33	32	6
Syracuse	184,511	8	6	2	----	2	2	23	7
New Jersey:									
Camden	124,157	8	4	6	0	0	27	5	6
Newark	438,699	29	18	18	15	1	55	9	19
Trenton	127,390	1	5	4	0	0	8	0	2
Pennsylvania:									
Philadelphia	1,922,788	67	76	116	----	12	361	19	51
Pittsburgh	613,442	69	21	13	----	13	429	52	79
Reading	110,917	10	3	2	0	0	37	9	0
Scranton	140,636	4	3	7	0	0	1	0	5

[1] Population Jan. 1, 1920.

City reports for week ended March 21, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	406,312	16	10	18	3	5	2	10	21
Cleveland	888,519	66	27	33	8	3	4	12	29
Columbus	261,082	7	4	2		13	2	3	18
Toledo	268,338	31	4	7		3	81	0	2
Indiana:									
Fort Wayne	93,573	5	3	1	0	0	2	0	1
Indianapolis	342,718	23	9	3		3	2	9	30
South Bend	76,709	3	1	3	0	0.	1	0	9
Terre Haute	68,939	0	1	1		1	2	0	5
Illinois:									
Chicago	2,886,121	67	108	65	340	30	514	26	108
Cicero	55,968	1	1	1	7	0	3	1	1
Peoria	79,675	7	1	0	0	0	1	5	4
Springfield	61,833	7	1	1	7	0	1	40	5
Michigan:									
Detroit	995,668	30	54	36	11	6	14	13	56
Flint	117,968	8	5	1		1	1	1	3
Grand Rapids	145,947	10	3	1	3	1	50	0	0
Wisconsin:									
Madison	42,519	3	1	0	0	0	6	104	7
Milwaukee	484,595	51	15	11		2	421	127	3
Racine	64,393	11	1	4		1	20	14	1
Superior	[1] 39,671	2	1	0	0	0	0	0	3
WEST NORTH CENTRAL									
Minnesota:									
Duluth	106,289	6	1	0	0	0	0	0	5
Minneapolis	409,125	58	15	22		2	10	11	14
St. Paul	241,891	15	11	10	0	0	19	25	10
Iowa:									
Davenport	61,262	0	1	2	0		0	0	
Des Moines	140,923	0	3	2	0		0	0	
Sioux City	79,662	3	2	0	0		0	35	
Waterloo	39,667	11	0	0	0		0	2	
Missouri:									
Kansas City	351,819	16	10	6	13	14	3	38	28
St. Joseph	78,232	2	2	1	0	0	0	1	3
St. Louis	803,853	18	40	50	3	2	12	6	
North Dakota:									
Fargo	24,841	4	1	1	0	0	0	12	0
Grand Forks	14,547	0	1	0	0		0	0	
South Dakota:									
Aberdeen	15,829	0		0	0		0	1	
Sioux Falls	29,206	3	1	0	7	0	0	0	0
Nebraska:									
Lincoln	58,761	11	2	3	0	0	0	5	0
Omaha	204,382	6	4	0	0	0	0	0	15
Kansas:									
Topeka	52,555	5	1	3	7	1	0	159	1
Wichita	79,261	14	1	3	0	0	1	1	3
SOUTH ATLANTIC									
Delaware:									
Wilmington	117,728	3	2	11	0	0	14	1	4
Maryland:									
Baltimore	773,580	71	25	27	23	10	8	30	67
Cumberland	32,361		1	1	0	1	0		1
Frederick	11,301		1	0	0	1	0		0
District of Columbia:									
Washington	[1] 437,571	10	11	14		6	38		18
Virginia:									
Lynchburg	30,277	1	0	0	0	0	0	28	2
Norfolk	159,089	19	1	5	0	0	3	68	5
Richmond	181,044	0	2	0	0	0	0	0	5
Roanoke	55,502	5	1	0		1	4	1	1
West Virginia:									
Charleston	45,597	1	1	0	0	0	21	5	3
Huntington	57,918	0	1	0	0		0	0	
Wheeling	[1] 56,208	3	2	2	0	0	2	1	3
North Carolina:									
Raleigh	29,171	13	0	0		1	0	0	1
Wilmington	35,719	3	0	0		1	0	7	0
Winston-Salem	56,230	6	1	1		1	3	1	2

[1] Population Jan. 1, 1920.

City reports for week ended March 21, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
SOUTH ATLANTIC—con.									
South Carolina:									
Charleston	71,245	0	0	3	0	0	0	0	6
Columbia	39,688	3	1	0	0	0	0	3	3
Greenville	25,789	0	0	0	0	0	0	0	4
Georgia:									
Atlanta	222,963	2	2	2	2	2	0	0	15
Brunswick	15,937		0	0	2	0	0		0
Savannah	89,448	2	1	0	16	1	0	8	2
Florida:									
St. Petersburg	24,403	0	1	0	0	0	0	0	0
Tampa	56,050	2	2	1	1	1	0	2	1
EAST SOUTH CENTRAL									
Kentucky:									
Covington	57,877	0	1	1	2	1	0	0	2
Louisville	257,671	0	5	0	18	2	2	0	21
Tennessee:									
Memphis	170,067		6	2		3	1		5
Nashville	121,128	1	1	1		5	8	0	3
Alabama:									
Birmingham	195,901	9	2	7	8	6	1	6	17
Mobile	63,858	1	1	1	2	4	0	2	2
Montgomery	45,383	5	0	0	0	0	0	10	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	30,635	3	1	0	0		1	6	
Little Rock	70,916	3	1	2	11	2	5	0	0
Louisiana:									
New Orleans	404,575	7	11	5	15	7	2	0	10
Shreveport	54,590	2		0	0	0	1	0	5
Oklahoma:									
Oklahoma	101,150	2	1	0	6	2	0	0	2
Tulsa	102,018		1	0	0		3		
Texas:									
Dallas	177,274	23	3	10	6	1	0	1	3
Galveston	46,877	0	1	0	0	0	0	2	1
Houston	154,970	6	2	1		4	0	0	8
San Antonio	184,727	0	2	3		1	0	0	8
MOUNTAIN									
Montana:									
Billings	16,927	3	1	0	0	0	1	13	1
Great Falls	27,787	3	1	2	0	0	55	4	3
Helena	[1] 12,037	0	0	0	0	0	0	0	0
Missoula	[1] 12,668	0	1	0	0	0	0	0	0
Idaho:									
Boise	22,806	4	0	0	0	0	0	1	0
Colorado:									
Denver	272,031	27	8	7		5	2	105	11
Pueblo	43,519	8	2	0	0	0	0	11	3
New Mexico:									
Albuquerque	16,648	1	1	1	0	0	1	0	0
Arizona:									
Phoenix	33,899	0		0		3	4	0	3
Utah:									
Salt Lake City	126,241	12	2	6	0	0	2	38	0
Nevada:									
Reno	12,429	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	[1] 315,685	52	5	3	0		3	67	
Spokane	104,573	6	2	30	0		0	0	
Tacoma	101,731	2	1	1	1	0	1	1	1
Oregon:									
Portland	273,621	6	3	11	2	0	3	8	10
California:									
Los Angeles	666,853	91	37	33	57	3	46	43	22
Sacramento	69,950		1	1	1	0	0		1
San Francisco	539,038	20	26	18	7	0	15	54	8

[1] Population Jan. 1, 1920.

City reports for week ended March 21, 1925—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND											
Maine:											
Portland	1	14	0	0	0	1	0	0	0	3	29
New Hampshire:											
Concord	1	0	0	0	0	1	0	0	0	0	8
Manchester	2	15	0	0	0	0	0	0	0	----	20
Vermont:											
Barre	0	3	0	0	0	1	0	0	0	0	6
Massachusetts:											
Boston	59	89	1	0	0	24	1	7	0	44	265
Fall River	3	6	0	0	0	2	0	0	0	10	37
Springfield	7	28	0	0	0	5	0	0	0	5	47
Worcester	8	7	0	0	0	3	0	4	0	12	53
Rhode Island:											
Pawtucket	2	3	0	0	0	0	1	0	0	0	19
Providence	10	13	0	0	0	1	0	1	0	0	61
Connecticut:											
Bridgeport	7	13	1	0	0	0	0	0	0	0	36
Hartford	6	11	0	0	0	1	0	0	0	15	42
New Haven	6	32	0	0	0	4	1	0	0	11	57
MIDDLE ATLANTIC											
New York:											
Buffalo	19	30	0	0	0	5	1	0	2	29	165
New York	208	353	0	0	0	[1] 94	8	6	2	138	1,581
Rochester	12	54	0	0	0	2	0	2	0	4	74
Syracuse	15	4	0	0	0	1	0	0	0	0	60
New Jersey:											
Camden	3	30	0	4	3	2	0	1	0	2	40
Newark	24	65	0	0	0	5	0	0	0	70	121
Trenton	4	3	0	0	0	2	1	1	0	1	34
Pennsylvania:											
Philadelphia	66	198	0	11	0	33	3	4	0	92	535
Pittsburgh	21	72	0	0	0	18	0	2	0	12	268
Reading	3	16	0	0	0	0	0	0	0	3	24
Scranton	4	1	0	0	0	2	1	0	0	12	----
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	12	19	2	0	0	16	0	2	0	3	162
Cleveland	36	32	1	0	0	22	2	1	0	27	218
Columbus	8	21	2	6	0	4	1	0	0	1	92
Toledo	14	29	4	0	0	7	1	1	1	40	74
Indiana:											
Fort Wayne	3	4	1	1	0	0	1	0	0	0	25
Indianapolis	11	3	2	7	0	6	0	0	0	23	116
South Bend	3	15	1	1	0	0	0	0	0	0	19
Terre Haute	3	7	1	1	0	2	0	0	0	0	33
Illinois:											
Chicago	89	299	3	0	1	42	3	2	1	146	819
Cicero	1	11	0	0	0	0	0	0	0	0	15
Peoria	3	11	1	0	0	1	0	0	0	3	17
Springfield	1	5	1	0	0	0	0	0	0	0	27
Michigan:											
Detroit	83	142	4	5	0	28	1	2	1	46	331
Flint	7	6	1	4	0	1	0	0	0	3	17
Grand Rapids	9	69	1	0	0	2	0	2	0	0	35
Wisconsin:											
Madison	3	8	0	0	0	0	0	0	0	3	13
Milwaukee	34	13	1	15	3	0	1	0	0	18	133
Racine	5	3	0	3	0	0	0	0	0	0	11
Superior	2	15	5	0	0	2	0	0	0	0	11
WEST NORTH CENTRAL											
Minnesota:											
Duluth	5	19	1	0	0	0	0	0	0	2	25
Minneapolis	34	91	7	4	3	5	1	1	0	2	127
St. Paul	26	32	7	3	1	6	0	2	0	17	74

[1] Pulmonary tuberculosis only.

City reports for week ended March 21, 1925—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST NORTH CENTRAL—con.											
Iowa:											
Davenport	2	0	2	7	----	----	0	0	----	0	----
Des Moines	9	5	2	1	----	----	0	0	----	0	----
Sioux City	2	0	1	0	----	----	0	0	----	0	----
Waterloo	3	0	0	6	----	----	0	0	----	0	----
Missouri:											
Kansas City	11	122	3	3	0	12	0	0	0	8	149
St. Joseph	2	4	0	0	0	4	0	0	0	0	29
St. Louis	31	103	3	13	0	14	1	0	0	6	246
North Dakota:											
Fargo	2	3	0	0	0	0	0	1	0	0	6
Grand Forks	1	0	0	0	----	----	0	0	----	0	----
South Dakota:											
Aberdeen	----	1	----	0	----	----	----	0	----	2	----
Sioux Falls	3	2	1	0	0	0	0	0	0	0	6
Nebraska:											
Lincoln	4	1	1	0	0	0	0	0	0	1	13
Omaha	5	2	2	20	0	2	0	0	0	0	69
Kansas:											
Topeka	2	2	1	0	0	1	0	0	0	0	16
Wichita	2	2	4	0	0	0	0	0	0	11	31
SOUTH ATLANTIC											
Delaware:											
Wilmington	2	1	0	0	0	2	0	0	0	2	33
Maryland:											
Baltimore	37	26	0	0	0	27	2	3	0	90	308
Cumberland	1	0	0	0	0	0	0	2	0	----	7
Frederick	1	0	0	0	0	0	0	0	0	----	5
District of Col.:											
Washington	22	27	1	0	0	15	1	3	0	18	150
Virginia:											
Lynchburg	1	0	0	0	0	0	0	0	0	3	8
Norfolk	2	1	0	0	0	4	0	0	0	3	----
Richmond	3	0	0	0	0	4	0	0	0	0	35
Roanoke	1	0	0	0	0	1	0	0	0	2	21
West Virginia:											
Charleston	1	1	1	0	0	1	0	0	0	1	15
Huntington	1	2	0	1	----	----	0	0	----	0	----
Wheeling	1	2	0	0	0	0	1	3	0	3	20
North Carolina:											
Raleigh	0	0	0	7	0	2	0	0	0	0	18
Wilmington	0	0	0	0	0	0	0	0	0	2	12
Winston-Salem	1	6	2	12	0	1	0	0	0	5	18
South Carolina:											
Charleston	1	1	0	0	0	1	0	0	0	1	30
Columbia	1	1	0	0	0	3	0	0	0	11	25
Greenville	0	0	1	6	0	0	0	0	0	1	13
Georgia:											
Atlanta	5	6	4	3	0	5	1	0	1	3	66
Brunswick	0	0	0	0	0	0	0	0	0	----	2
Savannah	1	0	0	0	0	1	0	0	0	6	27
Florida:											
St. Petersburg	3	0	0	0	0	0	1	0	1	0	8
Tampa	0	0	0	0	0	2	2	0	0	1	35
EAST SOUTH CENTRAL											
Kentucky:											
Covington	2	0	1	0	0	1	1	2	0	0	11
Louisville	5	12	1	8	0	7	0	0	0	3	104
Tennessee:											
Memphis	3	6	1	14	0	6	1	3	1	----	84
Nashville	1	9	1	4	0	5	0	3	0	3	----
Alabama:											
Birmingham	1	20	0	85	0	8	1	0	1	1	82
Mobile	0	1	2	0	0	1	0	0	0	0	27
Montgomery	1	2	1	2	0	0	0	0	0	0	11

City reports for week ended March 21, 1925—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	1	3	1	1	----	----	0	0	----	0	----
Little Rock	1	4	1	1	0	1	0	2	0	0	----
Louisiana:											
New Orleans	4	15	4	0	0	19	2	2	0	4	146
Shreveport	----	1	----	0	0	0	----	0	0	0	22
Oklahoma:											
Oklahoma	2	1	5	0	0	0	0	1	0	3	30
Tulsa	1	0	3	1	----	----	0	0	----	----	----
Texas:											
Dallas	1	2	7	1	0	1	1	1	1	1	32
Galveston	0	0	0	4	0	0	1	0	0	0	7
Houston	1	3	1	16	0	4	0	0	0	0	46
San Antonio	1	1	0	0	0	10	1	0	0	0	57
MOUNTAIN											
Montana:											
Billings	1	7	1	0	0	0	0	0	0	3	7
Great Falls	1	4	1	1	0	0	0	0	0	0	11
Helena	0	0	0	0	0	2	0	0	0	0	6
Missoula	1	0	0	0	0	0	0	0	0	0	1
Idaho:											
Boise	1	0	1	0	0	0	0	0	0	0	3
Colorado:											
Denver	12	26	3	0	0	11	0	0	0	2	79
Pueblo	1	1	0	0	0	3	0	0	0	0	11
New Mexico:											
Albuquerque	1	0	0	0	0	4	0	0	0	0	12
Arizona:											
Phoenix	----	1	----	0	0	8	----	0	0	2	29
Utah:											
Salt Lake City	3	5	2	0	0	2	1	0	0	5	34
Nevada:											
Reno	0	2	0	6	0	0	0	0	0	0	3
PACIFIC											
Washington:											
Seattle	10	13	1	17	----	----	0	0	----	58	----
Spokane	4	2	9	1	----	----	0	0	----	2	----
Tacoma	2	0	2	2	0	2	0	0	0	0	22
Oregon:											
Portland	6	6	5	11	0	3	0	2	0	9	----
California:											
Los Angeles	14	54	2	35	0	17	2	0	0	76	258
Sacramento	2	0	0	3	0	0	0	0	0	----	17
San Francisco	17	6	4	15	1	12	2	0	0	33	154

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
NEW ENGLAND									
New Hampshire:									
Concord	0	0	0	0	0	0	0	1	0
Massachusetts:									
Boston	1	1	0	0	0	0	1	0	0
Connecticut:									
Bridgeport	1	1	0	0	0	0	0	0	0

City reports for week ended March 21, 1925—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
MIDDLE ATLANTIC									
New York:									
New York	1	3	7	7	0	0	0	1	0
New Jersey:									
Newark	1	0	2	0	0	0	0	1	0
Pennsylvania:									
Philadelphia	0	0	0	1	1	0	0	0	0
Scranton	0	1	0	0	0	0	0	0	0
EAST NORTH CENTRAL									
Ohio:									
Cleveland	0	2	0	0	0	0	1	0	0
Indiana:									
South Bend	0	0	0	0	0	0	0	0	1
Illinois:									
Chicago	2	2	3	0	0	0	1	0	0
Springfield	1	0	0	0	0	0	0	0	0
Michigan:									
Detroit	3	0	0	0	0	0	1	0	0
WEST NORTH CENTRAL									
Minnesota:									
St. Paul	0	0	1	0	0	0	0	0	0
Missouri:									
St. Louis	1	1	0	0	0	0	0	0	0
Nebraska:									
Omaha	0	0	0	1	0	0	0	0	0
SOUTH ATLANTIC									
Maryland:									
Baltimore	0	0	1	1	0	0	0	0	0
District of Columbia:									
Washington	0	0	0	0	0	0	0	1	0
Virginia:									
Norfolk	0	0	0	1	1	0	0	0	0
West Virginia:									
Wheeling	0	1	0	0	0	0	0	0	0
North Carolina:									
Winston-Salem	0	0	0	0	0	1	0	0	0
South Carolina:									
Columbia	1	1	0	0	0	1	0	0	0
Georgia:									
Savannah	0	0	0	0	2	0	0	0	0
Florida:									
St. Petersburg	0	1	0	0	0	0	0	0	0
EAST SOUTH CENTRAL									
Tennessee:									
Memphis	0	0	0	0	1	1	0	0	0
Nashville	0	0	0	0	0	1	0	0	0
Alabama:									
Birmingham	0	0	0	0	1	0	0	1	0
Montgomery	0	0	0	0	1	1	0	0	0
WEST SOUTH CENTRAL									
Texas:									
Dallas	1	0	0	0	0	0	0	0	0
San Antonio	0	0	0	1	0	0	0	0	0
MOUNTAIN									
Colorado:									
Denver	0	0	0	1	0	0	0	0	0
PACIFIC									
California:									
Los Angeles	1	0	0	0	2	2	0	0	0
San Francisco	0	0	1	2	0	0	0	0	0

The following table gives the rates per hundred thousand population for 105 cities for the 10-week period ended March 21, 1925. The population figures used in computing the rates were estimated as of July 1, 1923, as this is the latest date for which estimates are available. The 105 cities reporting cases had an estimated aggregate population of nearly 29,000,000 and the 97 cities reporting deaths had more than 28,000,000 population. The number of cities included in each group and the aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, January 11 to March 21, 1925—Annual rates per 100,000 population [1]

DIPHTHERIA CASE RATES

	Week ended—										
	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21
Total	169	[2] 172	[2] 163	[3] 166	[2] 175	[2] 168	149	[4] 169	162	[5] 168	167
New England	256	179	171	199	191	246	241	[4] 189	233	176	147
Middle Atlantic	181	188	175	155	171	165	163	178	167	214	196
East North Central	132	141	130	[3] 135	145	132	123	119	114	128	134
West North Central	143	255	199	251	255	259	209	299	282	201	199
South Atlantic	173	[2] 106	[2] 138	128	[2] 153	[2] 183	156	114	104	[6] 93	136
East South Central	120	91	80	97	63	69	80	51	63	[7] 40	69
West South Central	144	195	162	148	176	162	125	162	144	158	97
Mountain	239	153	239	134	191	95	162	153	86	105	143
Pacific	194	206	223	293	270	180	165	258	235	197	249

MEASLES CASE RATES

Total	215	[2] 141	[2] 213	[3] 214	[2] 254	[2] 297	383	[4] 358	418	[5] 451	506
New England	395	440	497	484	576	661	720	[4] 585	656	542	725
Middle Atlantic	169	157	187	205	205	287	373	343	428	518	598
East North Central	417	127	379	[3] 373	453	515	688	632	789	740	775
West North Central	19	12	27	21	17	31	27	73	68	75	93
South Atlantic	83	[2] 43	[2] 38	37	[2] 49	[2] 98	110	81	100	[6] 150	189
East South Central	29	46	74	91	51	74	51	46	86	[7] 7	69
West South Central	5	23	14	14	37	51	14	51	23	88	42
Mountain	134	267	248	286	782	153	620	916	29	763	573
Pacific	194	160	55	17	61	29	64	61	107	110	189

SCARLET FEVER CASE RATES

Total	369	[2] 355	[2] 370	[3] 364	[2] 412	[2] 400	390	[4] 408	395	[5] 432	427
New England	661	561	596	534	614	564	606	[4] 558	584	534	544
Middle Atlantic	324	294	326	322	373	407	376	412	372	439	417
East North Central	383	375	369	[3] 379	426	397	432	434	433	497	498
West North Central	757	755	804	779	871	728	742	734	775	719	792
South Atlantic	160	[2] 243	[2] 189	185	[2] 255	[2] 277	167	203	171	[6] 224	146
East South Central	229	183	183	217	97	212	223	183	194	[7] 336	286
West South Central	148	116	195	204	162	121	125	144	185	107	134
Mountain	382	534	305	258	334	382	248	315	286	200	429
Pacific	189	183	220	226	258	177	186	223	218	229	218

SMALLPOX CASE RATES

Total	57	[2] 58	[2] 70	[3] 67	[2] 76	[2] 79	66	[4] 66	62	[5] 61	63
New England	0	0	0	0	0	0	0	[4] 0	0	0	0
Middle Atlantic	3	10	6	9	2	4	2	3	1	5	8
East North Central	40	39	48	[3] 35	39	35	56	28	42	39	32
West North Central	220	193	180	195	145	193	126	120	114	124	102
South Atlantic	30	[2] 64	[2] 38	45	[2] 62	[2] 98	67	43	51	[6] 60	57
East South Central	395	217	675	652	823	675	532	583	652	[7] 495	646
West South Central	65	32	32	60	125	139	83	116	74	74	107
Mountain	29	57	95	48	29	162	86	57	48	95	67
Pacific	148	212	209	177	267	220	215	313	206	247	212

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1923.
[2] Wilmington, Del., not included. Report not received at time of going to press.
[3] Racine, Wis., not included.
[4] Hartford, Conn., not included.
[5] Tampa, Fla., and Nashville, Tenn., not included.
[6] Tampa, Fla., not included.
[7] Nashville, Tenn., not included.

Summary of weekly reports from cities, January 11 to March 21, 1925—Annual rates per 100,000 population—Continued

TYPHOID FEVER CASE RATES

	Week ended—										
	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21
Total	36	[2] 21	[2] 17	[3] 18	[2] 13	[2] 13	11	[4] 14	11	[5] 9	12
New England	15	25	20	7	30	20	0	[4] 13	7	5	30
Middle Atlantic	49	21	20	19	13	6	10	8	10	5	8
East North Central	23	23	11	[3] 10	8	6	6	7	11	4	7
West North Central	6	10	6	12	0	10	4	17	6	10	8
South Atlantic	55	[2] 21	[2] 11	37	[2] 17	[2] 34	8	20	8	[6] 21	22
East South Central	51	17	29	23	11	40	34	34	34	[7] 33	46
West South Central	70	70	42	60	23	46	42	42	28	28	23
Mountain	10	0	48	19	29	19	38	76	10	19	0
Pacific	26	6	15	3	17	12	23	9	15	15	0

INFLUENZA DEATH RATES

Total	21	[2] 22	[2] 22	[3] 23	[2] 30	[2] 28	30	[4] 34	30	[6] 34	42
New England	17	27	10	27	47	27	17	[4] 40	17	35	30
Middle Atlantic	20	18	20	16	24	22	21	20	15	24	29
East North Central	16	15	18	[3] 12	13	17	18	24	27	33	49
West North Central	13	2	20	15	20	11	22	37	35	33	42
South Atlantic	35	[2] 47	[2] 23	39	[2] 49	[2] 55	55	49	53	[6] 29	53
East South Central	46	46	63	74	69	63	74	126	103	106	120
West South Central	41	87	92	82	97	122	153	148	143	107	76
Mountain	19	29	10	38	57	57	57	19	19	48	48
Pacific	20	12	12	20	41	4	12	29	29	16	12

PNEUMONIA DEATH RATES

Total	192	[2] 215	[2] 211	[3] 206	[2] 225	[2] 222	216	[4] 201	205	[6] 223	217
New England	122	157	216	241	211	239	241	[4] 242	226	229	211
Middle Atlantic	228	260	234	230	253	231	216	185	210	214	217
East North Central	152	152	142	[3] 145	164	168	184	171	195	241	222
West North Central	90	107	120	118	134	131	131	166	140	175	173
South Atlantic	246	[2] 294	[2] 275	252	[2] 315	[2] 270	252	305	268	[6] 241	290
East South Central	292	189	320	203	326	320	320	292	269	422	286
West South Central	200	449	362	229	352	404	408	200	229	178	178
Mountain	229	248	324	315	191	277	219	267	162	210	172
Pacific	184	163	208	217	196	192	213	163	139	155	131

[2] Wilmington, Del., not included. Report not received at time of going to press.
[3] Racine, Wis, not included.
[4] Hartford, Conn., not included.
[5] Tampa, Fla., and Nashville, Tenn., not included.
[6] Tampa, Fla., not included.
[7] Nashville, Tenn., not included.

Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases	Aggregate population of cities reporting deaths
Total	105	97	28,898,350	28,140,934
New England	12	12	2,098,746	2,098,746
Middle Atlantic	10	10	10,304,114	10,304,114
East North Central	17	17	7,032,535	7,032,535
West North Central	14	11	2,515,330	2,381,454
South Atlantic	22	22	2,566,901	2,566,901
East South Central	7	7	911,885	911,885
West South Central	8	6	1,124,564	1,023,013
Mountain	9	9	546,445	546,445
Pacific	6	3	1,797,830	1,275,841

FOREIGN AND INSULAR

SMALLPOX ON VESSEL

Steamship "Eldridge"—At Port Townsend—From Yokohama and ports.—On March 23, 1925, the steamship *Eldridge* arrived at Port Townsend, Washington, from Yokohama, Kobe, and way ports, with a case of smallpox on board. The *Eldridge* left Yokohama, February 10, 1925, and touched at Kobe, Dairen, Tsingtao, and Manila.

BRAZIL

Regulations for public cleaning service—Pernambuco (Recife)—During January, 1925, regulations for the service of public cleaning at Pernambuco (Recife), Brazil, were issued by the municipal government. The service was placed under the prefect, whose administrative staff, consisting of a superintendent with two assistants, will have direct charge of the work, through managers appointed for groups of workmen. For the execution of the work the municipality was divided into two zones. Notice was to be given of the hours for garbage collection, and garbage receptacles were required to be in accordance with the type approved by the Public Health Department. In addition to garbage removal, public cleaning will include the washing and disinfecting of all stands for vehicles and animals. Cleaning in the second zone will include the removal of garbage from homes and from vacant lots and the cutting of grass and weeds in all streets and market places.

CANARY ISLANDS

Mortality, year 1924—Plague—Vaccination against plague—Las Palmas—Sanitary conditions.—During the year 1924, 1,551 deaths from all causes were reported at Las Palmas, Canary Islands. Population, 66,461, census of 1920.

During the period under report, three cases of plague, with no resulting fatalities, were reported at Las Palmas. The cases occurred in persons vaccinated against plague. From September 1 to December 31, 1924, 2,261 persons in the port district were vaccinated against plague. During the same period, 178 rats were examined for plague. No plague-infected rat was found.

Sanitary conditions are considered not to be good. The municipality has recently commenced constructing sewers, but only a few houses situated on the principal streets are connected with this system.

Plague—Puerto de la Luz.—The only locality in the east Canary Islands stated to be recognized as plague infected is Puerto de la Luz, the principal harbor of the islands. This port is in close contact with the plague-infected ports of West Africa and it is visited by five or six thousand vessels a year. The coarse volcanic formation of the soil affords innumerable small tunnels and crevices in the rocks for rat harborage, and rat extermination would be extremely difficult.

CUBA

Communicable diseases—Provinces—November and December, 1924.—Cases of communicable diseases were notified in the provinces of Cuba for the months of November and December, 1924, as follows:

NOVEMBER, 1924

Disease	Pinar Del Rio	Habana	Matanzas	Santa Clara	Camaguey	Oriente	Total
Cerebrospinal meningitis		1					1
Chicken pox		10					10
Diphtheria	2	9	2		2	3	18
Malaria	11	110	1	5	128	394	649
Measles		4		23			27
Paratyphoid	1		2	3			6
Poliomyelitis (infantile paralysis)							
Scarlet fever		4					4
Tetanus (infantile)			1				1
Typhoid fever	5	42	7	30	6	25	115

DECEMBER, 1924

Disease							
Cerebrospinal meningitis			1				1
Chicken pox		3	1		2		6
Diphtheria		19	2	2		7	30
Malaria	15	107	4	8	80	336	550
Measles	2	9		6			17
Paratyphoid	1	3					4
Poliomyelitis (infantile paralysis)			2				2
Scarlet fever		3					3
Tetanus (infantile)			1				1
Typhoid fever	4	40	11	17	11	23	106

CZECHOSLOVAKIA

Communicable diseases—October–December, 1924.—During the period October–December, 1924, communicable diseases were reported in Czechoslovakia as follows:

Disease	Cases	Deaths	Province showing greatest number of cases and deaths
Anthrax	15		Russinia: Cases, 6.
Cerebrospinal meningitis	23	9	Bohemia: Cases, 10; deaths, 6.
Diphtheria	1,057	81	Bohemia: Cases, 514; deaths, 35.
Dysentery	635	55	Slovakia: Cases, 464; deaths, 35.
Malaria	10		Slovakia: Cases, 6.
Paratyphoid fever A	1		Bohemia.
Paratyphoid fever B	16		Bohemia: Cases, 12.
Scarlatina	3,570	112	Bohemia: Cases, 1,591; deaths, 35.
Trachoma	568		Slovakia: Cases, 225.
Typhoid fever	2,197	180	Slovakia: Cases, 1,010; deaths, 58.
Typhus fever	5		Russinia.

Rabies.—During the same period two deaths from rabies were reported in Czechoslovakia. The deaths occurred in the Province of Bohemia.

ECUADOR

Plague—Plague-infected rodents—February 16 to March 15, 1925.—Plague was reported in Ecuador from February 16 to March 15, 1925, as follows: Guayaquil, 28 cases, 13 deaths; Yaguachi, 1 case; Naranjito, 1 case. During this period, 90 plague-infected rats were found at Guayaquil out of 23,775 rats examined.

MADAGASCAR

Plague—January 16–31, 1925.—During the period January 16 to 31, 1925, 85 cases of plague with 70 deaths were reported in the Island of Madagascar, occurring in the Provinces of Moramanga (cases, 4; deaths, 4) and Tananarive (cases, 81; deaths, 66). The types were stated to be bubonic (54 cases), pneumonic (11 cases), septicemic (20 cases). No occurrence of the disease was reported at ports.

UNION OF SOUTH AFRICA

Plague—Further relative to outbreak in Boshof district, Transvaal[1]*—Infected rodents found.*—During the week ended February 14, 1925, 16 cases of plague with 5 deaths were reported in the Union of South Africa. Of these, 15 cases occurred in the Boshof District, Transvaal, 14 being in the white population and 1 case (native) in the Winburg District. The history of the outbreak in the Boshof District shows that the first case became infected January 25, 1925, while out on the veldt; the other cases, all relatives and living within a mile of each other, became infected while nursing and visiting the first patient during his illness. The house was heavily infested with fleas. Two plague-infected rodents are stated to have been found at Meyerville, adjoining Standerton Town Commonage.

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

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

Reports Received During Week Ended April 10, 1925 [2]

CHOLERA

Place	Date	Cases	Deaths	Remarks
India:				
Calcutta	Feb. 8–14	26	26	

[1] Public Health Reports, Apr. 3, 1925, p. 683.
[2] From medical officers of the Public Health Service, American consuls, and other sources.

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

Reports Received During Week Ended April 10, 1925—Continued

PLAGUE

Place	Date	Cases	Deaths	Remarks
Azores:				
St. Michaels	Jan. 18-24	3	1	
Ecuador:				
Guayaquil	Feb. 16-Mar. 15	28	13	Rats taken, 23,775; found infected, 90.
Naranjito	do	1		
Yaguachi	do	1		
India:				
Bombay	Feb. 8-14	3	2	
Java:				
East Java—				
Soerabaya	Jan. 22-28	2	1	
Madagascar				Jan. 16-31, 1925: Cases, 85; deaths, 70. Bubonic, pneumonic, septicemic.
Province—				
Moramanga	Jan. 16-31	4	4	
Tananarive	do	81	66	
Siam:				
Bangkok	Feb. 8-14	1		
Straits Settlements:				
Singapore	Feb. 8-21	2	2	
Union of South Africa				Feb. 8-14, 1925: Cases, 16; deaths, 5. Of these, 14 in white population, with 5 deaths.
Transvaal—				
Boshof district	Feb. 8-14	15	5	On farms. White cases, 14; deaths, 5.
Winburg district	do	1		On farm. Native.

SMALLPOX

Algeria:				
Algiers	Feb. 11-28	1		
Arabia:				
Aden	Feb. 22-28	4	1	Of these, 3 imported.
Brazil:				
Pernambuco	Jan. 18-Feb. 14	56	23	
Canada:				
Alberta—				
Calgary	Mar. 15-21	1		Stated to have been contracted in Ontario.
British Columbia—				
Ocean Falls	Mar. 7-20	3		Very mild.
Vancouver	Mar. 8-21	45		
China:				
Amoy	Feb. 15-21			Present. Feb. 22-28: One death.
Foochow	Feb. 8-14			Present.
Hongkong	Jan. 18-Feb. 7	5	5	
Manchuria—				
Dairen	Jan. 19-Feb. 1	2		
Colombia:				
Buenaventura	Feb. 22-28	1		
Dominican Republic:				
Puerta Plata	Mar. 8-14	1		
France:				
Dunkirk	Mar. 2-8	1		From vessel. In quarantine.
Great Britain:				
England and Wales	Mar. 1-14	259		
India:				
Bombay	Feb. 8-14	46	25	
Calcutta	Feb. 8-14	225	133	
Karachi	Feb. 22-28	13	6	
Japan:				
Taiwan	Jan. 1-31	1		
Java:				
East Java—				
Soerabaya	Jan. 22-28	109	12	
Mexico:				
Guadalajara	Mar. 17-23		2	
Tampico	Mar. 11-20	7		
Vera Cruz	Mar. 16-22		1	
Poland	Dec. 21-28	1		
Portugal:				
Lisbon	Feb. 23-Mar. 14	19	5	
Oporto	Mar. 8-14	2		

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

Reports Received During Week Ended April 10, 1925—Continued

SMALLPOX—Continued.

Place	Date	Cases	Deaths	Remarks
Siam:				
Bangkok	Feb. 1-14	1	6	
Spain:				
Malaga	Mar. 8-14		4	
Syria:				
Aleppo	Feb. 22-28	8		
Tunis:				
Tunis	Mar. 12-18	19	28	
On vessel:				
S. S. Eldridge	Mar. 23	1		At Port Townsend, from Yokohama and ports.

TYPHUS FEVER

Algeria:				
Algiers	Feb. 1-28	4	1	
Argentina:				
Rosario	Jan. 1-31		1	
Chile:				
Valparaiso	Feb. 15-21		1	
Palestine:				
Tiberias	Feb. 24-Mar. 2	2		
Poland				Dec. 21-Jan. 3, 1925: Cases, 209; deaths, 24.
Rumania:				
Constanza	Feb. 1-28	2		
Turkey:				
Constantinople	Feb. 22-28	1		

Reports Received from December 27, 1924, to April 3, 1925[1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon				June 29-Dec. 27, 1924: Cases, 14; deaths, 13.
Colombo	Nov. 16-22	1		
Do	Jan. 11-24	2	2	
India				Oct. 19, 1924, to Jan. 3, 1925: Cases, 27,164; deaths, 16,228. Jan. 4-24, 1925: Cases, 7,941; deaths, 4,705.
Bombay	Nov. 23-Dec. 20	4	4	
Do	Jan. 18-24	1	1	
Calcutta	Oct. 26-Jan. 3	59	51	
Do	Jan. 4-Feb. 7	72	67	
Madras	Nov. 16-Jan. 3	69	40	
Do	Jan. 4-Feb. 21	131	92	
Rangoon	Nov. 9-Dec. 20	9	2	
Do	Jan. 4-31	6	4	
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 14; deaths, 10.
Province—				
Anam	Aug. 1-31	1	1	
Cambodia	Aug. 1-Sept. 30	6	5	
Cochin-China	do	7	4	
Saigon	Nov. 30-Dec. 6	1		
Siam:				
Bangkok	Nov. 9-29	4	2	
Do	Jan. 18-Feb. 7	5	2	

PLAGUE

Azores:				
Fayal Island—				
Castelo Branco	Nov. 25			Present with several cases.
Feteira	do	1		
St. Michael Island	Nov. 2-Jan. 3	30	13	

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

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

Reports Received from December 27, 1921, to April 3, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Brazil:				
Bahia	Feb. 15–Jan. 10	3	3	
British East Africa:				
Tanganyika Territory	Nov. 23–Dec. 27	17	10	
Uganda	Aug.–Nov., 1924	242	211	
Canary Islands:				
Las Palmas	Jan. 21–23	2		Stated to be endemic.
Do	Feb. 4	1		Stated to have been infected with plague Sept. 30, 1924.
Realejo Alto	Dec. 19	3	1	Vicinity of Santa Cruz de Teneriffe.
Teneriffe—				
Santa Cruz	Jan. 3	1		In vicinity.
Celebes:				
Macassar	Oct. 29			Epidemic.
Ceylon:				
Colombo	Nov. 9–Jan. 3	12	9	
Do	Jan. 4–Feb. 18	8	10	Five plague rodents.
China:				
Foochow	Dec. 28–Jan. 3			Present.
Nanking	Nov. 23–Jan. 31			Do.
Shing Hsien	October, 1924		790	
Ecuador:				
Chimborazo Province—				
Alausi District	Jan. 14		14	At two localities on Guayaquil and Quito Railway.
Guayaquil	Nov. 16–Dec. 31	9	3	Rats taken, 27,004; found infected, 92.
Do	Jan. 1–Feb. 15	31	12	Rats taken, 31,252; rats found infected, 144.
Yaguachi	Feb. 1–15	1	1	
Egypt				Year 1924: Cases, 373. Jan. 1–28, 1925: Cases, 15.
City—				
Alexandria	Year 1924	2	2	Last case, Nov. 26.
Ismailia	do	1	1	Last case, July 6.
Port Said	do	6	4	Last case, Dec. 7.
Suez	do	20	13	Last case, Dec. 20.
Province—				
Dakhalia	Jan. 1–8	1	1	
Kalioubiah	do	3		
Menoufieh	do	7	3	
Gold Coast				September–November, 1924: Deaths, 48.
Hawaii:				
Honokaa	Nov. 4	1		Plague-infected rodents found Dec. 9, 1924, and Jan. 15, 1925.
India				Oct. 19, 1924, to Jan. 3, 1925:
Bombay	Nov. 22–Jan. 3	4	3	Cases, 28,154; deaths, 21,505.
Do	Jan. 4–17	2	2	Jan. 4–24, 1925: Cases, 12,364;
Calcutta	Jan. 18–24	1	1	deaths, 10,463.
Karachi	Nov. 30–Dec. 6	2	1	
Do	Jan. 4–Feb. 21	12	11	
Madras Presidency	Nov. 23–Jan. 3	685	487	
Do	Jan. 4–24	658	511	
Rangoon	Oct. 26–Jan. 3	26	25	
Do	Jan. 4–Feb. 7	55	47	
Indo-China				Aug. 1–Sept. 30, 1924: Cases, 25; deaths, 20.
Province—				
Anam	Aug. 1–Sept. 30	4	4	
Cambodia	do	18	15	
Cochin-China	do	3	1	
Saigon	Jan. 11–17	2	1	Including 100 square kilometers of surrounding territory.
Do	Dec. 25–31	1	1	Do.
Iraq	June 29–Dec. 13	18	13	
Japan	Aug. 10–Dec. 6	19		
Java:				
East Java—				
Blitar	Nov. 11–22			Province of Kediri; epidemic.
Pare	Nov. 29			Do.
Sidoardjo	Jan. 2			Declared epidemic, Province of Soerabaya.
Soerabaya	Nov. 16–Dec. 31	71	72	
Do	Jan. 15–21	1	1	

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

Reports Received from December 27, 1924, to April 3, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Java—Continued				
West Java—				
Cheribon	Oct. 14-Nov. 3		14	
Do	Nov. 18-Dec. 22		80	
Do	Jan. 1-14		44	Cheribon Province.
Do	Jan. 30			Present.
Pasoeroean	Dec. 27			Province. Epidemic in one locality.
Pekalongan	Oct. 14-Nov. 3		29	
Do	Nov. 18-Dec. 31		177	
Do	Jan. 1-14		81	Pekalongan Province.
Probalingga	Dec. 27			Province. Epidemic.
Tegal	Oct. 14-Dec. 31		26	
Do	Jan. 1-14		37	Pekalongan Province.
Madagascar:				
Fort Dauphin (port)	Nov. 1-Dec. 15	12	5	
Itasy Province				Nov. 1-Dec. 15, 1924: Cases, 4; deaths, 2.
Majunga (port)	Nov. 1-30	1	1	
Moramanga Province				Nov. 1-Dec. 15, 1924: Cases, 49; deaths, 34.
Tamatave (port)	Nov. 1-30	1	1	
Tananarive Province				Oct. 16-Dec. 31, 1924: Cases, 298; deaths, 274.
Do				Jan. 1-15: Cases, 54; deaths, 48.
Tananarive (town)	Oct. 16-Nov. 30	8	7	Bubonic, pneumonic, septicemic.
Do	Dec. 16-31	4	4	
Do	Jan. 1-15	1	1	
Mauritius Island				Sept. 7-Oct. 18, 1924: Cases, 60, deaths, 53.
Morocco:				
Marrakech				Feb. 9, 1925: Present in native quarter of town. Stated to be pneumonic in form and of high mortality.
Nigeria				August-November, 1924: Cases, 387; deaths, 317.
Peru	February, 1925	6	6	
Siam:				
Bangkok	Dec. 28-Jan. 3	1	1	
Do	Jan. 25-31	1	1	
Siberia:				
Transbaikalia—				
Turga	October, 1924		3	On Chita Railroad.
Straits Settlements:				
Singapore	Nov. 9-15	1	1	
Do	Jan. 4-17	3	2	
Do	Jan. 25-31	3	2	
Syria:				
Beirut	Jan. 11-20	1		
Turkey:				
Constantinople	Jan. 9-15	5	5	
Union of South Africa	Jan. 4-Feb. 7	24	10	Native cases, 3; deaths, 1; white, 2 cases, 1 death.
Cape Province—				
De Aar District	Nov. 22-Jan. 3	4	1	Native.
Do	Jan. 4-10		2	Natives; on farms.
Do	Jan. 25-31	1	1	Malay camp.
Dronfield	Dec. 7-13	1		8 miles from Kimberley.
Edenburg (town)	Jan. 25-31			Plague infected house mouse.
Kimberley	Dec. 7-27	3	2	
Do	Feb. 1-7	1	1	On farm.
Maraisburg District	Nov. 22-Dec. 13	4	2	Bubonic, on Goedshoop Farm.
Orange Free State—				
Bloemfontein District	Dec. 21-Jan. 3	5	2	
Do	Jan. 11-17	1	1	Native; on farm.
Ficksburg District	Dec. 28-Jan. 3	1	1	
Hoopstad District	Dec. 7-13	1		On farm.
Kroonstad District	Nov. 22-Jan. 3	2	1	
Do	Jan. 18-24	1	1	Native; on farm.
Philippolis District	Dec. 21-27	1		
Vredefort District	Dec. 7-20	2	2	On farms.
Steynsburg District	Jan. 4-10	1		Native; on farm.
Transvaal—				
Boshof District	Dec. 7-Jan. 3	3	3	On farm.
Do	Jan. 11-Feb. 7	13	4	Native, 4 cases; white, 1 fatal case. On farms.
Smithfield	Jan. 11-17	1		
Wodehouse District	Feb. 1-7	2	1	On farm.
Wolmaransstad District	Nov. 22-29	1	1	On Farm Wolverspruit, Vaal River. Native.

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

Reports Received from December 27, 1924, to April 3, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
On vessel:				
S. S. Conde				At Marseille, France, Nov. 8, 1924. Plague rat found. Vessel left for Tamatave, Madagascar, Nov. 12, 1924.
Steamship	November, 1924	1	1	At Majunga, Madagascar, from Djibuti, Red Sea port.

SMALLPOX

Algeria				July 1-Dec. 31, 1924: Cases, 409.
Algiers	Jan. 1-31	5		Jan. 1-20, 1925: Cases, 107.
Arabia:				
Aden	Jan. 25-Feb. 21	5		Imported.
Bolivia:				
La Paz	Nov. 1-Dec. 31	20	11	
Do	Jan. 1-31		5	
Brazil:				
Pernambuco	Nov. 9-Jan. 3	100	27	
Do	Jan. 4-17	22	12	
British East Africa:				
Kenya—				
Mombasa	Jan. 18-24	1		
Uganda—				
Entebbe	Oct. 1-31	4		
British South Africa:				
Northern Rhodesia	Oct. 28-Dec. 15	57	2	
Do	Jan. 27-Feb. 2	3		Natives
Southern Rhodesia	Jan. 29-Feb. 4	1		
Canada:				
British Columbia—				
Vancouver	Dec. 14-Jan. 3	32		
Do	Jan. 4-Mar. 7	223		
Victoria	Jan. 18-Feb. 7	2		
Manitoba—				
Winnipeg	Dec. 7-Jan. 3	14		
Do	Jan. 4-Feb. 27	30		
New Brunswick—				
Bonaventure and Gaspe Counties.	Jan. 1-31	1		
Northumberland	Feb. 8-14	1		County.
Ontario				Nov. 30-Dec. 27, 1924: Cases, 33.
Hamilton	Jan. 24-30	1		Dec. 28, 1924, to Feb. 28, 1925: Cases, 41; deaths, 1.
Ceylon				July 27-Nov. 29, 1924: Cases, 27;
Colombo	Jan. 18-Feb. 7	4		deaths, 1.
China:				
Amoy	Nov. 9-Feb. 14			Present.
Antung	Nov. 17-Dec. 28	5		
Do	Jan. 5-Feb. 14	15	1	
Foochow	Nov. 2-Jan. 27			Do.
Hongkong	Nov. 9-Jan. 3	6	2	
Do	Jan. 4-17	4	2	
Manchuria—				
Harbin	Jan. 15-Feb. 11	5		
Nanking	Jan. 4-21			Do.
Shanghai	Dec. 7-27	1	2	
Do	Jan. 18-24	1		
Do	Feb. 1-14	3	4	Deaths among Chinese.
Chosen:				
Seoul	Dec. 1-31	1		
Colombia:				
Buenaventura	Feb. 15-22	1		
Czechoslovakia				April-June, 1924: Cases, 1; occurring in Province of Moravia.
Ecuador:				
Guayaquil	Nov. 16-Dec. 15	4		
Egypt:				
Alexandria	Nov. 12-Dec. 31	10		
Do	Jan. 8-28	8		
Esthonia				Dec. 1-31, 1924: Cases, 2.
France				July-December, 1924: Cases, 81;
St. Malo	Feb. 2-8	7	1	Believed to have been imported on steamship Ruyth from Sfax, Tunis.

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

Reports Received from December 27, 1924, to April 3, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Germany				June 29–Nov. 8, 1924: Cases, 7.
Frankfort-on-Main	Jan. 1-10	1		
Gibraltar	Dec. 8-14	1		
Gold Coast				July–September, 1924: Cases, 82; deaths, 1.
Great Britain:				
England and Wales	Nov. 23-Jan. 3	472		
Do	Jan. 4-Feb. 28	1,085		
Newcastle-on-Tyne	Jan. 18-Feb. 21	9		
Do	Mar. 1-7	1		
Greece				January–June, 1924: Cases, 170; deaths, 27.
Do				July–December, 1924: Cases, 38; deaths, 26.
Saloniki	Nov. 11-Dec. 22	3		
India				Oct. 19, 1924, to Jan. 3, 1925: Cases, 12,564; deaths, 2,857. Jan. 4–24, 1925: Cases, 7,921; deaths, 1,642. Mar. 5, 1925: Epidemic.
Bombay	Nov. 2-Jan. 3	30	18	
Do	Jan. 4-Feb. 7	114	65	
Calcutta	Oct. 26-Jan. 8	307	170	
Do	Jan. 4-Feb. 7	578	358	
Karachi	Nov. 16-Jan. 3	16	2	
Do	Jan. 4-Feb. 14	52	6	
Madras	Nov. 16-Jan. 3	122	48	
Do	Jan. 4-Feb. 21	379	114	
Rangoon	Oct. 26-Jan. 3	86	28	
Do	Jan. 4-Feb. 7	287	49	
Indo-China				Aug. 1–Sept. 30, 1924: Cases, 223. deaths, 76.
Province—				
Anam	Aug. 1-Sept. 30	49	11	
Cambodia	do	40	9	
Cochin-China	do	115	49	
Saigon	Nov. 16-Jan. 3	17	5	Including 100 sq. km. of surrounding country.
Do	Jan. 4-10	3	1	Do.
Do	Jan. 25-31	5	2	
Tonkin	Aug. 1-Sept. 30	19	7	
Iraq	June 29-Dec. 13	137	66	
Bagdad	Nov. 9-Dec. 27	2	1	
Italy				June 29–Dec. 27, 1924: Cases, 63.
Jamaica				Nov. 30, 1924–Jan. 3, 1925: Cases, 50. Reported as alastrim.
Do				Jan. 4–31, 1925: Cases, 43. Reported as alastrim.
Kingston	Nov. 30-Dec. 27	4		Reported as alastrim.
Japan				Aug. 1–Nov. 15, 1924: Cases, 4.
Nagasaki	Feb. 9-15	3		
Java:				
East Java—				
Pasoeroean	Oct. 26-Nov. 1	9	1	
Do	Nov. 12-19			Epidemic in 2 native villages.
Soerabaya	Oct. 19-Dec. 31	685	212	
Do	Jan. 15-21	62	11	
West Java—				
Batam	Oct. 14-20	2		
Batavia	Oct. 21-Nov. 14	2		
Do	Dec. 20-Jan. 2	19	4	
Buitenzorg	Dec. 25-31	1		Batavia Residency.
Cheribon	Oct. 14-Nov. 24	15		Cheribon Residency.
Do	Jan. 1-7	2		
Pekalongan	Oct. 14-Nov. 24	22		
Do	Dec. 25-31	3		Province.
Pemalang	Jan. 8-14	1		Pekalongan Residency.
Preanger	Nov. 18-24	1		
Latvia				Oct. 1–Nov. 30, 1924: Cases, 5.
Lithuania				Jan. 1–31, 1925: Cases, 2.
Mexico:				
Durango	Dec. 1-31		5	
Do	Jan. 1-Feb. 28		10	
Guadalajara	Dec. 23-29		1	
Do	Jan. 6-12		1	
Do	Mar. 3-9		1	
Mexico City	Nov. 23-Dec. 27	5		
Do	Jan. 11-Feb. 14	9		
Monterey				Jan. 24, 1925: Outbreak. Mar. 14, 1925, present.
Salina Cruz	Dec. 1-31	1	1	
Saltillo	Feb. 22-28		1	

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

Reports Received from December 27, 1924, to April 3, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Mexico—Continued				
Tampico	Dec. 11-31	5	4	
Do	Jan. 1-Mar. 10	44	16	
Vera Cruz	Dec. 1-Jan. 3		10	
Do	Jan. 5-Mar. 15		35	
Villa Hermosa	Dec. 28-Jan. 10			Present. Locality, capital, State of Tabasco.
Nigeria				January-June, 1924: Cases, 357; deaths, 87.
Do				July-November, 1924: Cases, 87; deaths, 25.
Persia:				
Teheran				Sept. 23-Dec. 21, 1924: Deaths, 12.
Peru:				
Arequipa	Nov. 24-30		1	
Poland				Sept. 21-Nov. 29, 1924: Cases, 19; deaths, 2.
Do				Nov. 30-Dec. 20, 1924: Cases, 10.
Portugal:				
Lisbon	Dec. 7-Jan. 3	17		
Do	Jan. 4-Feb. 28	59	2	
Oporto	Nov. 30-Dec. 27	3	2	
Do	Jan. 11-17	1		
Russia				January-June, 1924: Cases, 9,683; July-September, 1924: Cases, 1,251.
Siam:				
Bangkok	Dec. 28-Jan. 3	1	1	
Do	Jan. 18-31	4	6	
Sierra Leone:				
Freetown	Feb. 7-14	2		From S. S. Elmina.
Spain:				
Barcelona	Nov. 27-Dec. 31		5	
Cadiz	Nov. 1-Dec. 31		51	
Do	Jan. 1-31		9	
Madrid	Year 1924		40	
Malaga	Nov. 23-Jan. 3		97	
Do	Jan. 4-Mar. 7		77	
Valencia	Nov. 30-Dec. 6	2		
Do	Feb. 15-Mar. 7	3		
Switzerland:				
Lucerne	Nov. 1-Dec. 31	19		
Do	Jan. 1-31	24		
Syria:				
Aleppo	Nov. 23-Dec. 27	13		
Do	Jan. 4-Feb. 21	63	18	
Damascus	Jan. 6-13	2		
Tripoli:				
Tripoli	July 14-Dec. 12	52		
Tunis:				
Tunis	Nov. 25-Dec. 29	42	35	
Do	Jan. 1-Mar. 11		199	
Turkey:				
Constantinople	Dec. 13-19	5		
Union of South Africa				Nov. 1-Dec. 31, 1924: Cases, 14.
Cape Province	Feb. 1-7			Outbreaks.
De Aar District	Jan. 25-31			Outbreak at railway camp.
Do	Nov. 9-Jan. 17			Outbreaks.
Orange Free State	Nov. 2-8			Do.
Ladybrand District	Jan. 15-31			Outbreak, on farm.
Transvaal	Nov. 9-Jan. 10			Do.
Do	Feb. 1-7			Outbreaks.
Uruguay				January-June, 1924: Cases, 101; deaths, 2.
Do				July-October, 1924: Cases, 45; deaths, 4.
On vessel:				
S. S. Habana	Feb. 18	1		At Santiago de Cuba, from Kingston, Jamaica.
S. S. Ruyth				At St. Malo, France, from Sfax, Tunis, Feb., 1924; believed to have imported smallpox infection.

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

Reports Received from December 27, 1924, to April 3, 1925—Continued

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec. 20, 1924: Cases, 101; deaths, 14.
Algiers	Nov. 1-Dec. 31	5	1	
Do	Jan. 1-Feb. 20	4	3	
Bolivia:				
La Paz	Nov. 1-Dec. 31	3		
Do	Jan. 1-31	2		
Bulgaria				January-June, 1924: Cases, 191; deaths, 28.
Do				July-October, 1924: Cases, 5.
Chile:				
Concepcion	Nov. 25-Dec. 1		1	
Do	Jan. 6-12		2	
Do	Jan. 27-Feb. 2		1	
Iquique	Nov. 25-Dec. 1		2	
Do	Feb. 1-7		1	
Talcahuano	Nov. 16-Dec. 20		5	
Do	Jan. 4-10		1	
Valparaiso	Nov. 25-Dec. 7		4	
Do	Jan. 11-Feb. 14		9	
Chosen:				
Seoul	Nov. 1-30	1	1	
Czechoslovakia				December, 1924: Cases, 5.
Egypt:				
Alexandria	Dec. 3-9	1	1	
Cairo	Oct. 1-Dec. 23	13	8	
Esthonia				Dec. 1-31, 1924: Cases, 5.
France				July-October, 1924: Cases, 7.
Gold Coast				Oct. 1-31, 1924: 1 case.
Greece				May-June, 1924: Cases, 116; deaths, 8.
Do				July-December, 1924: Cases, 40; deaths, 4.
Saloniki	Nov. 17-Dec. 15	3	2	
Do	Jan. 25-31	1		
Japan				Aug. 1-Nov. 15, 1924; Cases, 2.
Latvia				October-December, 1924: Cases, 30.
Lithuania				August-October, 1924: Cases, 15; deaths, 1.
Do				Jan. 1-31, 1925: Cases, 27; deaths, 2.
Mexico:				
Durango	Dec. 1-31		1	
Guadalajara	Dec. 23-29		1	
Mexico City	Nov. 9-Jan. 3	80		Including municipalities in Federal District.
Do	Jan. 11-Feb. 14	40		Do.
San Luis Potosi	Mar. 8-14		1	
Morocco				November, 1924: Cases, 5.
Palestine				Nov. 12-Dec. 8, 1924: Cases, 7.
Ekron	Dec. 23-29	1		
Jerusalem	do	2		
Do	Jan. 20-26	1		
Mikveh Israel	do	1		
Ramleh	Feb. 10-16	1		
Peru:				
Arequipa	Nov. 24-30		1	
Poland				Sept. 28-Dec. 20, 1924: Cases, 542; deaths, 33.
Portugal:				
Lisbon	Dec. 29-Jan. 4		2	
Oporto	Jan. 4-Feb. 7	2		
Rumania				January-June, 1924: Cases, 2,906; deaths, 328.
Do				July-August, 1924: Cases, 89; deaths, 12.
Constanza	Dec. 1-10	1		
Russia				Jan. 1-June 30, 1924: Cases, 92,000. July-September, 1924: Cases, 5,225.
Leningrad	June 29-Nov. 22	12		
Spain:				
Madrid	Year 1924		3	
Malaga	Dec. 21-27		1	
Sweden:				
Goteborg	Jan. 18-24	1		
Tunis				July 1-Dec. 20, 1924: Cases, 40.
Tunis	Mar. 5-11	1		

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

Reports Received from December 27, 1924, to April 3, 1925—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Turkey:				
Constantinople	Nov. 15–Dec. 19	6	1	
Do	Jan. 2–22	6		
Do	Feb. 1–7	1	1	
Union of South Africa				Nov. 1–Dec. 31, 1924: Cases, 345; deaths, 87.
Cape Province	Nov. 1–Dec. 31	126	24	Dec. 21, 1924–Jan. 17, 1925: Outbreaks.
Do	Feb. 1–7			Outbreaks.
East London	Nov. 16–22	1		
Do	Jan. 18–24	1		
Natal	Nov. 1–Dec. 31	130	50	
Do	Jan. 18–24			Do.
Orange Free State	Nov. 1–Dec. 31	59	8	Jan. 11–17: Outbreaks.
Transvaal	do	30	5	
Yugoslavia				Aug. 3–Oct. 18, 1924: Cases, 17; deaths, 2.
Belgrade	Nov. 24–Dec. 28	5		

YELLOW FEVER

Gold Coast	October–November, 1924.	4	4	
Salvador:				
San Salvador	June–October, 1924	77	28	Last case, Oct. 22, 1924.