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COMMENTS FROM READERS OF THE PUBLIC HEALTH REPORTS

On March 25, 1927, the Surgeon General of the United States Public Health Service sent a circular letter to all those on the mailing list receiving the PUBLIC HEALTH REPORTS, which read as follows:

> We are very desirous of making the weekly PUBLIC HEALTH REPORTS of the greatest possible value and assistance to public health officials and others to whom they are distributed. In the accomplishment of this purpose, your full and frank comment and criticism are earnestly solicited.
>
> It is requested that you submit any suggestions that you may have as to the character of material that you would find of most value, and also as to any material now being included in the REPORTS which you believe might be omitted without detriment.
>
> Your prompt and careful consideration of this matter will be very much appreciated.

Several hundred letters have already been received in reply to this communication, in which a great many helpful suggestions have been offered by those who read the PUBLIC HEALTH REPORTS. It is not practicable to make a personal reply to all those who have sent in suggestions and criticisms, and the Surgeon General takes this opportunity of thanking each reader who responded to the communication quoted above.

Quite a number of persons replying to the letter stated that an index to the PUBLIC HEALTH REPORTS would be useful. For their information, and for the information of others interested, it may be stated that such an index is printed twice each year, covering the material that has appeared in the issues of the preceding six months. The PUBLIC HEALTH REPORTS are designed for binding in a double volume for each year. The REPORTS for the months of January to June, 1927, inclusive, are to be bound as volume 42, part 1, and the issues from July to December, 1927, to be bound as volume 42, part 2.

The Public Health Service can not undertake to supply bound volumes of PUBLIC HEALTH REPORTS. It does, however, furnish an index for each half year—January–June and July–December—convenient for binding. This index is now being sent to libraries, medical journals, Public Health Service stations, and subscribers who have requested it. Other subscribers may obtain the index as it is issued twice each year by addressing a request to the Surgeon General, United States Public Health Service, Washington, D. C.

DEFINITIONS OF PASTEURIZATION AND THEIR ENFORCEMENT[1]

By LESLIE C. FRANK, *Sanitary Engineer;* FREDERIC J. MOSS, *Assistant Sanitary Engineer;* and PETER E. LEFEVRE, *Associate Milk Specialist, United States Public Health Service*

There can be no question that Pasteurization is the most potent single force operating to-day to prevent the transmission of milk-borne diseases. In most fields of public health, however, actual practice tends to fall short of the laboratory ideal, and the conviction has recently become acute that this is true of commercial Pasteurization.

It would be of very questionable service to the true cause of Pasteurization were we to attempt to belittle the defects of present practice. Such an attempt would merely furnish the opponents of Pasteurization with ammunition. It will be far more to the purpose to bring the defects to light and correct them, and thereby forestall opposition.

The object of this paper is, therefore, to discuss: (1) Certain unsatisfactory aspects of the present status of milk Pasteurization, and (2) a suggested remedy.

THE PROBLEM

The principal difficulties in the enforcement of present-day definitions of Pasteurization are as follows:

(*a*) That some of them, if actually enforced as intended, do not insure uniformly effective Pasteurization; (*b*) that some of them, though theoretically effective, can not be effectively enforced without more information than is at present available to local health officers; and (*c*) that some of them, if strictly enforced as intended, will partly or completely destroy the creaming ability of the milk and consequently produce a sales resistance to Pasteurized milk which it would be highly desirable to avoid if consistent with safety.

The vast majority of definitions of Pasteurization in use to-day in this country specify a temperature of either 142° F. or 145° F., and a holding time of 30 minutes. In order to simplify discussion, these limits will be freely used as illustrative examples in this paper.

The first difficulty—namely, that certain types of ordinances do not insure effective Pasteurization—concerns itself with a type of definition of which the following is an example:

> Pasteurized milk is milk which has been heated to at least 142° F. (or 145° F.) and held thereat for at least 30 minutes.

[1] Expanded from a paper read at the Fifty-ninth Annual Meeting of the American Public Health Association, Buffalo, N. Y., October, 1926.

This type of definition is usually enforced by requiring the recording thermometer to read 142° F. (or 145° F.) for 30 minutes. The health officer assumes that every particle of milk will thus be subjected to at least 140° F. for 30 minutes, which most authorities accept as being lethal to milk-borne pathogens.

Unfortunately this can not be assumed with safety. Experiments conducted by the United States Public Health Service in the course of its Pasteurization research work, recently inaugurated in Chicago, show that some apparatus in wide usage will permit part of the milk to pass through far below the minimum lethal temperature even if the recording thermometer indicates 145° F. for 30 minutes. In most cases this is the result of "cold pockets," foam, valve leakage, and unsatisfactory devices for indicating and controlling temperature and time.

The second difficulty—namely, that some definitions, though theoretically effective, are not actually enforceable with the information at present available—has to do with several different types of definition. The following is one example:

Pasteurized milk is milk which has been heated to at least 142° F. (or 145° F.) and held thereat for at least 30 minutes *in Pasteurization apparatus approved by the health officer.*

This type of definition attempts to remedy the difficulty above discussed by forbidding the use of improperly designed apparatus, and assumes that the local health officer is in possession of all the necessary technical information concerned.

Unfortunately the local health officer does not always possess such complete technical information. The published material relative to design defects and the required margins of safety for all of the many designs of apparatus on the market is very incomplete.

In order to be able to enforce this type of definition effectively, therefore, the local health officer would have to employ a sanitary engineer or similarly trained assistant, to determine these facts for him for every type of apparatus in use in his community.

Several States and cities have recently attempted to formulate design and operation specifications for Pasteurization machinery. Much good has thus been accomplished and many improvements have already been made by the manufacturers as a result of the enforcement of these specifications, but it is believed safe to say that the fundamental data upon which such specifications should be based are not yet fully available for many types of apparatus. A few machines have been studied and the results secured are valuable. The machines studied, however, are far too few in number and are indeed not even named in the publications, for obvious reasons.

It is clear, then, that the local health officer is not in a position to enforce this type of definition effectively.

Another type of definition which has the same shortcoming is illustrated by the following example:

Pasteurized milk is milk *every particle of which* has been heated to at least 142° F. (or 145° F.) and held thereat for at least 30 minutes in Pasteurizing apparatus approved by the health officer.

This type of definition presupposes an entirely different method of enforcement. In this type the commercial practice margin of safety is evidently intended to be applied above the definition limits. The phrase "every particle of which" indicates clearly that the intent of the definition is that the apparatus shall be so operated that every particle of milk is to be treated as defined and that the commercial practice margin of safety required to bring this about must be added to the definition limits in enforcing it. In other words, if the definition requires that every particle of milk be heated to at least 145° F., the recording thermometer of any given machine must show an excess temperature above this point equal to the safety margin required by that machine.

In this type of definition we have, therefore, to deal in reality, with two superimposed safety margins—one a blanket margin lying between the generally accepted lethal limit of 140° F. and the definition temperature of 142° or 145° F., and the other a secondary margin evidently intended by the wording to be applied above the definition limit.

The purpose of the first or primary margin is somewhat vague, but possibly reflects a feeling of conservatism as to the usually accepted lethal limit of 140° F. as found in the laboratory.

This is, therefore, a very conservative type of definition and would, in the opinion of most authorities, be effective if it could be enforced.

The enforcement of this type of definition is, however, subject to the same difficulty as is the enforcement of the one previously discussed. The information at present available to the local health officer is not sufficiently complete to enable him to know what margin of safety he should require for the various types of apparatus in order that he may satisfy himself that "every particle of milk" is actually exposed to the definition limits, and, furthermore, does not enable him to recognize design defects which no margin of safety can be expected to offset.

The third difficulty—namely, that some definitions of Pasteurization, if strictly enforced as intended, will partly or completely destroy the creaming ability of the milk—applies to any definition which requires that any considerable portion of the milk be exposed to more than 145° F. for the usual holding period of 30 minutes. This fact has been satisfactorily demonstrated in repeated experiments.

Reduction of creaming ability is not encountered in the enforcement of definitions which are intended to require a recording thermometer

temperature of at least 142° F. This is quite generally agreed upon. Some authorities believe, however, that reduction of creaming ability will be encountered whenever the required thermometer temperature approaches 145° F., because, under a literal enforcement of this requirement, the apparatus must be operated at somewhat above 145° F. in order that the recording thermometer shall never be found to dip below 145° F. as a result of unavoidable operation fluctuations. The testimony on this point is conflicting, however, and many health officers are not convinced that a recording thermometer temperature of 145° F. will reduce creaming ability if certain other plant processes are properly carried out.

Definitions which require "every particle" to be exposed to at least 142° F. will not cause reduction in creaming ability unless the apparatus used requires a commercial practice factor of safety of more than 3° F. Apparatus which requires a higher margin will be likely to cause trouble.

Definitions which require "every particle of milk" to be exposed to at least 145° F. will be practically certain to cause creaming difficulties if literally enforced, because here the commercial practice factor of safety will lift the actual temperature to which much of the milk is exposed considerably above 145° F.

Before leaving this subject it should be reemphasized that, if consistent with safety, reduction of creaming ability should be avoided as it will inevitably prejudice consumers against Pasteurized milk. Not many consumers feel financially able to purchase cream separately, and the custom of using top milk for coffee and cereal is almost universal. It would be a superhuman task to change this custom suddenly and by force.

The thought has been advanced that an edict to Pasteurize all milk in such a manner as to destroy entirely its creaming ability would not meet with serious reaction, because no raw milk would be available to which the consumer could turn. It is believed, however, that there would be serious public opposition to such a step, and it must be remembered that the great majority of our cities still emphatically insist upon permitting the sale of raw milk. In these cities we would be practically certain to have a reversion toward the use of raw milk if we were to remove the visible cream from Pasteurized milk.

It is believed, therefore, that if a definition of Pasteurization can be evolved which can be rigidly enforced, which will be effective, and which will still preserve the creaming ability of milk, it will be highly desirable.

Let us now restate the problem. It is clear—

(1) That definitions of Pasteurization which do not specify approved apparatus can not be depended upon to provide uniformly effective Pasteurization, whereas those which do specify approved

apparatus can not be effectively enforced because of the lack of an adequate basis for approval.

(2) That definitions of Pasteurization which require "every particle of milk" to be exposed to a given temperature for a given time obviously imply a knowledge which the average health officer does not now possess. He can not answer the question, "Will a given machine apply the prescribed time and temperature to every particle of milk, and under what operating conditions?"

(3) That some present-day definitions of Pasteurization would, if strictly enforced, partly or completely destroy the creaming ability of milk and consequently interfere with Pasteurized milk sales.

A SUGGESTED REMEDY

The above statement of the problem points the way fairly obviously to at least part of the remedy. Certainly it is desirable that some competent and responsible agency should furnish us as early as possible with the results of exhaustive tests on various makes of apparatus. Certain of the States or cities may decide to undertake this work for the benefit of their citizens, or they may adopt such valid determinations as are or may be made by other agencies. These tests should determine for each type of apparatus the following: (1) What design corrections should be made, if any, before its use should be authorized at all? (2) What margin of safety must be applied in its operation before it can be expected to apply any given Pasteurization limits to every particle of milk passing through it? and (3) How it must be operated in order that the recommended margin of safety may be adequate.

The agency doing the testing could well be advised and supported by a committee of experts representing health officers, the apparatus industry, the dairy industry, and the Federal health and dairy agencies. The United States Public Health Service has for some time anticipated the necessity for such testing work and has recently inaugurated investigations intended to define the problem and develop the technique of testing. Once such information is available for all makes of apparatus, and continuously augmented for newly appearing types of apparatus, the solution of our problem will have become relatively simple, provided only that some point or points upon the minimum lethal curve can be generally agreed upon.

This latter must of course be the business of bacteriologists, but until an authoritative pronouncement is issued by them to the contrary it is believed that it will be a sensible policy for health authorities to accept the rule that 140° F. will be lethal for milk-borne pathogens if actually applied to every particle of milk for 30 minutes.

If this be tentatively assumed, we have, then, merely to decide whether we wish to incorporate in our definition an arbitrary blanket margin of safety covering all apparatus, and bar from use any apparatus requiring more than that margin, or whether we wish the definition to state in absolute terms the time and temperature which shall actually be applied to every particle of milk, and then to require that the recording thermometer of any given machine must show the legally required temperature and time plus the safety margin officially recommended for that machine.

If the first type of definition be selected, it might read something like the following: "Pasteurized milk is milk which has been heated to at least —° F. and held thereat for at least — minutes as indicated by its recording device, provided that no apparatus shall be used which has not been approved by the (accepted agency making the official tests) for use under this definition, and provided that all apparatus shall be operated in accordance with the directions recommended by the (accepted agency making the official tests)."

If the second type of definition be selected, it might read as follows: "Pasteurized milk is milk every particle of which has been heated to 140° F. and held thereat for 30 minutes in apparatus approved by the health officer, provided that the recording device shall indicate a temperature and time in excess of 140° F. and 30 minutes, equal to the safety margin recommended by the (accepted agency making the official tests) for the apparatus in question, and provided the apparatus is operated in accordance with the directions recommended by the (accepted agency making the official tests)."

It is obvious that neither of the definitions here suggested can be used immediately. They are without value until there is available the complete information necessary to their enforcement.

The question will, therefore, immediately arise, "How can the health officer best protect the milk consumer in the meantime?" It is believed that his most effective work will be to see that the defects in the design of Pasteurization machinery are corrected.

The Pasteurization-machinery studies being conducted by the Public Health Service in Chicago show quite clearly that, in pursuing the sharp controversy as to whether the definition "temperature" should be 142° F. or 145° F., we have neglected the equally serious problem of machinery defects, which neither of the two temperatures will offset.

Neither 142° F. nor 145° F., as indicated by the indicating or recording thermometers for the main body of the milk, will offset a temperature drop frequently as high as 6° or 7° and occasionally as high as 50° F. in the milk in "cold pockets" or "dead ends" which are beyond the influence of the heating and agitation devices. These "cold pockets" or "dead ends" usually consist of a pipe section

between the holder proper and the effluent valve, the milk in which is not properly heated during the heating period or drops in temperature during the holding period.

Plate I illustrates "dead end" effluent fittings frequently encountered. It is obvious that the milk held in these fittings during the holding period will not be effectively Pasteurized. When the vat is filled with cold milk prior to heating, the milk in pipe *a—a*, upper illustration in Plate I, has been observed to be almost as cold at the end of the heating period as at the beginning. In the case of the effluent fitting shown in the lower illustration some heating takes place but not to the full Pasteurization temperature.

The remedy for this defect is, of course, either to bring the seat of the effluent valve flush with the inside of the holder (flush type valve) or so nearly flush as to bring the milk within the effluent fitting within the influence of the milk agitation device (if there is one), and thus cause a constant exchange of milk between the holder proper and the inside of the fitting.

Where the holder is not provided with an agitation device, as in the case of certain pocket type designs, or where the agitation device is not used during the holding period, the flush type valve will probably be imperative.

The "cold pocket" defect exists also in the riser pipe at the effluent end of certain continuous-flow apparatus. The remedy here consists also in providing a flush type valve.

Plate II (upper illustration) shows one type of flush type valve. The seat of the valve when closed is flush with the inside lining of the vat.

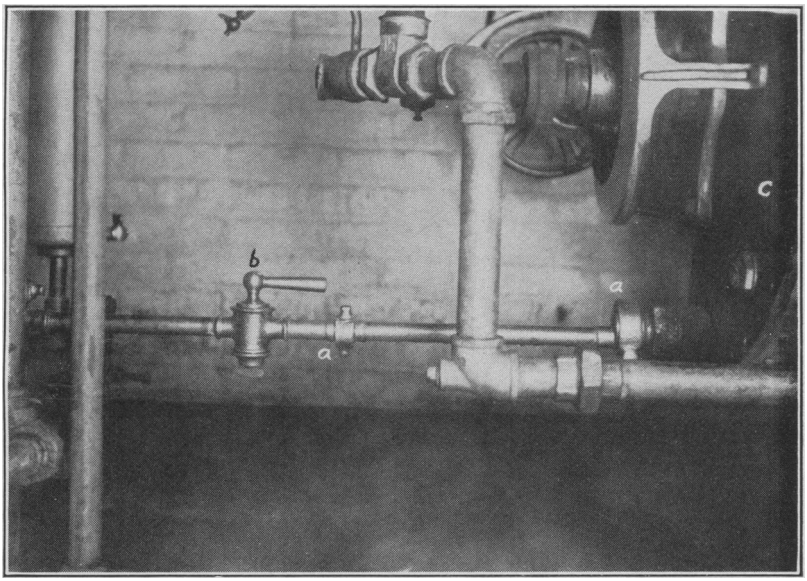
Furthermore, neither of the two controversial temperatures will be adequate to solve the problem of "cold foam." A large percentage of the designs of milk-handling equipment in use to-day result in the formation of a blanket, or of islands of foam on the surface of the milk in the vat or pocket type holders.

The temperature of the air above the milk is frequently far below the temperature of Pasteurization, and our studies show that the temperature of the foam can be well below 130° F. when the main body of the milk is at 145° F.

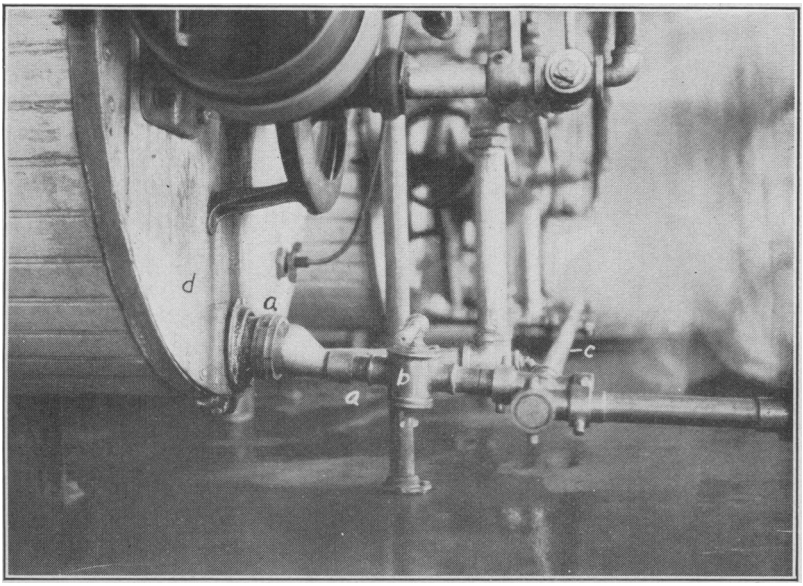
It is, of course, obvious that the mixture of foam and milk which leaves the vat at the end of the Pasteurization process is not safely Pasteurized. Any infection present in the foam before Pasteurization may be present in the foam after Pasteurization and will partly destroy the value of the Pasteurization process.

The remedy is, of course, either to eliminate the foam entirely or to keep the foam at the Pasteurization temperature.

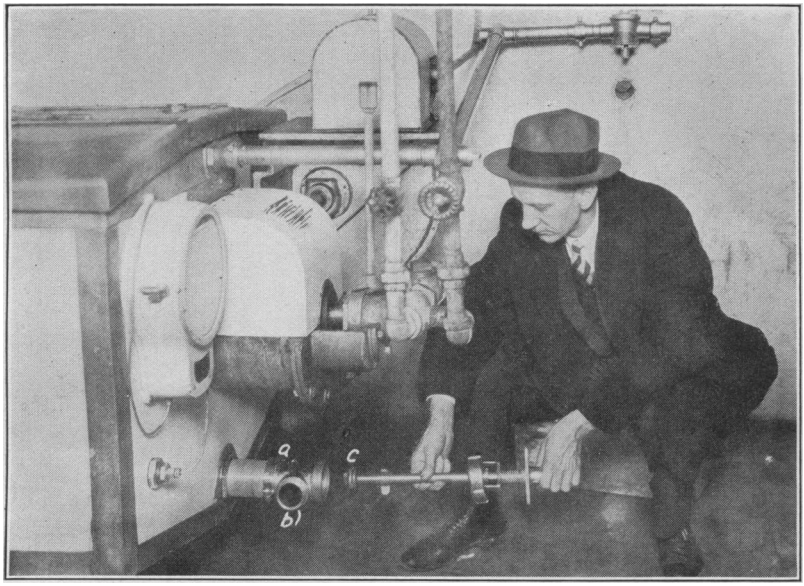
Steps are now being taken by the manufacturers of milk-plant equipment to eliminate or reduce foam by correcting the designs of



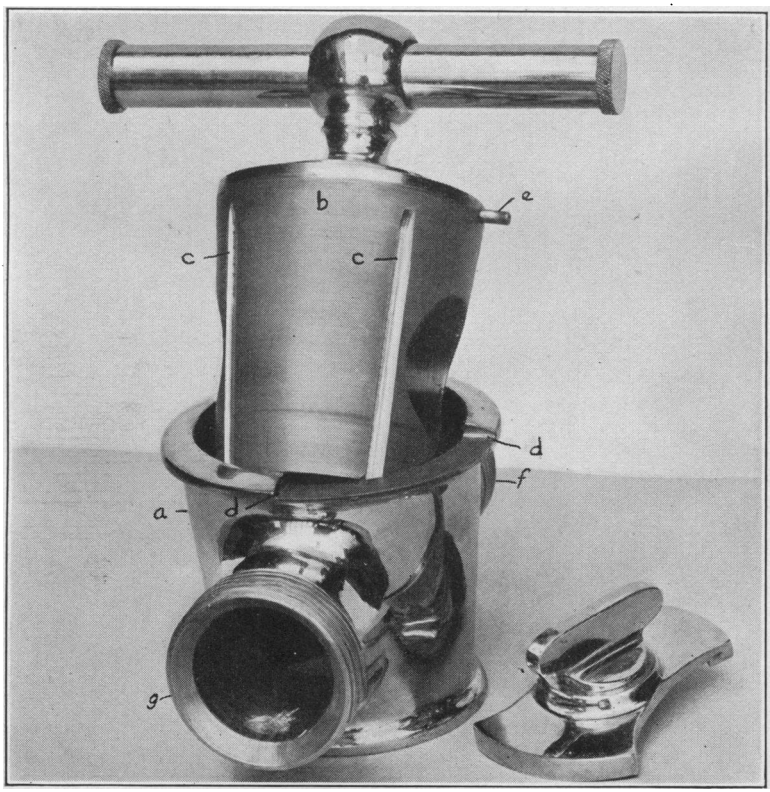
"Dead end" effluent fitting on Pasteurization vat. The milk held in pipe *a–a* during the holding period is not effectively Pasteurized



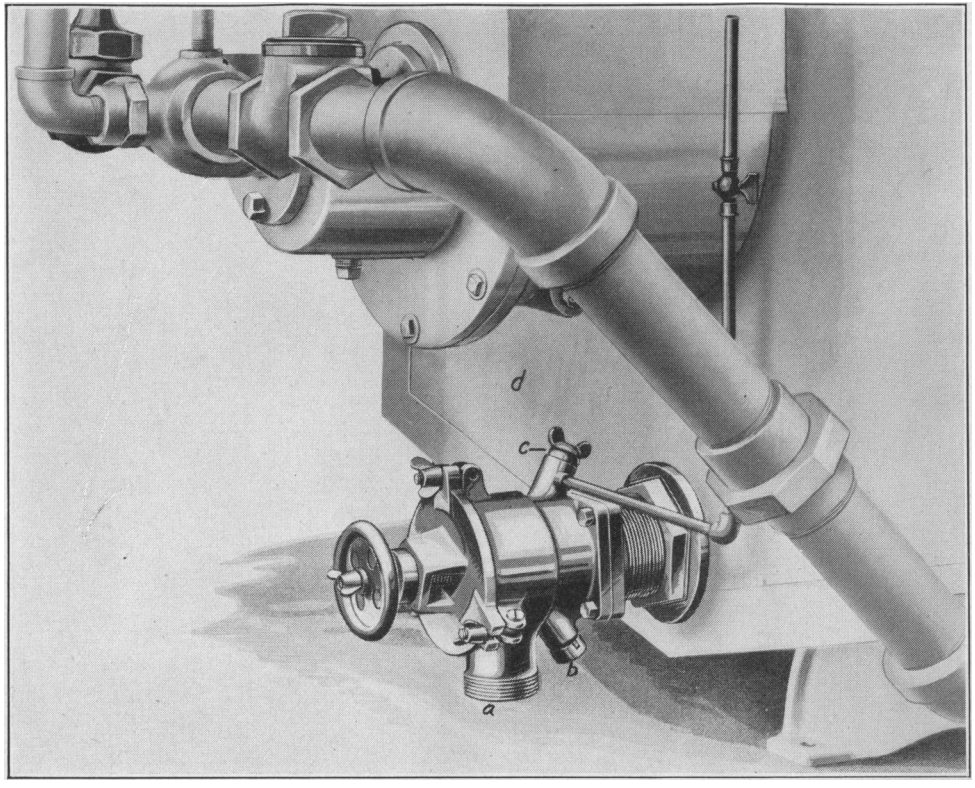
"Dead end" effluent fitting on Pasteurization vat. The milk in the fitting *a–a* is not effectively Pasteurized



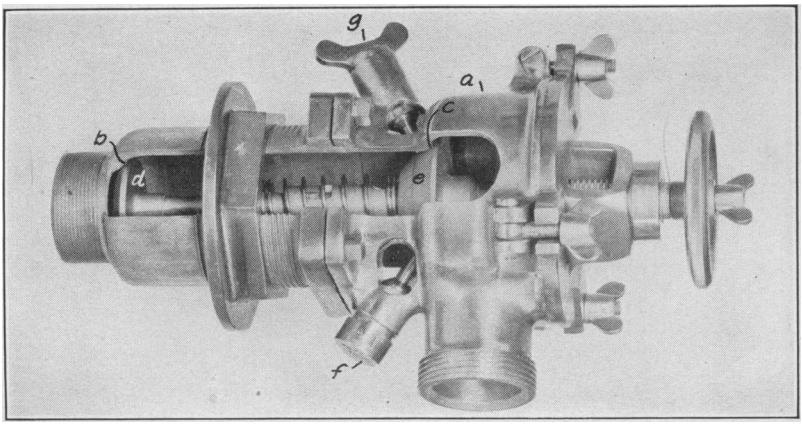
Coil vat equipped with flush-type valve: *a* is valve body; *b*, outlet connection; *c*, valve seat, which shuts off flush with inside lining of vat



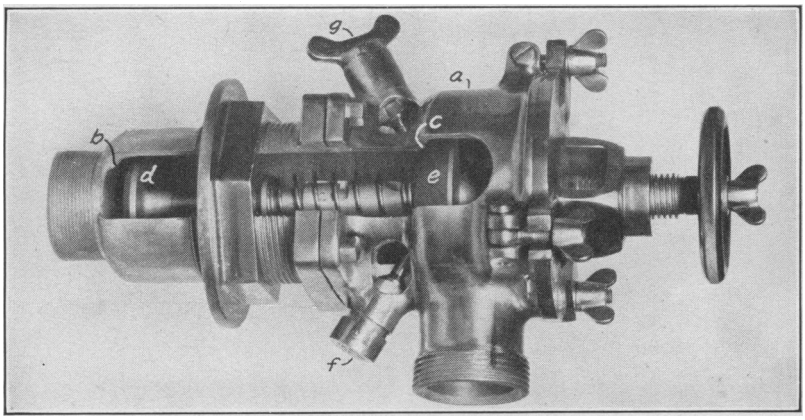
Leak-protector inlet valve: *a*, valve body; *b*, valve plug; *c–c*, leak drain grooves; *d–d*, stops; *e*, stop pin; *f*, *g*, connections to inlet header line and holder, respectively



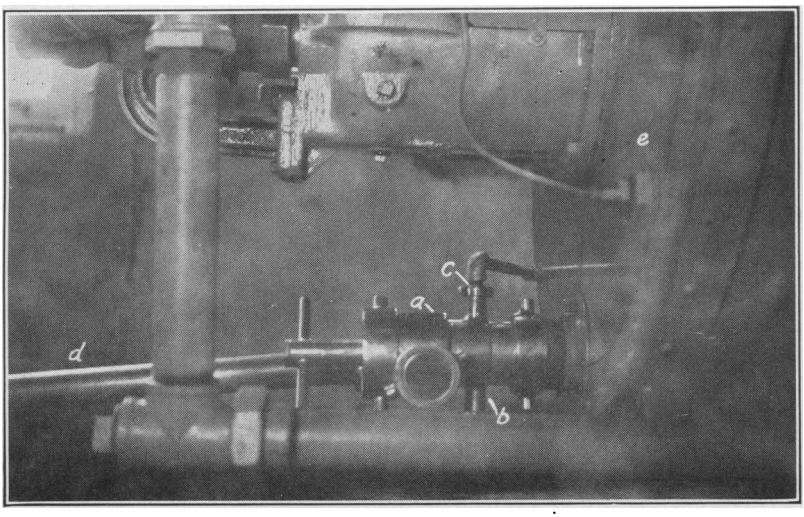
Flush-type leak-protector valve on coil vat: *a*, outlet; *b*, leak drain; *c*, steam connection; *d*, coil vat



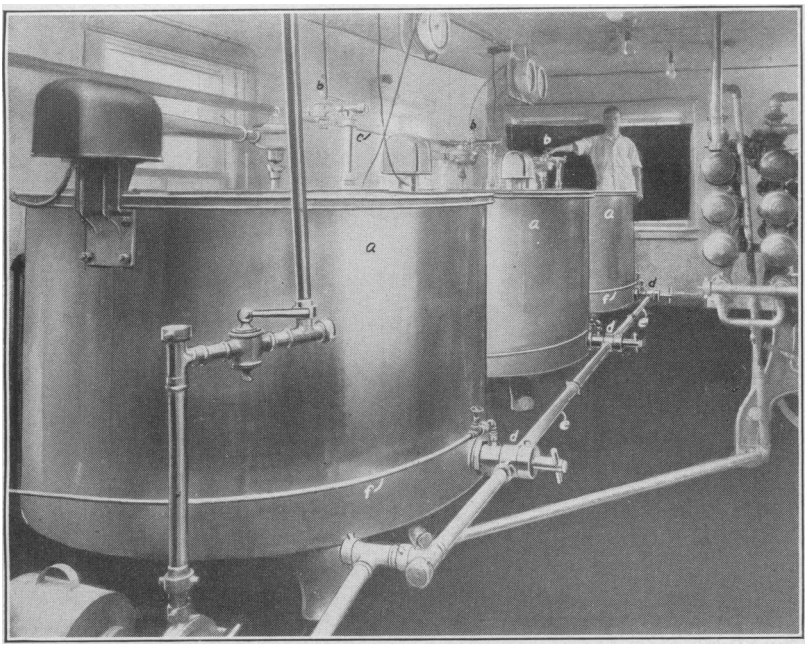
Flush-type leak-protector valve in closed position: *a*, valve body; *b*, *c*, valve seats; *d*, *e*, corresponding disks; *f*, leak drain; *g*, steam valve



Flush-type leak-protector valve in open position. Parts designated as above



Flush-type leak-protector valve on coil vat: *a*, valve body; *b*, leak drain; *c*, steam connection; *d*, outlet pipe; *e*, coil vat



Series of three vat holders equipped with leak-protector inlet and outlet valves. Inlet and outlet pipes remain connected. *a–a*, vat holders; *b–b*, leak-protector inlet valves; *c*, inlet header line; *d–d*, flush-type leak-protector outlet valves; *e*, outlet header line; *f–f*, steam connections to valve

those parts of the machinery principally at fault, namely, milk pumps, milk clarifiers, flash heaters, and turbulence producing inlet devices to Pasteurization vats or pockets. Excellent progress is being made and properly designed equipment will probably result in the elimination of much, if not all, of the foam.

It is not certain as yet, however, that foam will ever be completely eliminated, and one possible remedy will be to require the heating of the atmosphere above the milk by means of either steam or hot air.

All Pasteurization plants have steam available, and the introduction of a small jet of steam above the body of the milk will be a simple procedure. A trap should, of course, be provided so as to prevent any water from condensation in the steam line from reaching the Pasteurization chamber. The condensation of steam in the chamber itself will be insignificant in quantity. Several of the Chicago plants have already incorporated this change, and tests by the Public Health Service are in progress to determine its effectiveness.

Another defect which can not be offset by temperatures of either 142° F. or 145° F. is that of leaky valves. Practically all valves used in milk work will leak sooner or later, due to the inevitable scoring of the valve seat in service. If the valve in question is an influent valve connected to the un-Pasteurized raw milk supply, raw milk will leak into the Pasteurization chamber during the holding period. This leakage will therefore not have been held for the full required holding period, and can not be considered as having been effectively Pasteurized.

On the other hand, if the valve in question is an effluent valve, any leakage taking place before the milk in the Pasteurizer has been held for the full holding period, will contaminate the Pasteurized supply with which the effluent fitting may be connected.

The correction of this defect lies, of course, in either disconnecting the holder from the effluent system entirely during the filling, heating, and holding period, and disconnecting the holder from the influent system during the heating and holding period, or of substituting for the present valve one of the recently designed leak-protector valves. These leak-protector valves are designed with a leak port which captures any leakage and leads it to waste.

In the case of plug-type valves, permitted in influent fittings, this leak-escape device consists of vertical grooves in the plug face. Plate II (lower illustration) shows a plug-type inlet valve provided with leak-escape grooves. Any milk leaking past the inlet port of the valve drops into the grooves and escapes through the bottom of the valve. It can not gain access to the Pasteurizer holder. In the case of flush-type valves used in effluent fittings, the leak-escape device consists of a leak port located between two valve seats. The port is closed when the valve is open, and open when the valve is closed.

Plates III and IV illustrate several types of leak-protector flush valves. The two upper illustrations in Plate IV show a cutaway view of one design. The leak drain is shown at *f*. During the heating and holding period the valve is closed. Both valve disks *d* and *e* are closed tight against the corresponding valve seats *b* and *c*. In this position leak drain *f* is held open by pressure of disk *e* upon the small push rod of *f*. Thus, any leakage past the inner valve seat *b* drains away and can not pass outer valve seat *c*. When the valve is open and the vat is being emptied, the pressure upon the push rod of *f* is released and the drain is closed, thus preventing the wastage of milk.

Another defect in design which must be corrected is that effluent valves become contaminated with leakage during the filling, heating, and holding period. This contamination is not avoided, of course, by the leak-escape feature above described. For this reason either a manual or automatic steaming of effluent valves is recommended either continuously during the holding period or just prior to the discharge of Pasteurized milk from any holder. Steam connections are shown in Plates III and IV.

A defect found in long-distance flow holders as a result of the Public Health Service studies is the existence of unequal temperatures in the air surrounding the holder tubes. The variation found has been as much as 19° F. This may be corrected by the thermostatically controlled heating of the air in the holder. Agitation of the air in the holder may further prove necessary in order to insure sufficiently even distribution of temperature.

The above is merely a tentative list of defects thus far studied and will probably have to be augmented as the studies proceed.

In general, it is desired to reemphasize the fact that no mere fixing of definition temperatures will offset the serious danger produced by these defects, and it is believed that health officials will be well advised to devote immediate attention to their correction.

In the meantime experimental work should be pushed as rapidly as possible to determine the safety margin or margins which must be provided for correctly designed apparatus.

TENTATIVE DRAFT OF SPECIFICATIONS

Following is a tentative draft of specifications of Pasteurization apparatus which are suggested for use pending further developments in Pasteurization apparatus studies:

VAT TYPE APPARATUS

(Milk heated in the holder)

(*a*) The apparatus shall be so designed that every particle of milk will be agitated during the entire heating period. This disbars any apparatus containing "cold pockets" or pipe sections which are beyond the influence of the agitation device.

(*b*) The vat must be either disconnected entirely during the holding period from any influent piping, and during the filling, heating, and holding period from the effluent piping, or provided with leak-escape valves which will not permit any un-Pasteurized milk to enter the vat during the holding period or any incompletely Pasteurized milk to escape into the effluent piping at any time.

(*c*) The lids of vats must be kept closed during operation, and so designed that nothing on top thereof will drop into the vat if opened.

(*d*) Every vat shall be provided with an indicating thermometer, as well as a recording thermometer. The indicating thermometer shall be accurate within 1° F. The recording thermometer shall be checked daily by the plant operator, and at least biweekly by the health officer. The indicating, and not the recording, thermometer shall be used as an index of temperature by the plant operator.

(*e*) All effluent fittings shall be steam sterilized, either manually or automatically, immediately before discharge of the Pasteurized milk.

(*f*) Designs which permit foam formation, whether in large or small quantities, shall be equipped with a steam or hot-air device which will keep the atmosphere above the body of the milk at a temperature equal to at least that of the body of the milk. If steam is used, the steam line shall be provided with a trap properly designed to avoid the discharge of water into the body of the milk.

POCKET TYPE APPARATUS

(Milk heated before entering holder)

(*a*) The apparatus shall be so designed as to be free from "cold pockets" or pipe sections, the milk in which will drop below the recorded temperature before discharge from the pocket.

(*b*) The influent and effluent manifolds shall each be provided with both recording and indicating thermometers. Indicating thermometers shall be accurate within 1° F. The indicating, and not the recording, thermometers shall be used as an index of temperature by the plant operator. Recording thermometers shall be checked daily by the plant operator and biweekly by the health officer.

(*c*) All influent and effluent fittings shall be so designed (leak-escape valves or other satisfactory solution) as not to permit any un-Pasteurized milk to enter the pocket during the holding period, or incompletely Pasteurized milk to enter the effluent manifold at any time.

(*d*) Lids of pockets must be kept closed during operation, and so designed that nothing on top thereof will drop into the pocket if open.

(*e*) Designs which permit foam formation, whether in large or small quantities, shall be equipped with a steam or hot-air device which will keep the atmosphere above the body of the milk at a temperature equal to at least that of the body of the milk. If steam

is used, the steam line shall be provided with a trap properly designed to avoid the discharge of water into the body of the milk.

(*f*) All effluent fittings shall be steam sterilized, either manually or automatically, immediately before the discharge of the Pasteurized milk.

CONTINUOUS-FLOW-TYPE APPARATUS

(*a*) No continuous-flow-type apparatus shall be used which has not been tested by the health officer or by other proper authority to determine the operating conditions which must be observed in order to insure the uniform application of the desired time and temperature.

(*b*) Influent and effluent piping shall each be provided with both recording and indicating thermometers. Indicating thermometers shall be accurate within 1° F. The indicating, and not the recording, thermometers shall be used as an index of temperature by the plant operator. Recording thermometers shall be checked daily by the plant operator, and biweekly by the health officer.

(*c*) The holder shall be free of any "cold pockets" or pipe sections, the milk in which will drop below the recorded temperature before discharge.

(*d*) All continuous flow apparatus shall be provided with thermostatic control, properly designed to maintain a uniform temperature, both in the milk and in the heating medium surrounding the milk.

Lest this paper be used as propaganda against Pasteurization, it is desired to state that, while testing-work thus far done by the Public Health Service has disclosed many defective types of apparatus, it has also disclosed that most of the defective types are being immediately redesigned as fast as the testing work discloses defects, and that testing work already done on improved designs has shown satisfactory results.

Furthermore, attention is called to the fact that, in most cases, the necessary modifications of apparatus now in use can be made in the field; that is, without the necessity for returning the apparatus to the factory.

It will be noted that the discussion in this paper is based upon the fact that practically all definitions of Pasteurization rest upon the acceptance of only one point upon the minimum lethal curve. The possibility must be anticipated, however, that other points on the curve may, in the future, receive wide acceptance, and that future definitions may need to be modified accordingly.

In conclusion, it is desired to acknowledge gratefully the assistance of Mr. George W. Putnam, Chief Bureau of Dairy Products, city of Chicago, and of Mr. Louis Shere, Assistant Director, Division of Dairy Products, with whom the subject matter of this paper was discussed, and who contributed valuable criticism. The photographic illustrations used in this paper were made by the Chicago Health Department.

EXTENT OF RURAL HEALTH SERVICE IN THE UNITED STATES, 1923–1927

By L. L. Lumsden, *Surgeon, United States Public Health Service*

According to data obtained by the Rural Sanitation Office of the Public Health Service from the health departments of the States, the following (Table 1) is a list, by States, of counties (or districts) in which the rural sections thereof at the beginning of the calendar years 1923, 1924, 1925, 1926, and 1927, respectively, were provided with local health service under the administration of whole-time county or (local) district health officers:

Table 1.—*List of counties or districts in which, as of January 1, 1923, 1924, 1925, 1926, and 1927, respectively, rural sections were provided with health service under whole-time local health officers*

1923	1924	1925	1926	1927
		ALABAMA		
Baldwin. Barbour. Calhoun. Colbert. Covington. Dallas. Etowah. Houston. Jefferson. Lauderdale. Madison. Mobile. Montgomery. Morgan. Pike. Sumter. Talladega. Tuscaloosa. Walker.	Baldwin. Barbour. Calhoun. Colbert. Covington. Dallas. Escambia. Etowah. Franklin. Houston. Jefferson. Lauderdale. Limestone. Madison. Mobile. Montgomery. Morgan. Pike. Sumter. Talladega. Tuscaloosa. Walker.	Baldwin. Barbour. Calhoun. Colbert. Covington. Dallas. Escambia. Etowah. Franklin. Houston. Jefferson. Lauderdale. Limestone. Madison. Marengo. Marshall. Mobile. Montgomery. Morgan. Pike. Sumter. Talladega. Tuscaloosa. Walker.	Baldwin. Barbour. Calhoun. Coffee. Colbert. Covington. Dallas. Escambia. Etowah. Franklin. Houston. Jackson. Jefferson. Lauderdale. Lawrence. Lee. Limestone. Madison. Marengo. Marshall. Mobile. Montgomery. Morgan. Pike. Sumter. Talladega. Tuscaloosa. Walker.	Baldwin. Barbour. Calhoun. Chambers. Coffee. Colbert. Covington. Dallas. Escambia. Etowah. Franklin. Houston. Jackson. Jefferson. Lauderdale. Lawrence. Lee. Limestone. Madison. Marengo. Marshall. Mobile. Montgomery. Morgan. Pike. Sumter. Talladega. Tallapoosa. Tuscaloosa. Walker.
		ARIZONA		
		Cochise.	Cochise.	Cochise. Yuma.
		ARKANSAS		
			Garland. Jefferson. Pulaski.	Garland. Jefferson. Pulaski.

TABLE 1.—*List of counties or districts in which, as of January 1, 1923, 1924, 1925, 1926, and 1927, respectively, rural sections were provided with health service under whole-time local health officers*—Continued

1923	1924	1925	1926	1927
CALIFORNIA				
Los Angeles. Monterey. Orange. San Francisco.[1] San Luis Obispo.	Los Angeles. Monterey. Orange. San Joaquin. San Luis Obispo.	Los Angeles. Monterey. Orange. San Diego. San Joaquin. San Luis Obispo.	Los Angeles. Monterey. Orange. San Diego. San Joaquin. San Luis Obispo. Santa Barbara.	Los Angeles. Monterey. Orange. Riverside. San Diego. San Joaquin. San Luis Obispo. Santa Barbara. Yolo.
COLORADO				
			Otero.	Otero.
CONNECTICUT				
		Fairfield.[2]	Fairfield.[2]	Fairfield.[2]
FLORIDA				
			Polk.	Manatee. Polk. Sarasota.
GEORGIA				
Baldwin. Bartow. Clarke. Cobb. Decatur. Dougherty. Floyd. Fulton. Glynn. Hall. Laurens. Lowndes. Mitchell. Richmond. Sumter. Thomas. Troup. Walker.	Baldwin. Bartow. Bibb. Clarke. Cobb. Decatur. Dekalb. Dougherty. Floyd. Glynn. Hall. Laurens. Lowndes. Mitchell. Richmond. Sumter. Thomas. Troup. Walker.	Baldwin. Bartow. Bibb. Clarke. Cobb. Decatur. Dekalb. Dougherty. Floyd. Glynn. Hall. Laurens. Lowndes. Miller. Mitchell. Richmond. Seminole. Sumter. Thomas. Troup. Walker.	Baker. Baldwin. Bartow. Bibb. Clarke. Cobb. Decatur. Dekalb. Dougherty. Floyd. Glynn. Grady. Hall. Laurens. Lowndes. Mitchell. Richmond. Sumter. Thomas. Troup. Walker. Ware.	Baker. Baldwin. Bartow. Bibb. Brooks. Clarke. Cobb. Decatur. Dekalb. Dougherty. Floyd. Glynn. Grady. Hall. Laurens. Lowndes. Mitchell. Richmond. Spaulding. Sumter. Thomas. Troup. Walker. Ware.
ILLINOIS				
Morgan.	Morgan.	Cook. Crawford. Morgan. Sangamon.	Cook. Morgan. Sangamon.	Cook. Morgan. Sangamon.

[1] As San Francisco County is entirely urban, it should not have been included in 1923 and is omitted from the 1924, 1925, 1926, and 1927 lists.
[2] District.

TABLE 1.—*List of counties or districts in which, as of January 1, 1923, 1924, 1925, 1926, and 1927, respectively, rural sections were provided with health service under whole-time local health officers*—Continued

1923	1924	1925	1926	1927
INDIANA				
Fulton.				
IOWA				
Dubuque.	Dubuque. Washington.	Dubuque. Washington.	Dubuque.	Dubuque.
KANSAS				
Butler. Cherokee. Ellis. Ford. Geary. Marion. Ottawa. Wabaunsee.	Butler. Cherokee. Ellis. Geary. Lyon. Marion. Ottawa. Sheridan.	Cherokee. Geary. Lyon. Marion. Ottawa. Sheridan.	Butler. Coffey. Ellis. Geary. Jefferson. Lyon. Marion. McPherson. Ottawa. Phillips.	Butler. Coffey. Ellis. Geary. Jefferson. Lyon. Marion. Ottawa. Phillips.
KENTUCKY				
Boyd. Daviess. Fulton. Harlan. Jefferson. Johnson. Mason. Scott.	Bell. Boyd. Daviess. Fayette. Fulton. Jefferson. Johnson. Mason. Scott.	Boyd. Daviess. Fayette. Fulton. Jefferson. Johnson. Mason. Scott.	Boyd. Daviess. Fayette. Fulton. Jefferson. Johnson. Mason. Scott.	Boyd. Daviess. Fayette. Fulton. Jefferson. Johnson. Knott. Mason. Scott.
LOUISIANA [3]				
Beauregard. Caddo. De Soto. Natchitoches. Ouachita. Rapides. Washington.	Beauregard. Caddo. Claiborne. De Soto. Natchitoches. Ouachita. Rapides. St. Mary. Tangipahoa. Washington.	Beauregard. Caddo. Claiborne. De Soto. Natchitoches. Ouachita. St. Mary. Tangipahoa. Washington.	Caddo. Claiborne. De Soto. Lafourche. Natchitoches. Ouachita. Plaquemines. St. Mary. Tangipahoa. Washington. Webster.	Caddo. Claiborne. De Soto. Lafourche. Natchitoches. Ouachita. Plaquemines. St. Mary. Washington. Webster.
MAINE [2]				
Oldtown. Rumford. Sanford. Waterville. York.	Oldtown. Rumford. Sanford. Waterville. York.	Oldtown. Rumford. Sanford. Waterville. York.	Oldtown. Rumford. Sanford. Waterville. York.	Oldtown. Rumford. Sanford. Waterville. York.
MARYLAND				
Allegany. Montgomery.	Allegany. Frederick. Montgomery.	Allegany. Baltimore. Calvert. Carroll. Frederick. Montgomery.	Allegany. Baltimore. Calvert. Carroll. Frederick. Montgomery.	Allegany. Baltimore. Calvert. Carroll. Frederick. Montgomery.

[2] Districts. [3] Parishes.

TABLE 1.—*List of counties or districts in which, as of January 1, 1923, 1924, 1925, 1926, and 1927, respectively, rural sections were provided with health service under whole-time local health officers*—Continued

1923	1924	1925	1926	1927
MASSACHUSETTS				
Cape Cod.[1]	Cape Cod.[1]	Cape Cod.[1]	Cape Cod.[1]	Cape Cod.[1]
MINNESOTA				
	St. Louis.	St. Louis.	St. Louis.	St. Louis.
MISSISSIPPI				
Bolivar. Coahoma. Forrest. Harrison. Hinds. Jones. Lauderdale. Lee. Leflore. Marshall. Tallahatchie. Washington.	Bolivar. Coahoma. Forrest. Harrison. Hinds. Jones. Lauderdale. Lee. Tallahatchie. Washington.	Bolivar. Coahoma. Forrest. Hancock. Harrison. Jackson. Jones. Lee. Pearl River. Sharkey. Washington.	Bolivar. Coahoma. Forrest. Hancock. Harrison. Hinds. Jackson. Jones. Lee. Leflore. Pearl River. Sharkey. Washington.	Bolivar. Clarke. Coahoma. Forrest. Hancock. Harrison. Hinds. Holmes. Jackson. Jones. Lamar. Lee. Leflore. Pearl River. Perry. Sharkey. Union. Washington.
MISSOURI				
Cape Girardeau. Dunklin. Gentry. Greene. Jasper. Monroe. New Madrid. Nodaway. Pettis. Polk. St. Francois.	Dunklin. Gentry. Greene. New Madrid. Nodaway. Pettis. Polk. St. Francois. St. Louis.	Dunklin. Gentry. Greene. New Madrid. Nodaway. Pettis. Polk. St. Francois. St. Louis.	Boone. Dunklin. Greene. Jackson. New Madrid. Nodaway. Pemiscot. Pettis. Polk. St. Francois. St. Louis.	Boone. Dunklin. Greene. Holt. Jackson. Marion. New Madrid. Nodaway. Pemiscot. Pettis. St. Francois. St. Louis.
MONTANA				
Cascade. Lewis and Clark. Missoula. Yellowstone.	Cascade. Lewis and Clark. Missoula.	Cascade. Lewis and Clark. Missoula.	Cascade. Lewis and Clark. Missoula.	Cascade. Lewis and Clark. Missoula.
NEW MEXICO				
Bernalillo. Chaves. Dona Ana. Eddy. San Miguel. Santa Fe. Union. Valencia.	Bernalillo. Chaves. Colfax. Dona Ana. Eddy. McKinley. San Miguel. Santa Fe. Union. Valencia.	Bernalillo. Chaves. Colfax. Dona Ana. Eddy. McKinley. San Miguel. Santa Fe. Union. Valencia.	Bernalillo. Chaves. Colfax. Dona Ana. Eddy. McKinley. Santa Fe. Union. Valencia.	Bernalillo. Chaves. Dona Ana. Eddy. McKinley. Santa Fe. San Miguel. Union. Valencia.

[1] Districts.

TABLE 1.—*List of counties or districts in which, as of January 1, 1923, 1924, 1925, 1926, and 1927, respectively, rural sections were provided with health service under whole-time local health officers*—Continued

1923	1924	1925	1926	1927
		NEW YORK		
	Cattaraugus.	Cattaraugus.	Cattaraugus.	Cattaraugus.
		NORTH CAROLINA		
Bertie. Bladen. Buncombe. Cabarrus. Carteret. Columbus. Craven. Cumberland. Davidson. Durham. Edgecombe. Forsyth. Granville. Guilford. Halifax. Lenoir. Mecklenburg. New Hanover. Northampton. Pitt. Robeson. Rowan. Sampson. Surry. Vance. Wake. Wayne. Wilkes. Wilson.	Beaufort. Bertie. Bladen. Brunswick. Buncombe. Cabarrus. Columbus. Craven. Cumberland. Davidson. Durham. Edgecombe. Forsyth. Granville. Guilford. Halifax. Henderson. Hyde. Lenoir. Mecklenburg. New Hanover. Northampton. Pamlico. Pitt. Robeson. Rowan. Sampson. Surry. Vance. Wake. Wayne. Wilkes. Wilson.	Beaufort. Bertie. Bladen. Brunswick. Buncombe. Cabarrus. Columbus. Craven. Cumberland. Davidson. Durham. Edgecombe. Forsyth. Granville. Guilford. Halifax. Henderson. Hyde. Lenoir. Mecklenburg. New Hanover. Northampton. Pamlico. Pitt. Richmond. Robeson. Rowan. Rutherford. Sampson. Surry. Vance. Wake. Wayne. Wilkes. Wilson.	Beaufort. Bertie. Bladen. Brunswick. Buncombe. Cabarrus. Columbus. Craven. Cumberland. Davidson. Durham. Edgecombe. Forsyth. Granville. Guilford. Halifax. Henderson. Johnston. Lenoir. Mecklenburg. New Hanover. Northampton. Pamlico. Pitt. Richmond. Robeson. Rowan. Rutherford. Sampson. Surry. Vance. Wake. Wayne. Wilkes. Wilson.	Beaufort. Bertie. Bladen. Brunswick. Buncombe. Cabarrus. Carteret. Columbus. Craven. Cumberland. Davidson. Durham. Edgecombe. Forsyth. Granville. Guilford. Halifax. Henderson. Johnston. Lenoir. Mecklenburg. Nash. New Hanover. Northampton. Pamlico. Pitt. Richmond. Robeson. Rowan. Rutherford. Sampson. Surry. Vance. Wake. Wayne. Wilkes. Wilson.
		OHIO		
Allen. Ashtabula. Auglaize. Belmont. Butler. Champaign. Clermont. Clinton. Columbiana. Coshocton. Crawford. Cuyahoga. Erie. Hamilton. Hocking. Huron. Lake. Lorain. Lucas. Madison. Mahoning. Marion. Miami. Monroe. Montgomery. Morrow. Muskingum.	Allen. Ashtabula. Athens. Auglaize. Belmont. Butler. Clermont. Clinton. Columbiana. Coshocton. Crawford. Cuyahoga. Erie. Geauga. Hamilton. Hancock. Hocking. Huron. Lake. Lorain. Lucas. Mahoning. Marion. Meigs. Mercer. Miami. Montgomery.	Allen. Ashtabula. Athens. Belmont. Butler. Clermont. Clinton. Columbiana. Coshocton. Crawford. Cuyahoga. Delaware. Erie. Fayette. Franklin. Geauga. Hamilton. Hancock. Hocking. Huron. Lake. Lorain. Lucas. Mahoning. Marion. Meigs. Mercer.	Allen. Ashtabula. Athens. Belmont. Butler. Clermont. Clinton. Columbiana. Coshocton. Crawford. Cuyahoga. Delaware. Erie. Fayette. Franklin. Geauga. Hamilton. Hancock. Hocking. Huron. Jefferson. Lake. Lorain. Lucas. Mahoning. Marion. Meigs.	Allen. Ashtabula. Belmont. Butler. Clermont. Clinton. Columbiana. Coshocton. Crawford. Cuyahoga. Darke. Delaware. Erie. Fayette. Geauga. Hamilton. Hancock. Hocking. Huron. Jefferson. Lake. Lorain. Lucas. Mahoning. Marion. Meigs. Mercer.

TABLE 1.—*List of counties or districts in which, as of January 1, 1923, 1924, 1925, 1926, and 1927, respectively, rural sections were provided with health service under whole-time local health officers*—Continued

1923	1924	1925	1926	1927
OHIO—continued				
Paulding. Perry. Ross. Sandusky. Scioto. Seneca. Shelby. Stark. Summit. Trumbull. Tuscarawas. Union. Washington. Wayne. Wood.	Morrow. Muskingum. Paulding. Perry. Richland. Ross. Sandusky. Scioto. Seneca. Shelby. Stark. Summit. Trumbull. Tuscarawas. Union. Washington. Wayne. Wood.	Miami. Montgomery. Morrow. Muskingum. Paulding. Perry. Richland. Ross. Sandusky. Scioto. Seneca. Shelby. Stark. Summit. Trumbull. Tuscarawas. Union. Washington. Wayne. Wood.	Mercer. Miami. Montgomery. Morrow. Muskingum. Perry. Richland. Ross. Sandusky. Scioto. Seneca. Shelby. Stark. Summit. Trumbull. Tuscarawas. Union. Washington. Wayne. Wood.	Miami. Montgomery. Morrow. Muskingum. Perry. Preble. Richland. Ross. Sandusky. Scioto. Seneca. Shelby. Stark. Summit. Trumbull. Tuscarawas. Union. Washington. Wayne. Wood.
OKLAHOMA				
Ottawa.	Ottawa.	Carter. Le Flore. Muskogee. Oklahoma. Pittsburg.	Carter. Le Flore. McCurtain. Muskogee. Oklahoma. Okmulgee. Ottawa. Pittsburg.	Carter. Kay. Le Flore. McCurtain. Muskogee. Oklahoma. Okmulgee. Ottawa. Pittsburg.
OREGON				
Coos.	Coos.	Clackamas. Coos. Douglas. Jackson. Klamath.	Clackamas. Coos. Douglas. Jackson. Klamath.	Clackamas. Coos. Douglas. Jackson. Klamath.
SOUTH CAROLINA				
Charleston. Cherokee. Darlington. Fairfield. Greenville. Newberry. Orangeburg.	Aiken. Anderson. Charleston. Cherokee. Dillon. Fairfield. Greenville. Newberry. Orangeburg.	Aiken. Anderson. Beaufort. Charleston. Cherokee. Colleton. Darlington. Dillon. Fairfield. Georgetown. Greenville. Marion. Newberry. Orangeburg.	Aiken. Anderson. Beaufort. Charleston. Cherokee. Colleton. Darlington. Dillon. Fairfield. Georgetown. Greenville. Greenwood. Marion. Newberry. Orangeburg. Spartanburg.	Aiken. Anderson. Beaufort. Charleston. Cherokee. Darlington. Dillon. Fairfield. Georgetown. Greenville. Greenwood. Horry. Marion. Newberry. Orangeburg. Spartanburg.
SOUTH DAKOTA				
Brown.	Brown.	Brown. Pennington. Yankton.	Brown. Pennington. Yankton.	Brown. Pennington.

TABLE 1.—*List of counties or districts in which, as of January 1, 1923, 1924, 1925, 1926, and 1927, respectively, rural sections were provided with health service under whole-time local health officers*—Continued

1923	1924	1925	1926	1927
		TENNESSEE		
Davidson. Gibson. Montgomery. Roane. Williamson.	Blount. Davidson. Gibson. Montgomery. Obion. Roane. Sevier. Williamson.	Blount. Davidson. Gibson. Montgomery. Obion. Roane. Rutherford. Sevier. Williamson.	Blount. Davidson. Dyer. Gibson. Hamilton. Montgomery. Obion. Roane Rutherford. Sevier. Weakley. Williamson.	Blount. Davidson. Dyer. Gibson. Hamilton. Lauderdale. Montgomery. Obion. Roane. Rutherford. Sevier. Shelby. Weakley. Williamson.
		TEXAS		
Cherokee. Dallam. Dallas. Hidalgo. Jefferson. Tarrant.	Dallam. Hidalgo. Jefferson. Red River. Tarrant. Washington.	Falls. Hidalgo. Nueces. Tarrant.	Cameron. Hidalgo. Jefferson. McLennan. Tarrant.	Cameron. Hidalgo. Jefferson. McLennan. Tarrant.
		UTAH		
Weber.	Weber.	Davis. Weber.	Davis. Weber.	Box Elder. Davis. Morgan. Summit. Wasatch. Weber.
		VERMONT [3]		
First. Second. Third. Fourth. Fifth. Sixth. Seventh. Eighth. Ninth. Tenth.				
		VIRGINIA		
Albemarle. Arlington. Augusta. Fairfax. Halifax. Nansemond. Norfolk. Russell. Wise.	Accomac. Albemarle. Arlington. Augusta. Fairfax. Halifax. Henrico. James City. Loudoun. Nansemond. Norfolk. Princess Anne. Russell. Wise.	Accomac. Albemarle. Arlington. Augusta. Brunswick. Fairfax. Halifax. Henrico. Isle of Wight. James City. Nansemond. Northampton. Wise.	Accomac. Albemarle. Arlington. Augusta. Brunswick. Fairfax. Halifax. Henrico. Isle of Wight. James City. Nansemond. Northampton. Sussex. Wise.	Accomac. Albemarle. Arlington. Augusta. Brunswick. Fairfax. Halifax. Henrico. Isle of Wight. James City. Nansemond. Northampton. Southampton. Sussex. Wise.

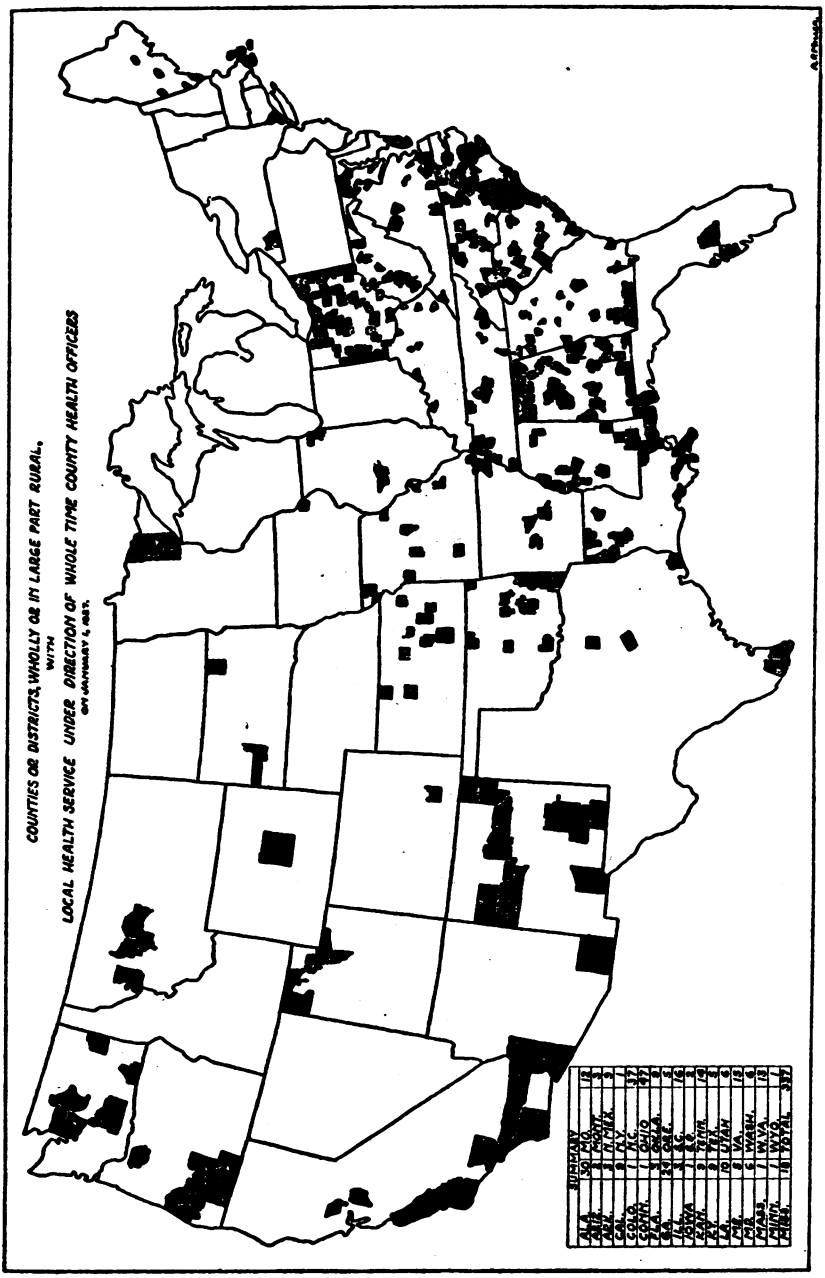
[3] Districts.

TABLE 1.—*List of counties or districts in which, as of January 1, 1923, 1924, 1925, 1926, and 1927, respectively, rural sections were provided with health service under whole-time local health officers*—Continued

1923	1924	1925	1926	1927
WASHINGTON				
Chelan. King. Spokane. Yakima.	Chelan. King. Spokane. Walla Walla. Yakima.	Chelan. King. Spokane. Walla Walla. Yakima.	Chelan. King. Walla Walla. Yakima.	Chelan. King. Snohomish. Spokane. Walla Walla. Yakima.
WEST VIRGINIA				
Logan. Marion. Mingo. Preston.	Hancock. Harrison. Logan. Marion. Preston. Taylor.	Gilmer. Hancock. Harrison. Logan. Marion. Marshall. Preston. Taylor.	Gilmer. Hancock. Harrison. Logan. Marion. Marshall. Preston. Roane.	Boone. Brooke. Gilmer. Hancock. Harrison. Kanawha. Logan. Marion. Marshall. Ohio. Preston. Roane. Wood.
WYOMING				
	Natrona.	Natrona.	Natrona.	Natrona.

Résumé of Table 1

State	Number of counties Jan. 1—					Increase or decrease in 1923	Increase or decrease in 1924	Increase or decrease in 1925	Increase or decrease in 1926
	1923	1924	1925	1926	1927				
Alabama	19	22	24	28	30	+3	+2	+4	+2
Arizona	0	0	1	1	2		+1		+1
Arkansas	0	0	0	3	3			+3	
California	4	5	6	7	9	+1	+1	+1	+2
Colorado	0	0	0	1	1			+1	
Connecticut	0	0	1	1	1		+1		
Florida	0	0	0	1	3			+1	+2
Georgia	18	19	21	22	24	+1	+2	+1	+2
Illinois	1	1	4	3	3		+3	−1	
Indiana	1	0	0	0	0	−1			
Iowa	1	2	2	1	1	+1		−1	
Kansas	8	8	6	10	9		−2	+4	−1
Kentucky	8	9	8	8	9	+1	−1		+1
Louisiana	7	10	9	11	10	+3	−1	+2	−1
Maine	5	5	5	5	5				
Maryland	2	3	6	6	6	+1	+3		
Massachusetts	1	1	1	1	1				
Minnesota	0	1	1	1	1	+1			
Mississippi	12	10	11	13	18	−2	+1	+2	+5
Missouri	11	9	9	11	12	−2		+2	+1
Montana	4	3	3	3	3	−1			
New Mexico	8	10	10	9	9	+2		−1	
New York	0	1	1	1	1	+1			
North Carolina	29	33	35	35	37	+4	+2		+2
Ohio	42	45	47	47	47	+3	+2		
Oklahoma	1	1	5	8	9		+4	+3	+1
Oregon	1	1	5	5	5		+4		
South Carolina	7	9	14	16	16	+2	+5	+2	
South Dakota	1	1	3	3	2		+2		−1
Tennessee	5	8	9	12	14	+3	+1	+3	+2
Texas	6	6	4	5	5		−2	+1	
Utah	1	1	2	2	6		+1		+4
Vermont	10	0	0	0	0	−10			
Virginia	9	14	13	14	15	+5	−1	+1	+1
Washington	4	5	5	4	6	+1		−1	+2
West Virginia	4	6	8	8	13	+2	+2		+5
Wyoming	0	1	1	1	1	+1			
Total	230	250	280	307	337	+20	+30	+27	+30


COUNTIES OR DISTRICTS, WHOLLY OR IN LARGE PART RURAL,
WITH
LOCAL HEALTH SERVICE UNDER DIRECTION OF WHOLE TIME COUNTY HEALTH OFFICERS
JAN. 1, 1927.
JURISDICTION
ALA. 18
ALTA. 50
ARIZ. 3
ARK. 3
CAL. 1
COLO. 37
CONN. 1
FLA. 67
GA. 2
ILL. 2
IOWA 16
KAN. 5
KY. 14
LA. 2
MD. 2
MICH. 16
MINN. 16
MISS. 6
MO. 18
MONT. 1
NEB. 1
N.C. 1
N.D. 3
OHIO 8
OKLA. 1
OREG. 1
PA. 1
S.C. 1
S.DAK. 1
TENN. 8
TEX. 2
VA. 16
WASH. 1
W.VA. 18
WYO. 1
TOTAL 327

The accompanying map shows the counties or districts in the United States in which, as of January 1, 1927, the rural sections thereof were provided with local health service under whole-time local (county or district) health officers.

The net gain of 30 counties in 1926 is cause for encouragement to all persons interested in this much-needed, economical, and effective development for the conservation and promotion of the health of the people of the United States. Most of the increases during the year were made in States in which the respective State health departments, with the cooperation of the United States Public Health Service or the International Health Board, or both, were enabled to give encouragement, technical advice, and financial assistance to county or district health departments.

Of the 337 counties or districts with local health service under whole-time local (county or district) health officers at the beginning of the present calendar year, 293, or 87 per cent, are receiving financial assistance for the support of their local health service from one or more of the following agencies: The State board of health, the United States Public Health Service, the International Health Board, the Children's Bureau of the United States Department of Labor.

Without assistance from outside agencies, local governments of rural communities (counties, towns, townships, or districts) in general are not disposed to appropriate adequately for the support of efficient, whole-time, local health service. Some local governments even when offered such assistance decline to appropriate their part of the budget for the service; but, according to all the evidence, development in this vitally important field of general welfare could be greatly increased by provision (which could be made at comparatively small governmental cost) to enable the State health departments and the Federal health service to offer to counties now willing to accept, and to those which would soon become willing to accept, adequate technical advice along with financial cooperation on a basis of $1 of Federal money and $3 of State money to meet four or more dollars of county money.

As health conditions in a rural community in one State influence those in other communities in that State and in other States, it seems that both the State Governments and the Federal Government may be properly concerned with the development and maintenance of efficient local health service throughout our extensive rural area. The local health service in doing its work efficiently necessarily performs duties, such as the collection of morbidity and mortality statistics and the carrying out of measures which prevent the spread of infection in intercounty and interstate traffic, for which both the State Governments and the Federal Government have a degree of definite responsibility. Therefore, if such duties can be performed more economically by the local health service than by separate or

combined specialized field forces from the State and the Federal health services, allotment of money to the local health department by the State Government and the Federal Government might be construed not as State and Federal Government aid but as payment for services on good business principles.

At the rate of progress made since 1919,[4] it will take about 85 years for reasonably adequate whole-time local rural health service to be extended to all communities of the United States in which such service is needed. To augment existing factors, or to bring into operation additional factors to speed up production, seems critically important.

Experience indicates that the proper foundation for rural health service in the United States is the county health department under the direction of the qualified whole-time county health officer. It becomes more and more evident to those with practical experience in the public health field that agencies concerned with the promotion of specialized health activities, such as typhoid fever prevention, hookworm control, tuberculosis prevention, malaria control, venereal disease prevention, or child and maternity hygiene, can perform most effectively and economically by dovetailing their specific activities in with and making them a part of a well-balanced, comprehensive program of local official health service under the immediate direction of qualified, whole-time local health officers.

The present budgets for the support of the health service covering the rural communities and some of the incorporated cities and towns in the counties and districts designated in the 1927 column of Table 1 total $4,873,168.17. Of the total local population of 12,732,233 receiving this service, 4,176,333, or 32.8 per cent, are urban. Therefore, about $3,274,769.01 of the total investment for the local health service in these 337 projects will be expended this year for strictly rural health service.

Reasonably adequate whole-time rural health service throughout this country would cost about $20,000,000 a year. Apart from the loss in human life, human health, and human happiness—which can not be measured—our national economic loss annually in wage-earnings and in other items incident to preventable sickness because of lack of efficient county health service is estimated at over $1,000,000,000. Money invested for well-directed whole-time county health service yields to the average local taxpaying citizen an annual dividend in dollars and cents ranging under different local conditions from 100 to 3,000 per cent. A claim made several years ago, and not yet successfully challenged, is that the dollar invested for well-directed comprehensive whole-time county health service yields to

[4] Reprint No. 921, p. 7, from the Public Health Reports, vol. 39, No. 20, May 16, 1924, pp. 1127-1137

the public welfare more than any other dollar obtainable by taxation of the people can be made to yield in normal times.

Table 2 presents, by States, the percentage of rural population having local health service under the direction of whole-time local (county or district) health officers at the beginning of 1927.

TABLE 2.—*Percentage of rural population having, on January 1, 1927, local health service under whole-time local (county or district) health officers*

State	Rural population (Census 1920)	Rural population with local health service under direction of whole-time health officers	Percentage of rural population with local health service under direction of whole-time health officers	State	Rural population (Census 1920)	Rural population with local health service under direction of whole-time health officers	Percentage of rural population with local health service under direction of whole-time health officers
Alabama	1,838,857	982,684	53.44	Nevada	62,153	0	0
Arizona	216,635	38,011	17.55	New Hampshire	163,322	0	0
Arkansas	1,461,707	85,414	5.84	New Jersey	680,964	0	0
California	1,095,132	327,377	29.89	New Mexico	295,390	104,176	35.27
Colorado	486,370	13,913	2.87	New York	1,795,383	39,708	2.21
Connecticut	444,292	11,475	2.58	North Carolina	2,068,753	1,020,067	49.31
Delaware	102,236	0	0	North Dakota	553,633	0	0
Florida	612,645	42,240	6.89	Ohio	2,082,258	1,242,507	59.67
Georgia	2,167,973	443,747	20.93	Oklahoma	1,488,803	263,767	17.72
Idaho	312,829	0	0	Oregon	392,370	80,896	20.61
Illinois	2,082,127	144,887	6.96	Pennsylvania	3,112,202	0	0
Indiana	1,447,535	0	0	Rhode Island	15,217	0	0
Iowa	1,528,526	19,121	1.25	South Carolina	1,389,737	593,360	42.70
Kansas	1,151,293	135,547	11.77	South Dakota	534,675	21,915	4.10
Kentucky	1,783,087	154,603	8.67	Tennessee	1,726,659	422,894	23.94
Louisiana	1,170,346	234,457	20.03	Texas	3,150,539	136,031	4.32
Maine	468,445	25,631	5.47	Utah	233,812	47,251	20.21
Maryland	580,239	225,038	38.78	Vermont	242,452	0	0
Massachusetts	202,108	16,562	8.19	Virginia	1,635,203	347,404	21.25
Michigan	1,426,852	0	0	Washington	607,886	203,592	33.49
Minnesota	1,335,532	50,898	3.81	West Virginia	1,094,694	331,727	30.30
Mississippi	1,550,497	399,690	25.78	Wisconsin	1,387,499	0	0
Missouri	1,817,152	313,511	17.25	Wyoming	137,054	3,188	2.33
Montana	376,878	32,711	8.68				
Nebraska	891,066	0	0	Total	51,406,017	8,556,000	16.64

The fact that over 83 per cent of our rural population is as yet unprovided with official local health service approaching adequacy is of utmost seriousness. It means that we are permitting a sacrifice of the health and lives and the material resources of many of our people every year—a sacrifice which is needless because preventable, and preventable by measures readily within our means and demonstrated to be in the highest sense economical. It clearly deserves the prompt and vigorous attention of all who are genuinely interested in our national welfare.

AVERAGE AGE AT DEATH IN WISCONSIN

The Wisconsin State Board of Health has recently prepared a chart which shows the average age at death in Wisconsin for each calendar year from 1908 to 1925, inclusive. The information given

on the chart shows the average age at death as presented in the following table:

Year	Average age at death
1908	40.8
1909	40.5
1910	40.0
1911	41.5
1912	42.4
1913	42.3
1914	42.2
1915	45.2
1916	44.1
1917	44.8
1918	39.4
1919	43.8
1920	43.8
1921	45.3
1922	47.0
1923	47.2
1924	48.2
1925	48.8

It will be noted from the above table that the severe epidemic of influenza which occurred in 1918 had a very material effect in shortening the average length of life in Wisconsin. The effect of influenza continued during the years 1919 and 1920, in both of which years the disease continued to prevail above its normal expectancy throughout the United States.

In commenting upon the data shown above, an official of the State board of health said that one of the factors causing increased longevity during the period was better control of communicable diseases. This control was indicated in the information given regarding the decrease of deaths from various diseases. These decreases were given as follows: Typhoid fever, 95 per cent; meningitis, 73 per cent; measles, 47 per cent; diphtheria, 58 per cent; scarlet fever, 50 per cent; infant mortality (under one year of age), 46 per cent; whooping cough, 43 per cent; tuberculosis, 42 per cent.

In contrast to these decreases that occurred in the case of communicable diseases, there was noted an increase in the number of deaths from three of the principal causes of death at the present time. These increases were as follows: Nephritis, 12 per cent; organic heart disease, 49 per cent; cancer, 42 per cent.

The State board of health seems quite justified in the closing statement shown on this chart, which reads as follows:

"Expenditures for public health yield a larger return than any other investment."

FRENCH SCIENTISTS TO HONOR THE MEMORIES OF VULPIAN AND PINEL

In connection with the annual meeting of the Biological Society and the French Congress on Neurology and Psychiatry, to be convened in Paris from May 27 to June 2, 1927, special ceremonies will

be held to commemorate the centennial of the birth of Vulpian, the great physiologist, and that of the death of Pinel, famous especially for his clinical lectures and his introduction of the modern humane method of treatment of the insane.

Through the Department of State, the ambassador of the French Republic has extended an invitation from the Medico-Psychological Society of France, to the universities and scientific societies of the United States to send delegates to these commemorative exercises. The note from the ambassador follows:

On the occasion of the annual meeting of the French Congress on Neurology and Psychiatry, the Medico-Psychological Society of France has decided to commemorate, on May 30 and 31 next, in Paris, the centennial of the death of Pinel and that of the birth of Vulpian.

A certain number of physicians of all countries have already shown a disposition to come to Paris in their personal capacity to commemorate the work of those two great French physiologists; but it occurred to the French Government that it might be interesting further to move the sending of official delegations from academies, faculties, and learned societies in foreign countries.

I am, therefore, instructed by M. Briand to forward to Your Excellency the invitation of the Medico-Psychological Society of France to the celebration of the dual centennial and to ask that you kindly see that it reaches the learned bodies of the United States.

I should be particularly thankful to you if you would kindly let me know as soon as possible the names of those whom they may choose as their representatives.

POPULATION OF HOSPITALS FOR THE INSANE

Data for November, 1926

Reports for the month of November, 1926, were received from 151 institutions for the care of the insane.

There was an increase in the number of patients during the month of 413 or 0.20 per cent. The number in the hospitals increased 0.18 per cent, and the number on parole or otherwise absent from the institutions increased 0.47 per cent.

First admissions constituted 78.15 per cent of the total admitted during the month; readmissions, 16.89 per cent, and 4.96 per cent of the total admitted were transfers or not accounted for.

Of the patients discharged, 25.47 per cent were recorded as recovered; 50.36 per cent as improved; 18.05 per cent as unimproved; 4.29 per cent as without psychosis; and 1.83 per cent as otherwise discharged or not accounted for.

There were 1,067 males per thousand females at the close of the month.

The patients on parole on November 30 constituted 8.10 per cent of the total.

During November there were 1,481 deaths of patients of the hospitals reporting, which gives an annual death rate of 85.57 per thousand under treatment.

Movement of patient population in 151 hospitals for the care of the insane during November, 1926

Number of institutions included:	
Public	123
Private	28
Total	151
Patients on books Nov. 1, 1926:	
In hospitals	189, 721
On parole	16, 669
Total	206, 390
Admitted during November:	
First admissions	3, 280
Readmissions	709
Admitted by transfer	203
Not accounted for	5
Total received during the month	4, 197
Total on books during the month	210, 587
Discharged during November:	
As recovered	529
As improved	1, 046
As unimproved	375
As without psychosis	89
Not accounted for	2
Otherwise discharged	36
Total discharged during November	2, 077
Transferred	226
Died	1, 481
Total discharged, transferred, and died during November	3, 784
Patients on books Nov. 30, 1926:	
In hospitals	190, 056
On parole	16, 747
Total	206, 803
Male	106, 733
Female	100, 070

PUBLIC HEALTH ENGINEERING ABSTRACTS

Comfort stations in Cook County Forest Preserve District. George Elliot Perry. *Engineering News-Record*, vol. 97, No. 25, December 16, 1926, pp. 996–997. (Abstract by G. H. Hazlehurst.)

This article describes 50 comfort stations built in 1922 at a cost of $1,500 each in the Forest Preserve District of Cook County, Ill. The estimated number of users is 7,500,000 per year. The stations are hexagonal in plan, about 12 feet in diameter, and contain five nonflushing seats, each erected directly above a vault 6 feet square and 8 feet deep. On one side of the main vault there is a smaller vault which provides treatment for such overflow as may be caused by displacement. In each compartment are "colloiders" or aerators, provided for the purpose of insuring the presence of dissolved oxygen in the tank liquid at all times. Air was supplied under 3 pounds pressure by air pump actuated by windmills. After contact with the sewage it escaped through a central stack. The only water supplied was from the run-off of the roof which, during dry periods, was not always adequate.

It is stated that under normal conditions no odor developed, the sludge was cleaned out once a year, was inodorous, and adapted to use as lawn fertilizer, and the effluent was odorless and contained sufficient dissolved oxygen to preclude its causing a nuisance when entering a surface ditch.

On holidays some of the stations were overloaded and some objection from odors arose. Rubbish thrown in the vault endangered the air-distributing apparatus. A new design enlarges the capacity from 50 cubic feet to 250 cubic feet per seat. A new type of nonclogging aerator has been designed. Where water under pressure is available, a small hydraulically operated air compressor will be used, actuated by a stream $\frac{1}{64}$ inch in diameter. The central vent stack will be omitted, as it is considered unnecessary.

The system has been patented in the United States and foreign countries.

Superchlorination Method of Taste Destruction. Norman J. Howard and Rudolph E. Thompson. *Water Works (Engineering & Contracting)*, vol. 65, No. 12, December, 1926, pp. 596–602. (Abstract by C. C. Ruchhoft.)

Causes producing taste in the Toronto water have been studied for a number of years. The "taste" periods occur most frequently during the spring and fall, and the periods of longest duration usually follow storms on Lake Ontario. It is suggested that, while the taste is often caused by substitution products in chlorinated water by phenol and cresol groups, organic matter may form phenoloid bodies and cause taste. Tastes were produced with chlorine doses from 0.19 to 0.68 p. p. m. after dechlorination; but with doses from 0.77 to 1.26 p. p. m., taste disappeared after dechlorination. The destructive distillation derivatives of coal which produce tastes were phenol, ortho-, meta-, and para-cresol, xylenol, and anisole. The distillation method for the determination of phenols in raw water, after intensive trial, did not prove sensitive enough to use as an index of phenol pollution. Twenty-eight coal derivatives were examined and it was impossible to differentiate between the taste and nontaste producing substances with the Folin-Dennis reagent. Similar observations were made with the Fox and Gauge reagents, and it was concluded that colorimetric tests for determining taste-producing substances were of limited value.

The method suggested for destroying taste consisted of treating the filtered water with 1.0 to 1.25 p. p. m. of chlorine and after a suitable contact period dechlorinating with sulphur dioxide. Experiments showed that superchlorination, with a short contact period, was not effective in destroying the taste. The

time of contact necessary to destroy taste with superchlorination and dechlorination varied with the concentration of the taste-producing substance and was greater for phenol than ortho-cresol. Using 1.25 p. p. m. of chlorine, the contact time necessary to destroy taste varied from 0.5 hours for 0.005 p. p. m. of phenol to 7 hours for 0.111 p. p. m. of phenol. Increasing the chlorine dosage reduced the contact time materially. An excess of sulphur dioxide is necessary to remove all trace of chlorine, but overdosing with sulphur dioxide may be prevented by leaving a slight residual chlorine in the water.

The superchlorination process was tried on 70,000,000 gallons of water per day for 10 days in September with complete success. During this time the island supply which did not receive the treatment developed pronounced tastes. It was found during these tests that, under heavy discharge conditions, sulphur dioxide requires more heat than chlorine to maintain cylinder pressure.

The authors also point out that acid and alkaline waters are least liable to taste and that the estimation of residual chlorine by the o-tolidine method should not be made in direct sunlight on account of its interference with color production.

Sterilization of Municipal Water Supply at Horton, Kans., by Ultra-Violet Rays. N. T. Veatch, jr. *American City*, vol. 36, No. 3, March, 1927, pp. 306–308. (Abstract by Chas. R. Cox.)

The city of Horton, with a population of 4,000, has recently completed a rapid sand filtration plant of conventional design, with the exception that the filtered water is treated by exposure to ultra-violet rays. This treatment was selected because cheap electrical current was available. A table is given showing the results of the bacteriological examination of 19 groups of samples of water collected during a period of about 5 months. Organisms of the colon group were present in 10 c. c. portions of the filtered water on only one occasion during the period, and the exposure of the filtered water to ultra-violet rays destroyed these organisms, thus resulting in the production of tap water which did not contain these organisms where the various samples were collected.

The ultra-violet ray apparatus consists of 3 R. U. V. units connected in series, having a capacity of 20,000 gallons per hour. The current consumption is 11.25 amperes; the operating voltage was not given.

No Agitators in this Filter Plant Design. C. T. Hough, city engineer, Lawrence, Kans. *Water Works Engineering*, vol. 80, No. 6, March 16, 1927, pp. 347–348. (Abstract by William L. Havens.)

The water-purification plant at Lawrence, Kans., was originally designed for a softening and filtration plant for well water, but it was found necessary to resort to river water soon after the plant was constructed. This change of source of supply caused the existing settling basins to be of insufficient capacity and of a design unsuited for clarifying the muddy river water. New settling basins have just been completed and new intake and flow lines are under construction. The present intakes, consisting of 16-inch universal cast-iron pipe lines extending from the intake pier in the middle of the Kaw River to the low-service pit, have settled so that the joints are partially opened and excessive quantities of mud are admitted. The new intake consists of a line of 20-inch bell and spigot cast-iron pipe, hung by round U bolts to cross members which are carried on wood piles.

No mechanical agitators are used in connection with the coagulation basins, but the water enters near the bottom of a hoppered bottom plain sedimentation basin designed to provide a retention period of five and one-half hours. The water then discharges from this basin over a weir into a collecting trough and thence

into the dosing chamber of the mixing wells. Two dry-feed machines, located directly over the dosing chamber, feed the lime and alum to the water. From the dosing chamber the water enters the mixing wells through openings near the bottom of the wells, which are so designed as to cause the water to maintain a spiral action upward to the mouth of a vertical downtake pipe which leads to the reaction basin. This basin is provided with baffles for the purpose of eliminating cross currents and lengthening the flow through the basin. From the reaction basin the water enters a distributing flume extending the full width of the coagulation basin and is discharged therefrom through a series of vertical and horizontal slots to the coagulation basin. The coagulation basin provides a retention period of 9½ hours, the lime reaction basin 2½ hours, and the settling basin 17 hours. The roughing filters consist of two units designed to operate at a rate of 4 gallons per square foot per minute. The lime and alum coagulation basins are each provided with mechanical agitators. The filter beds consist of four units, each having a capacity of 750,000 gallons per 24 hours and are provided with Wheeler type bottoms. The filters are washed with filtered water from five wooden storage tanks located on the third floor of the head house, each tank having a capacity of about 8,000 gallons. The clear well is located directly below the pipe gallery and filters and has a capacity equivalent to three and one-half hours' retention. Since there is no collecting pipe for the filter effluent, the water is chlorinated on the suction line from the clear well to the pump. Crank and flywheel pumping engines are used for the high-service pumping equipment, steam being supplied by two 150-horsepower return tubular boilers. As a precaution against breakdown of supply of current for the low-service pumps, the layout also includes a uniflow engine, direct connected to a 100-kilowatt alternating-current generator. It is expected that the new installation will eliminate the trouble which has been experienced in the past due to high turbidities in the river water.

Typhoid Epidemic Starts Water Improvements. W. E. MacDonald, water works engineer, Ottawa, Canada. *Water Works Engineering*, vol. 80, No. 6, March 16, 1927, pp. 343–344 and 368. (Abstract by William L. Havens.)

The city of Ottawa has, since 1872, taken its water supply from the Ottawa River. The original pumping station was operated by water power derived from two power channels furnishing water to the turbines under a head of 31 feet. The point of intake was located in the center of the river about 1½ miles upstream from the pumping station. The pipe line leading to the pumping station was originally a 30-inch wood-stave pipe, but this was later replaced by two steel lines, one 40 inches in diameter having standard ball joints and the other 42 inches in diameter and constructed with corrugated-steel sleeves. This plan was enlarged at various intervals from 1874 to 1914 to a total rated capacity of 26,000,000 gallons per day. In 1912 there occurred a very serious epidemic of typhoid fever and investigations disclosed that the cause was the defective condition of the joints of the 42-inch concrete and steel intake pipes which permitted the entry of raw sewage from Nepean Bay and the new aqueduct. In order to correct these conditions, new cast-iron pipe sewers with calked lead joints were constructed to replace existing sewers along the pipe line, the water-intake line was abandoned and replaced by a new line of 42-inch lock-bar steel pipe, and a new low-lift pumping station was constructed at the site of the intake. This new pumping station permitted the water to be conveyed under pressure to the main pumping station and thereby prevented the entrance of any foreign water.

Many reports upon proposed water supplies for the city of Ottawa have been prepared; but these projects have all been defeated by the electorate. Most of

them contemplated the development of a new supply in the Gatineau Lakes and involved the expenditure of several million dollars. In May, 1915, Mr. J. B. McRae submitted plans for the erection of a new pumping station at Lemieux Island and the building of a new concrete bridge from the island to the mainland on which were supported two 51-inch steel lock-bar pipes. These improvements included a new intake which was located on the west side of the island immediately below Remic's Rapids. The high-service pumps consist of two Escher Wyss 2-stage 26-inch centrifugal pumps having a capacity of 20,000,000 gallons per 24 hours when operating against a total head of 280 feet. The electric power is obtained from the plants of the Ottawa & Hull Power Co., and is supplied over three separate and independent transmission lines at a price of $13.50 per horsepower on the switchboard of the pumping station. In the substation are installed three Westinghouse 1,500-kilowatt-ampere transformers for operation of the high-lift pumping units and three 75-kilowatt-ampere transformers for the low-lift units in addition to the lighting transformers. The pipe lines consist of two steel lock-bar pipes 18,100 feet in length, seven-sixteenths inch in thickness, and 51 inches in diameter, furnished in 30-foot lengths. A septic tank was constructed on the island to take care of the sewage from the buildings. The water is not filtered but is treated by the application of chloramine. The bleach is mixed as a solution containing 0.3 to 0.6 per cent of available chlorine and is discharged from orifice boxes to water injectors which feed it into the suction well through a perforated pipe. Numerous booster pumping stations have been constructed in order to increase pressures in the higher business areas of the city.

Control of Bathing in New Jersey Water Supplies Effected. Anon. *Engineering News Record*, vol. 97, No. 25, December 16, 1926, p. 1012. (Abstract by Stephen De M. Gage.)

After long agitation the New Jersey State Department of Health recently added five sections to the State Sanitary Code prohibiting bathing in any river, brook, stream, lake, pond, or reservoir used as a source of public water supply, or the maintenance of any bathhouse pavilion or public place of entertainment adjacent thereto, if such bathing or maintenance pollutes or tends to the pollution of the water. Enforcement to be by inspectors designated by State health department as its agents but paid by municipality or water company.

Good Air—What It Is and How To Get It. Earle B. Phelps. *Public Health News*, New Jersey State Board of Health, vol. 12, No. 2, January, 1927, p. 52. (Abstract by Leonard Greenburg.)

This is a very succinct and accurate description of the present status of the problem of ventilation. Professor Phelps describes the physiological backgrounds of the problem and finally points out that the problem of ventilation is brought about by the necessity for the removal of excess heat and humidity from inclosed places.

The three physical factors bearing on the cooling power of the atmosphere are temperature, humidity, and air motion, and Professor Phelps has grouped these together in a relation for which he has determined the formula experimentally.

Two very important points bearing on the physiological backgrounds of this problem are described. The first is that equivalent states of physical conditions are not of necessity physiological equivalents, and the second is that the physiological test of feeling equally warm is not a satisfactory criterion of equivalent air conditions.

For the home and office the standard of the New York State Commission on Ventilation is recommended as being satisfactory; namely, the maintenance of

a temperature not over 68° F. without artificial humidification and a moderate supply of fresh air such as may be obtained from an open window. For auditoria and theaters, provisions should be made for the admission of fresh air, but it is pointed out that under many conditions the good effect of this air supply is often undone by overheating.

More Smoke Stopped by Diplomacy than by Ordinance. Osborn Monnett. *The American City*, vol. 36, No. 1, January, 1927, p. 81. (Abstract by Leonard Greenburg.)

The author of this paper, who has had very extensive experience in smoke control, points out that about one-half the smoke of any particular locality is caused by the more important industrial plants, and about 25 per cent of the smoke in the heating season is produced by the small heating plants. He emphasizes the importance of the human element in the control of the smoke problem. The progress of this art, he believes, depends largely on instruction and organized, consistent, educational effort, both for better equipment and for better supervision.

A standard satisfactory appropriation, according to Mr. Monnett, is approximately $50,000 a year per million population.

By the proper means, approximately 60 per cent of the residential smoke may be prevented and as high as 95 per cent of the industrial plant high-pressure smoke may be prevented. He emphasizes the importance of carbonized fuel as a solution of this problem.

The Estimation of Carbon Monoxide in the Air of Workshops. Dr. F. Schoofs, professor in the University of Liege, Belgium. *The Journal of State Medicine*, vol. 34, No. 10, October, 1926, pp. 575–577. (Abstract by Leonard Greenburg.)

The author presents analyses of 12 samples of coal gas and finds the carbon-monoxide content to lie between 12.6 and 16.4 per cent. Because of this high carbon-monoxide content he urges care in cases of gas leaks.

He also quotes the results of three analyses of blood of men who died from carbon-monoxide poisoning. The CO saturation of these was found to be between 58 and 72 per cent. He feels from this that a quantitative examination of the blood is desirable in all such cases.

He further shows by some brief experiments that carbon monoxide is given off when alkaline pyrogallol solutions are used for the removal of oxygen. A considerable excess of alkali must be used in order to prevent this.

DEATHS DURING WEEK ENDED APRIL 16, 1927

Summary of information received by telegraph from industrial insurance companies for week ended April 16, 1927, and corresponding week of 1926. (From the Weekly Health Index, April 21, 1927, issued by the Bureau of the Census, Department of Commerce)

	Week ended April 16, 1927	Corresponding week 1926
Policies in force	67, 347, 002	64, 038, 181
Number of death claims	12, 654	16, 648
Death claims per 1,000 policies in force, annual rate	9. 8	13. 6

Deaths from all causes in certain large cities of the United States during the week ended April 16, 1927, infant mortality, annual death rate, and comparison with corresponding week of 1926. (From the Weekly Health Index, April 21, 1927, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Apr. 16, 1927		Annual death rate per 1,000 corresponding week 1926	Deaths under 1 year		Infant mortality rate, week ended Apr. 16, 1927 [3]
	Total deaths	Death rate [1]		Week ended Apr. 16, 1927	Corresponding week 1926	
Total (68 cities)	7,706	13.6	[3] 15.5	823	[3] 1,092	[4] 68
Akron	47			4	20	43
Albany [5]	41	17.8	14.5	2	0	42
Atlanta	79			10	12	
White	44			4	9	
Colored	35	(6)		6	3	
Baltimore [5]	222	14.1	14.1	24	26	74
White	164		11.9	13	17	50
Colored	58	(6)	27.2	11	9	171
Birmingham	75	18.2	17.1	8	9	
White	34		12.2	3	4	
Colored	41	(6)	24.5	5	5	
Boston	224	14.7	19.5	31	37	87
Bridgeport	26			1	5	19
Buffalo	119	11.3	18.6	10	26	42
Cambridge	43	18.1	18.4	5	7	89
Camden	37	14.5	14.7	4	4	69
Canton	29	13.4	15.6	6	6	142
Chicago [5]	782	13.1	13.6	87	86	75
Cincinnati	146	18.5	19.5	14	13	87
Cleveland	221	11.7	15.5	22	44	58
Columbus	86	15.4	15.2	6	7	56
Dallas	41	10.2	12.3	8	2	
White	33		9.5	7	2	
Colored	8	(6)	30.9	1	0	
Denver	80	14.4	14.5	10	11	
Des Moines	26	9.1	12.9	2	1	33
Detroit	312	12.2	16.8	59	99	93
Duluth	34	15.4	16.6	3	4	65
El Paso	21	9.6	15.3	5	7	
Erie	20			3	7	59
Fall River [5]	33	12.9	20.3	10	10	177
Flint	22	8.0	8.1	3	8	49
Fort Worth	28	8.9	6.6	1	2	
White	23		6.3	1	2	
Colored	5	(6)	8.2	0	0	
Grand Rapids	31	10.2	15.0	5	9	73
Houston	48			7	6	
White	26			2	4	
Colored	22	(6)		5	2	
Indianapolis	97	13.5	16.9	6	10	47
White	80		16.1	5	9	45
Colored	17	(6)	22.5	1	1	61
Jersey City	100	16.2	14.3	8	9	60
Kansas City, Kans	42	18.7	20.5	4	6	78
White	29		19.5	2	2	45
Colored	13	(6)	25.4	2	4	304
Kansas City, Mo	94	12.8	14.6	6	13	
Knoxville	32	16.4		3		
White	28			2		
Colored	4	(6)		1		
Los Angeles	249			24	28	69
Louisville	68	11.1	16.9	2	9	17
White	46		15.2	2	5	19
Colored	22	(6)	26.6	0	4	0
Lowell	35	16.5	20.8	5	8	96
Lynn	33	16.4	11.5	3	3	79
Memphis	87	25.3	20.9	8	4	
White	44		21.0	1	2	
Colored	43	(6)	20.7	7	2	
Milwaukee	119	11.8	15.7	10	28	47
Minneapolis	110	13.0	15.4	8	16	45
Nashville [5]	39	14.7	20.6	3	4	
White	23		18.6	0	3	
Colored	16	(6)	25.4	3	1	

Footnotes at end of table.

Deaths from all causes in certain large cities of the United States during the week ended April 16, 1927, infant mortality, annual death rate, and comparison with corresponding week of 1926—Continued

City	Week ended Apr. 16, 1927		Annual death rate per 1,000 corresponding week 1926	Deaths under 1 year		Infant mortality rate, week ended Apr. 16, 1927 [2]
	Total deaths	Death rate [1]		Week ended Apr. 16, 1927	Corresponding week 1926	
New Bedford	26	11.3	22.2	5	11	87
New Haven	43	12.1	14.9	4	5	56
New Orleans	119	14.6	16.4	17	12	
White	70		14.1	7	6	
Colored	49	(6)	23.0	10	6	
New York	1,613	14.1	16.1	177	251	73
Bronx Borough	225	12.7	12.4	14	21	45
Brooklyn Borough	544	12.5	15.2	68	94	70
Manhattan Borough	652	18.7	20.5	79	101	93
Queens Borough	139	9.0	11.8	13	30	56
Richmond Borough	53	18.8	20.1	3	5	56
Newark, N. J	123	13.8	15.7	13	19	94
Norfolk	32	9.3	9.6	2	4	40
White	10		5.6	0	1	0
Colored	22	(6)	16.6	2	3	106
Oakland	66	12.9	11.0	6	3	70
Oklahoma City	23			2	3	
Omaha	55	13.1	12.8	6	7	67
Paterson	39	14.1	17.1	5	7	88
Philadelphia	545	14.0	14.8	43	62	57
Pittsburgh	157	12.7	19.8	18	27	63
Portland, Oreg	72			3	4	32
Providence	64	11.9	13.8	9	6	76
Richmond	53	14.4	13.0	7	8	92
White	27		8.6	3	2	61
Colored	26	(6)	23.7	4	6	152
Rochester	82	13.2	15.1	9	9	76
St. Louis	206	12.8	15.8	15	26	
St. Paul	57	11.9	12.6	5	2	45
Salt Lake City [3]	32	12.3	14.5	2	6	30
San Antonio	67	16.6	17.8	16	20	
San Diego	38	17.2	16.6	3	4	64
San Francisco	129	11.7	13.4	9	9	56
Schenectady	21	11.8	10.1	2	1	60
Seattle	81			6	3	63
Somerville	26	13.3	19.8	2	3	72
Spokane	31	14.8	14.4	3	2	75
Springfield, Mass	35	12.4	13.3	4	3	62
Syracuse	34	9.0	11.8	3	1	39
Tacoma	28	13.6	13.3	2	2	47
Toledo	68	11.7	15.6	2	8	19
Trenton	45	17.1	12.5	5	4	87
Utica	36	18.2	18.7	3	5	68
Washington, D. C	158	15.3	12.7	14	7	81
White	105		11.4	7	5	59
Colored	53	(6)	16.8	7	2	129
Waterbury	18			3	4	71
Wilmington, Del	40	16.6	14.7	5	6	124
Worcester	65	17.4	23.0	6	11	72
Yonkers	21	9.2	11.7	1	4	23
Youngstown	43	13.3	16.7	9	9	126

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births. Cities left blank are not in the registration area for births.
[3] Data for 67 cities.
[4] Data for 63 cities.
[5] Deaths for week ended Friday, April 15, 1927.
[6] In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentages of the total population: Atlanta, 31, Baltimore 15, Birmingham 39, Dallas 15, Fort Worth 14, Houston 25, Indianapolis 11, Kansas City, Kans., 14, Knoxville 15, Louisville 17, Memphis 38, Nashville 30, New Orleans 26, Norfolk 38, Richmond 32, and Washington, D. C., 25.

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 23, 1927

ARIZONA

	Cases
Chicken pox	7
Diphtheria	1
Measles	21
Poliomyelitis	1
Scarlet fever	4
Tuberculosis	27
Whooping cough	2

ARKANSAS

Chicken pox	22
Diphtheria	4
Influenza	41
Malaria	11
Measles	135
Mumps	34
Pellagra	3
Scarlet fever	5
Smallpox	7
Trachoma	1
Tuberculosis	2
Typhoid fever	5
Whooping cough	68

COLORADO

Cerebrospinal meningitis	2
Chicken pox	14
Diphtheria	4
German measles	8
Influenza	1
Measles	175
Mumps	5
Pneumonia	7
Scarlet fever	34
Smallpox	4
Tuberculosis	15
Typhoid fever	2
Whooping cough	2

CONNECTICUT

	Cases
Anthrax	1
Cerebrospinal meningitis	1
Chicken pox	44
Conjunctivitis (infectious)	1
Diphtheria	31
German measles	11
Influenza	1
Lethargic encephalitis	1
Measles	58
Mumps	38
Pneumonia (broncho)	38
Pneumonia (lobar)	55
Scarlet fever	106
Septic sore throat	2
Tuberculosis (all forms)	24
Whooping cough	20

FLORIDA

Cerebrospinal meningitis	1
Diphtheria	10
Influenza	39
Measles	143
Scarlet fever	12
Smallpox	76
Typhoid fever	13

GEORGIA

Cerebrospinal meningitis	1
Chicken pox	20
Diphtheria	10
Dysentery	21
Hookworm disease	5
Influenza	102
Lethargic encephalitis	2
Malaria	35
Measles	177
Mumps	30

GEORGIA—continued

	Cases
Pellagra	11
Pneumonia	46
Scarlet fever	8
Septic sore throat	8
Smallpox	45
Tuberculosis	13
Typhoid fever	13
Whooping cough	69

IDAHO

Chicken pox	5
Diphtheria	4
Measles	37
Mumps	1
Rocky Mountain spotted fever	1
Scarlet fever	14
Smallpox	7
Typhoid fever	2
Whooping cough	4

ILLINOIS

Cerebrospinal meningitis:	
Cook County	3
Knox County	1
Lake County	1
Randolph County	1
Chicken pox	262
Diphtheria	118
Influenza	133
Lethargic encephalitis	2
Measles	1,694
Mumps	530
Pneumonia	532
Scarlet fever	264
Smallpox	28
Tuberculosis	420
Typhoid fever	12
Whooping cough	210

KANSAS

Cerebrospinal meningitis:	
Columbus	1
Meade	1
Chicken pox	103
Diphtheria	8
German measles	11
Influenza	8
Measles	1,193
Mumps	59
Pneumonia	33
Poliomyelitis—Hutchinson	1
Scarlet fever	99
Smallpox	20
Tuberculosis	46
Tularæmia	1
Typhoid fever	2
Vincent's angina	2
Whooping cough	60

LOUISIANA

Diphtheria	16
Influenza	21
Measles	63
Pneumonia	28
Scarlet fever	9

LOUISIANA—continued

	Cases
Smallpox	3
Tuberculosis	25
Typhoid fever	11

MAINE

Cerebrospinal meningitis	1
Chicken pox	22
Diphtheria	5
German measles	76
Influenza	5
Measles	116
Mumps	7
Pneumonia	24
Scarlet fever	24
Tuberculosis	15
Typhoid fever	4
Vincent's angina	1
Whooping cough	13

MARYLAND [1]

Chicken pox	83
Diphtheria	47
German measles	2
Impetigo contagiosa	3
Influenza	64
Measles	16
Mumps	27
Paratyphoid fever	2
Pneumonia (broncho)	48
Pneumonia (lobar)	44
Scarlet fever	66
Septic sore throat	1
Tuberculosis	77
Typhoid fever	8
Vincent's angina	2
Whooping cough	98

MASSACHUSETTS

Cerebrospinal meningitis	1
Chicken pox	189
Conjunctivitis (suppurative)	9
Diphtheria	81
German measles	15
Influenza	14
Measles	327
Mumps	330
Ophthalmia neonatorum	23
Pellagra	2
Pneumonia (lobar)	137
Scarlet fever	462
Septic sore throat	6
Tuberculosis (pulmonary)	99
Tuberculosis (other forms)	43
Typhoid fever	3
Whooping cough	127

MICHIGAN

Diphtheria	92
Measles	351
Pneumonia	118
Scarlet fever	226
Smallpox	41
Tuberculosis	55
Typhoid fever	6
Whooping cough	125

[1] Week ended Friday.

MONTANA

	Cases
Cerebrospinal meningitis	2
Diphtheria	3
Measles	27
Rocky Mountain spotted fever	1
Scarlet fever	42
Smallpox	1
Typhoid fever	4

NEW JERSEY

Chicken pox	285
Diphtheria	150
Influenza	25
Measles	98
Pneumonia	172
Scarlet fever	387
Typhoid fever	6
Whooping cough	208

NEW MEXICO

Cerebrospinal meningitis	1
Chicken pox	24
German measles	66
Measles	117
Mumps	32
Paratyphoid fever	1
Pellagra	1
Pneumonia	4
Rabies (in animals)	1
Scarlet fever	11
Smallpox	2
Tuberculosis	22
Whooping cough	16

NEW YORK

(Exclusive of New York City)

Chicken pox	276
Diphtheria	56
Dysentery	1
German measles	292
Lethargic encephalitis	1
Measles	640
Mumps	401
Ophthalmia neonatorum	3
Pneumonia	321
Scarlet fever	251
Smallpox	3
Typhoid fever	7
Vincent's angina	19
Whooping cough	143

NORTH CAROLINA

Cerebrospinal meningitis	1
Chicken pox	99
Diphtheria	30
German measles	6
Measles	1,079
Scarlet fever	16
Smallpox	48
Typhoid fever	3
Whooping cough	628

OREGON

Cerebrospinal meningitis	1
Chicken pox	19
Diphtheria	3
Influenza	34

OREGON—continued

	Cases
Measles	355
Mumps	22
Pneumonia	[2] 5
Rocky Mountain spotted fever	2
Scarlet fever	28
Septic sore throat	1
Smallpox	14
Tuberculosis	[2] 6
Typhoid fever	1
Whooping cough	10

SOUTH DAKOTA

Cerebrospinal meningitis	1
Chicken pox	6
Diphtheria	4
Influenza	6
Measles	88
Mumps	5
Pneumonia	6
Rabies	1
Scarlet fever	33
Smallpox	6
Whooping cough	4

TEXAS

Cerebrospinal meningitis	1
Chicken pox	76
Dengue	5
Diphtheria	14
Influenza	25
Leprosy	1
Measles	60
Mumps	43
Paratyphoid fever	8
Pellagra	2
Pneumonia	9
Scarlet fever	26
Smallpox	49
Trachoma	2
Tuberculosis	23
Typhoid fever	3
Whooping cough	50

UTAH

Chicken pox	53
Diphtheria	10
German measles	2
Measles	48
Mumps	3
Pneumonia	8
Scarlet fever	19
Smallpox	6
Whooping cough	30

VERMONT

Chicken pox	47
Diphtheria	1
Measles	139
Mumps	37
Scarlet fever	3
Whooping cough	4

VIRGINIA

Poliomyelitis—Loudoun County	1

[2] Deaths.

WASHINGTON

	Cases
Cerebrospinal meningitis	5
Chicken pox	100
Diphtheria	10
German measles	361
Influenza	4
Measles	402
Mumps	102
Pneumonia	1
Scarlet fever	55
Smallpox	62
Tuberculosis	27
Typhoid fever	2
Whooping cough	47

WEST VIRGINIA

Chicken pox	49
Diphtheria	18
Influenza	28
Measles	151
Scarlet fever	31
Smallpox	13
Tuberculosis	9
Typhoid fever	1
Whooping cough	46

WISCONSIN

Milwaukee:	Cases
Cerebrospinal meningitis	7
Chicken pox	87
Diphtheria	13
German measles	3
Measles	132
Mumps	88
Pneumonia	21
Scarlet fever	43
Tuberculosis	21
Whooping cough	35
Scattering:	
Cerebrospinal meningitis	4
Chicken pox	60
Diphtheria	21
German measles	49
Influenza	33
Measles	406
Mumps	146
Pneumonia	15
Scarlet fever	100
Smallpox	8
Tuberculosis	25
Typhoid fever	1
Whooping cough	84

Reports for Week Ended April 16, 1927

ALABAMA

	Cases
Chicken pox	42
Dengue	1
Diphtheria	22
Malaria	25
Measles	197
Mumps	20
Pellagra	4
Pneumonia	91
Scarlet fever	9
Smallpox	51
Tuberculosis	101
Typhoid fever	21
Whooping cough	90

CALIFORNIA

Cerebrospinal meningitis:	
Butte County	1
Oakland	2
Sacramento County	2
San Francisco	1
Chicken pox	399
Diphtheria	101
Influenza	18
Lethargic encephalitis	3
Measles	2,474
Mumps	224
Poliomyelitis—Long Beach	1
Scarlet fever	183
Smallpox	23
Tuberculosis	178
Typhoid fever	9
Whooping cough	126

DISTRICT OF COLUMBIA

Chicken pox	60
Diphtheria	30

DISTRICT OF COLUMBIA—continued

	Cases
Influenza	2
Lethargic encephalitis	1
Measles	3
Pneumonia	14
Scarlet fever	12
Tuberculosis	22
Whooping cough	16

GEORGIA

Cerebrospinal meningitis	3
Chicken pox	50
Diphtheria	12
Dysentery	7
Hookworm disease	4
Influenza	180
Lethargic encephalitis	1
Malaria	19
Measles	145
Mumps	52
Pellagra	3
Pneumonia	47
Scarlet fever	8
Septic sore throat	6
Smallpox	41
Tuberculosis	17
Typhoid fever	14
Whooping cough	76

INDIANA

Chicken pox	149
Diphtheria	31
Influenza	27
Measles	260
Pneumonia	7
Scarlet fever	193
Smallpox	232

INDIANA—continued

	Cases
Tuberculosis	33
Typhoid fever	5
Whooping cough	47

IOWA

Cerebrospinal meningitis—Fort Dodge	1
Chicken pox	61
Diphtheria	25
Impetigo contagiosa	1
Measles	462
Mumps	34
Pneumonia	2
Scarlet fever	38
Septic sore throat	1
Smallpox	21
Tuberculosis	14
Typhoid fever	1
Whooping cough	17

MINNESOTA

Cerebrospinal meningitis	2
Chicken pox	98
Diphtheria	21
Influenza	6
Measles	176
Pneumonia	8
Scarlet fever	175
Smallpox	4
Tuberculosis	39
Typhoid fever	4
Whooping cough	14

MISSISSIPPI

Diphtheria	5
Scarlet fever	5
Smallpox	7
Typhoid fever	12

MISSOURI

(Exclusive of Kansas City)

Chicken pox	83
Diphtheria	35
Epidemic sore throat	1
Influenza	4
Measles	171
Mumps	122
Pneumonia	2
Rabies	2
Scarlet fever	76
Smallpox	30
Trachoma	1
Tuberculosis	33
Typhoid fever	3
Whooping cough	39

NEBRASKA

Chicken pox	30
Diphtheria	5
German measles	48
Influenza	16
Measles	301
Mumps	36
Pneumonia	3
Scarlet fever	56
Smallpox	33

NEBRASKA—continued

	Cases
Tuberculosis	9
Typhoid fever	1
Whooping cough	11

NORTH DAKOTA

Cerebrospinal meningitis	1
Chicken pox	13
Diphtheria	10
Measles	109
Mumps	2
Pneumonia	5
Poliomyelitis	1
Scarlet fever	64
Smallpox	3
Trachoma	1
Tuberculosis	4
Typhoid fever	2

OKLAHOMA

(Exclusive of Oklahoma City and Tulsa)

Cerebrospinal meningitis—Coal County	1
Chicken pox	21
Diphtheria	17
Influenza	159
Malaria	13
Measles	317
Mumps	34
Pneumonia	76
Scarlet fever	70
Smallpox	28
Typhoid fever	46
Whooping cough	40

PENNSYLVANIA

Cerebrospinal meningitis—Philadelphia	2
Chicken pox	521
Diphtheria	168
German measles	104
Impetigo contagiosa	7
Lethargic encephalitis	3
Measles	854
Mumps	620
Ophthalmia neonatorum	5
Pneumonia	166
Puerperal fever	7
Scabies	7
Scarlet fever	654
Trachoma	2
Trichinosis	2
Tuberculosis	144
Typhoid fever	17
Whooping cough	311

RHODE ISLAND

Chicken pox	7
Diphtheria	1
German measles	1
Mumps	6
Pneumonia	1
Poliomyelitis—Providence	1
Scarlet fever	18
Tuberculosis	6
Typhoid fever	1
Whooping cough	6

SOUTH CAROLINA

	Cases
Chicken pox	134
Dengue	9
Diphtheria	13
Hookworm disease	16
Influenza	1,776
Malaria	82
Measles	177
Pellagra	65
Poliomyelitis	1
Scarlet fever	19
Smallpox	18
Tuberculosis	45
Typhoid fever	3
Whooping cough	197

SOUTH DAKOTA

Actinomycosis	1
Anthrax	1
Cerebrospinal meningitis	1
Chicken pox	15
Diphtheria	6
Influenza	10
Measles	254
Mumps	9
Pneumonia	6
Scarlet fever	63
Smallpox	1
Tuberculosis	2
Typhoid fever	1
Whooping cough	10

TENNESSEE

Cerebrospinal meningitis:	
Claiborne County	1
Hancock County	1
Chicken pox	72
Diphtheria	10
Dysentery	1
Influenza	195
Malaria	15
Measles	92
Mumps	2
Ophthalmia neonatorum	2
Pellagra	4
Pneumonia	48
Scarlet fever	30
Smallpox	8
Tuberculosis	36
Typhoid fever	5
Whooping cough	78

TEXAS

Cerebrospinal meningitis	1
Chicken pox	47

TEXAS—continued

	Cases
Diphtheria	39
Influenza	35
Measles	387
Mumps	27
Paratyphoid fever	1
Pellagra	2
Pneumonia	19
Scarlet fever	10
Smallpox	75
Trachoma	2
Tuberculosis	26
Typhoid fever	12
Whooping cough	49

WISCONSIN

Milwaukee:	
Cerebrospinal meningitis	5
Chicken pox	79
Diphtheria	13
German measles	3
Influenza	2
Measles	122
Mumps	68
Ophthalmia neonatorum	1
Pneumonia	23
Scarlet fever	45
Tuberculosis	20
Whooping cough	22
Scattering:	
Cerebrospinal meningitis	1
Chicken pox	112
Diphtheria	16
German measles	46
Influenza	50
Lethargic encephalitis	1
Measles	711
Mumps	209
Pneumonia	15
Poliomyelitis	1
Scarlet fever	138
Smallpox	7
Tuberculosis	16
Typhoid fever	4
Whooping cough	138

WYOMING

Chicken pox	1
German measles	7
Measles	83
Mumps	31
Pneumonia	1
Rocky Mountain spotted fever	4
Scarlet fever	16
Smallpox	8
Whooping cough	6

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	Cerebro-spinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
March, 1927										
Alabama	6	139	526	63	886	22	2	66	197	74
Indiana	1	131	128		940		0	946	631	10
Iowa	5	93			3,284		0	377	115	25
Louisiana	3	99	76	22	603	3	1	34	41	48
Michigan	0	441	45		1,278		4	1,639	189	39
New Jersey	10	478	160		240		1	1,687	0	15
New York	35	1,830		8	3,480		4	5,707	53	91
South Carolina	0	130	6,291	388	386	163	3	31	90	18
West Virginia	2	55	288		798		1	140	173	24
Wisconsin	28	187	340		3,128		3	764	29	15

March, 1927

	Cases
Anthrax:	
New York	1
Chicken pox:	
Alabama	149
Indiana	736
Iowa	224
Louisiana	51
Michigan	1,561
New Jersey	1,393
New York	3,463
South Carolina	436
West Virginia	302
Wisconsin	1,014
Dengue:	
South Carolina	4
Dysentery:	
New Jersey	1
New York	3
German measles:	
Iowa	3
New Jersey	129
New York	1,279
Wisconsin	116
Hookworm disease:	
Louisiana	33
South Carolina	118
Impetigo contagiosa:	
Iowa	1
Lethargic encephalitis:	
Alabama	4
Louisiana	1
Michigan	5
New York	28
Wisconsin	2
Lead poisoning:	
New Jersey	8
Mumps:	
Alabama	201
Indiana	6
Iowa	171
Louisiana	100
Michigan	1,170
New York	4,363
South Carolina	7
Wisconsin	1,971

March, 1927—Continued

	Cases
Ophthalmia neonatorum:	
New Jersey	2
New York	6
Wisconsin	3
Paratyphoid fever:	
New York	1
South Carolina	3
Puerperal septicemia:	
New York	13
Rabies in animals:	
New York	26
South Carolina	26
Rabies in man:	
New York	1
Septic sore throat:	
Iowa	2
Michigan	16
New York	23
Tetanus:	
New York	5
Trachoma:	
Louisiana	1
New Jersey	1
New York	7
Wisconsin	1
Trichinosis:	
Iowa	3
Typhus fever:	
Alabama	2
Vincent's angina:	
New York	91
Whooping cough:	
Alabama	231
Indiana	225
Iowa	99
Louisiana	62
Michigan	611
New Jersey	1,633
New York	1,534
South Carolina	489
West Virginia	457
Wisconsin	539

RECIPROCAL NOTIFICATIONS

Notifications regarding communicable diseases sent during the month of March, 1927, to other State health departments by departments of health of certain States

Referred by—	Dysentery	Diphtheria	Measles	Scarlet fever	Smallpox	Tuberculosis	Typhoid fever
California						3	
Connecticut				1		1	
Illinois		1	1	1	2	9	1
Minnesota	1			4		41	2
New York				5	2		3

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 97 cities reporting cases used in the following table are situated in all parts of the country, and have an estimated aggregate population of more than 30,600,000. The estimated population of the 91 cities reporting deaths is more than 30,000,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended April 9, 1927, and April 10, 1926

	1927	1926	Estimated expectancy
Cases reported			
Diphtheria:			
42 States	1,788	1,287	
97 cities	1,188	680	881
Measles:			
41 States	15,673	23,860	
97 cities	5,087	10,193	
Poliomyelitis:			
43 States	15	12	
Scarlet fever:			
42 States	5,466	4,393	
97 cities	2,341	1,587	1,228
Smallpox:			
41 States	748	752	
97 cities	157	189	135
Typhoid fever:			
42 States	195	199	
97 cities	47	41	45
Deaths reported			
Influenza and pneumonia:			
91 cities	1,073	1,989	
Smallpox:			
91 cities	0	26	
Los Angeles	0	25	
San Francisco	0	1	

City reports for week ended April 9, 1927

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 1918 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, 1925, 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			
NEW ENGLAND									
Maine:									
Portland	75,333	3	0	1	0	0	3	1	1
New Hampshire:									
Concord	22,546	0	0	0	0	0	5	0	0
Manchester	83,097	0	2	0	0	1	0	0	5
Vermont:									
Barre	10,008	0	0	0	0	0	0	0	0
Burlington	24,089	0	1	0	0	0	0	1	0
Massachusetts:									
Boston	779,620	67	55	42	6	0	88	104	34
Fall River	128,993	4	3	2	1	0	0	3	1
Springfield	142,065	0	2	9	0	0	1	3	1
Worcester	190,757	16	4	6	0	0	2	5	3
Rhode Island:									
Pawtucket	69,760	9	1	0	0	0	0	0	3
Providence	267,918	0	8	7	0	3	0	0	7
Connecticut:									
Bridgeport	(1)	2	6	6	0	0	14	3	1
Hartford	160,197	2	6	0	0	0	0	1	3
New Haven	178,927	9	3	5	0	0	3	12	6
MIDDLE ATLANTIC									
New York:									
Buffalo	538,016	17	10	15	--------	1	6	13	22
New York	5,872,356	329	216	391	54	30	78	392	250
Rochester	316,786	19	9	20	--------	0	23	3	5
Syracuse	182,603	12	6	5	--------	1	122	16	4
New Jersey:									
Camden	128,642	12	4	16	0	0	1	1	7
Newark	452,513	100	16	6	6	1	4	95	20
Trenton	132,020	2	4	0	1	1	0	0	4
Pennsylvania:									
Philadelphia	1,979,364	107	71	71	--------	17	23	152	64
Pittsburgh	631,563	51	18	19	--------	2	61	8	24
Reading	112,707	14	2	3	--------	0	5	54	3
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	409,333	15	7	15	0	1	5	20	13
Cleveland	936,485	95	22	53	4	3	5	61	17
Columbus	279,826	4	3	7	0	1	1	1	6
Indiana:									
Fort Wayne	97,846	5	2	1	0	0	35	0	0
Indianapolis	358,810	64	6	4	0	0	19	36	15
South Bend	80,091	1	1	0	0	0	21	0	1
Terre Haute	71,071	3	0	0	0	1	39	0	2
Illinois:									
Chicago	2,995,239	90	81	83	14	4	1,104	172	70
Peoria	81,564	5	1	0	0	0	6	0	1
Springfield	63,923	7	1	3	0	0	18	0	2
Michigan:									
Detroit	1,245,824	82	50	56	2	4	17	137	38
Flint	130,316	11	3	4	0	0	6	1	8
Grand Rapids	153,698	8	3	1	0	0	2	0	2

[1] No estimate made.

City reports for week ended April 9, 1927—Continued

Division, State, and city	Population July 1, 1925, 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—continued									
Wisconsin:									
Kenosha	50,891	9	1	0	0	0	67	45	0
Madison	46,385	-------	0	-------	-------	-------	-------	-------	-------
Milwaukee	509,192	76	14	25	0	0	84	90	19
Racine	67,707	11	1	1	0	0	12	25	2
Superior	39,671	1	0	0	0	0	1	0	1
WEST NORTH CENTRAL									
Minnesota:									
Duluth	110,502	8	1	0	0	0	38	0	3
Minneapolis	425,435	63	15	24	0	3	4	0	10
St. Paul	246,001	46	15	13	0	1	15	3	15
Iowa:									
Davenport	52,469	0	1	0	0	-------	0	0	-------
Des Moines	141,441	0	2	1	0	-------	21	0	-------
Sioux City	76,411	5	1	2	0	-------	57	8	-------
Waterloo	36,771	7	0	2	0	-------	74	1	-------
Missouri:									
Kansas City	367,481	20	6	2	0	2	95	9	10
St. Joseph	78,342	3	1	0	0	0	36	0	6
St. Louis	821,543	31	38	39	0	0	51	59	-------
North Dakota:									
Fargo	26,403	1	1	0	0	1	47	14	1
Grand Forks	14,811	0	0	0	0	-------	0	0	-------
South Dakota:									
Aberdeen	15,036	0	0	0	0	-------	66	1	-------
Sioux Falls	30,127	0	0	0	0	-------	11	0	2
Nebraska:									
Lincoln	60,941	13	1	1	0	0	99	7	1
Omaha	211,768	4	3	1	0	0	89	22	10
Kansas:									
Topeka	55,411	6	1	1	0	1	138	2	2
Wichita	88,367	22	1	2	0	0	13	0	0
SOUTH ATLANTIC									
Delaware:									
Wilmington	122,049	6	2	2	0	0	0	0	0
Maryland:									
Baltimore	796,296	91	26	25	62	10	6	15	31
Cumberland	33,741	1	1	1	1	0	2	1	0
Frederick	12,035	-------	0	-------	-------	-------	-------	-------	-------
District of Columbia:									
Washington	497,906	34	10	19	2	2	5	0	9
Virginia:									
Lynchburg	30,395	5	1	2	0	0	50	0	2
Norfolk	(1)	-------	1	-------	-------	-------	-------	-------	-------
Richmond	186,403	0	2	5	0	1	162	2	7
Roanoke	58,208	4	0	0	0	1	2	0	1
West Virginia:									
Charleston	49,019	5	1	0	0	0	0	0	0
Wheeling	56,208	8	0	1	0	0	24	0	5
North Carolina:									
Raleigh	30,371	11	0	1	0	0	54	0	2
Wilmington	37,061	-------	0	-------	-------	-------	-------	-------	-------
Winston-Salem	69,031	3	1	0	0	2	14	22	5
South Carolina:									
Charleston	73,125	1	0	0	56	2	11	0	0
Columbia	41,225	7	1	0	0	1	0	3	2
Greenville	27,311	1	0	0	0	0	6	0	1
Georgia:									
Atlanta	(1)	5	2	4	36	2	54	14	8
Brunswick	16,809	2	0	0	0	0	0	1	1
Savannah	93,134	0	1	2	35	1	4	1	5
Florida:									
Miami	69,754	23	4	6	0	0	3	1	0
St. Petersburg	26,847	-------	0	-------	-------	1	-------	-------	2
Tampa	94,743	4	0	2	0	0	118	0	2

[1] No estimate made.

City reports for week ended April 9, 1927—Continued

Division, State, and city	Population July 1, 1925, 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 SOUTH CENTRAL									
Kentucky:									
Covington	58,309	0	1	1	0	0	0	0	2
Louisville	305,935	4	5	1	2	0	1	2	13
Tennessee:									
Memphis	174,533	12	4	1	0	5	16	0	8
Nashville	136,220	7	1	1	0	4	0	0	4
Alabama:									
Birmingham	205,670	14	2	7	43	5	47	8	13
Mobile	65,955	1	0	0	0	0	21	0	1
Montgomery	46,481	3	0	2	0	0	35	0	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	31,643	5	1	0	0	-------	161	2	-------
Little Rock	74,216	9	0	0	0	0	21	0	2
Louisiana:									
New Orleans	414,493	2	7	57	5	7	128	0	14
Shreveport	57,857	7	0	0	0	0	13	19	0
Oklahoma:									
Oklahoma City	(1)	3	1	0	18	0	8	1	3
Texas:									
Dallas	194,450	3	3	7	1	2	185	6	4
Galveston	48,375	0	1	3	0	0	0	0	0
Houston	164,954	1	2	5	0	1	1	2	4
San Antonio	198,069	2	1	9	0	2	2	1	9
MOUNTAIN									
Montana:									
Billings	17,971	2	0	1	0	0	0	0	0
Great Falls	29,853	9	0	0	0	1	5	0	1
Helena	12,037	-------	0	0	0	0	0	-------	3
Missoula	12,668	0	0	0	0	0	0	2	0
Idaho:									
Boise	23,042	0	0	0	0	0	2	0	0
Colorado:									
Denver	280,911	14	10	5	-------	3	226	2	17
Pueblo	43,787	5	1	5	0	0	49	0	4
New Mexico:									
Albuquerque	21,000	4	0	0	0	0	9	17	0
Utah:									
Salt Lake City	130,948	17	3	8	0	0	11	1	2
Nevada:									
Reno	12,665	0	0	0	0	0	18	0	0
PACIFIC									
Washington:									
Seattle	(1)	57	5	0	0	-------	69	75	-------
Spokane	108,897	6	2	0	0	-------	16	0	-------
Tacoma	104,455	16	1	1	0	1	77	0	4
Oregon:									
Portland	282,383	16	7	6	0	1	131	4	9
California:									
Los Angeles	(1)	50	40	28	29	2	853	13	18
Sacramento	72,260	30	2	2	0	1	15	2	3
San Francisco	557,530	81	20	17	3	1	133	130	9

[1] No estimate made.

City reports for week ended April 9, 1927—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	4	1	0	0	0	0	0	0	0	5	23
New Hampshire:											
Concord	1	0	0	0	0	1	0	0	0	0	16
Manchester	3	0	0	0	0	1	0	0	0	0	21
Vermont:											
Barre	1	0	0	0	0	0	0	0	0	0	4
Burlington	0	2	0	0	0	1	0	0	0	1	11
Massachusetts:											
Boston	71	96	0	0	0	15	1	0	0	24	252
Fall River	3	4	0	0	0	2	0	0	0	6	29
Springfield	6	5	0	0	0	2	0	0	0	13	34
Worcester	9	13	0	0	0	3	0	1	0	0	60
Rhode Island:											
Pawtucket	1	0	0	0	0	2	0	0	0	0	18
Providence	8	9	0	0	0	3	0	2	0	2	68
Connecticut:											
Bridgeport	10	12	0	0	0	1	1	0	0	0	34
Hartford	5	13	0	0	0	5	0	0	0	3	43
New Haven	11	3	0	0	0	3	0	0	0	4	51
MIDDLE ATLANTIC											
New York:											
Buffalo	21	33	0	0	0	6	0	0	0	20	138
New York	260	887	0	0	0	[1] 109	9	7	0	102	1,621
Rochester	15	17	0	0	0	3	0	1	0	1	75
Syracuse	12	14	0	1	0	3	1	1	0	2	50
New Jersey:											
Camden	6	4	0	0	0	1	0	0	0	1	30
Newark	26	60	0	0	0	12	1	0	0	50	123
Trenton	3	3	0	0	0	3	0	0	0	0	37
Pennsylvania:											
Philadelphia	78	154	1	0	0	45	3	3	0	17	573
Pittsburgh	29	29	0	0	0	14	1	0	0	13	200
Reading	4	5	0	0	0	2	0	0	0	0	36
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	15	35	2	0	0	10	0	0	0	1	131
Cleveland	33	41	0	0	0	19	1	0	0	39	204
Columbus	12	5	2	0	0	5	0	0	0	4	83
Indiana:											
Fort Wayne	6	6	3	4	0	2	0	0	0	0	35
Indianapolis	10	10	10	43	0	7	0	0	0	20	109
South Bend	3	4	0	3	0	1	0	0	0	1	14
Terre Haute	2	2	1	3	0	1	0	0	0	1	24
Illinois:											
Chicago	119	109	3	0	0	54	2	4	1	53	730
Peoria	3	0	1	0	0	1	0	0	0	0	22
Springfield	2	3	0	0	0	0	1	0	0	0	14
Michigan:											
Detroit	86	90	2	0	0	27	2	2	1	76	279
Flint	6	29	1	2	0	0	1	0	0	3	29
Grand Rapids	8	18	1	0	0	1	1	0	0	2	36
Wisconsin:											
Kenosha	3	3	1	0	0	0	0	0	0	0	5
Madison	3		0				0				
Milwaukee	26	41	2	0	0	4	1	1	0	42	100
Racine	4	5	0	0	0	0	0	0	0	19	15
Superior	3	7	3	0	0	0	0	0	0	0	9
WEST NORTH CENTRAL											
Minnesota:											
Duluth	7	10	1	0	0	1	1	0	0	0	25
Minneapolis	41	59	7	0	0	4	0	0	0	0	107
St. Paul	31	27	5	0	0	1	1	0	0	2	72

[1] Pulmonary tuberculosis only.

City reports for week ended April 9, 1927—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	3	2	0	-------	-------	0	0	-------	0	-------
Des Moines	5	16	3	1	-------	-------	0	0	-------	0	-------
Sioux City	2	5	1	2	-------	-------	0	0	-------	2	-------
Waterloo	2	2	1	0	-------	-------	0	0	-------	0	-------
Missouri:											
Kansas City	11	27	2	10	0	7	0	0	0	9	166
St. Joseph	2	3	0	0	0	1	0	0	0	1	25
St. Louis	35	43	4	1	0	16	2	0	2	31	229
North Dakota:											
Fargo	2	10	0	0	0	0	0	0	0	0	14
Grand Forks	0	1	0	0	-------	-------	0	0	-------	0	-------
South Dakota:											
Aberdeen	3	2	0	0	-------	-------	0	0	-------	0	-------
Sioux Falls	2	5	1	0	0	0	0	0	0	0	5
Nebraska:											
Lincoln	3	5	0	0	0	1	0	0	0	5	16
Omaha	3	20	9	1	0	2	0	0	0	1	81
Kansas:											
Topeka	3	5	1	3	0	1	0	0	0	3	20
Wichita	3	8	3	4	0	0	0	1	0	5	30
SOUTH ATLANTIC											
Delaware:											
Wilmington	3	8	0	0	0	1	0	0	0	3	16
Maryland:											
Baltimore	36	37	0	0	0	22	0	2	0	51	244
Cumberland	0	0	0	0	0	1	0	0	0	0	5
Frederick	0	-------	0	-------	-------	-------	0	-------	-------	-------	-------
District of Col.:											
Washington	24	29	2	0	0	13	1	0	0	14	128
Virginia:											
Lynchburg	0	4	0	0	0	0	0	0	0	0	10
Norfolk	2	-------	0	-------	-------	-------	1	-------	-------	-------	-------
Richmond	2	1	1	0	0	5	0	0	0	7	56
Roanoke	1	3	1	1	0	1	0	0	0	0	16
West Virginia:											
Charleston	0	1	0	1	0	2	0	1	0	0	24
Wheeling	2	3	0	0	0	1	0	0	0	7	19
North Carolina:											
Raleigh	0	2	0	0	0	2	0	0	0	27	10
Wilmington	0	-------	1	-------	-------	-------	0	-------	-------	-------	-------
Winston-Salem	1	1	5	0	0	2	0	0	0	37	22
South Carolina:											
Charleston	0	0	0	0	0	6	0	0	0	10	35
Columbia	0	0	1	1	0	0	0	0	0	15	10
Greenville	0	1	0	0	0	1	0	0	0	3	12
Georgia:											
Atlanta	3	7	3	8	0	5	0	2	1	2	72
Brunswick	0	0	0	1	0	0	0	0	0	0	3
Savannah	0	0	0	1	0	3	0	0	0	0	33
Florida:											
Miami	2	3	-------	0	0	1	1	0	0	4	33
St. Petersburg	0	-------	0	-------	0	1	1	-------	0	-------	18
Tampa	0	1	0	1	0	1	1	0	0	0	23
EAST SOUTH CENTRAL											
Kentucky:											
Covington	2	1	0	1	0	1	1	0	0	0	12
Louisville	5	10	1	2	0	7	1	0	1	0	95
Tennessee:											
Memphis	4	19	4	6	0	8	1	0	2	38	67
Nashville	2	2	2	0	0	4	0	0	0	3	48
Alabama:											
Birmingham	1	3	10	8	0	7	1	5	1	4	73
Mobile	1	0	1	0	0	2	0	2	0	0	25
Montgomery	0	0	1	0	0	0	0	0	0	0	12

City reports for week ended April 9, 1927—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	0	1	0	-------	2	0	0	-------	11	6
Little Rock	1	2	0	0	0	1	0	1	0	0	-------
Louisiana:											
New Orleans	5	7	3	0	0	16	2	3	2	8	153
Shreveport	0	2	2	0	0	0	0	0	0	0	20
Oklahoma:											
Oklahoma City	2	3	3	4	0	2	1	0	0	0	40
Texas:											
Dallas	2	2	2	7	0	1	0	1	0	0	56
Galveston	1	1	1	0	0	1	1	0	0	0	12
Houston	1	4	1	16	0	5	0	1	1	0	57
San Antonio	0	6	1	2	0	10	1	3	0	0	63
MOUNTAIN											
Montana:											
Billings	1	2	1	0	0	0	0	0	0	0	8
Great Falls	1	6	1	0	0	0	0	0	0	0	12
Helena	0	0	0	0	0	0	0	0	0	-------	-------
Missoula	1	3	0	0	0	0	0	0	0	0	6
Idaho:											
Boise	0	3	1	0	0	0	0	0	0	0	4
Colorado:											
Denver	11	77	3	0	0	11	0	0	0	0	97
Pueblo	1	8	0	0	0	0	0	0	0	0	18
New Mexico:											
Albuquerque	1	1	0	0	0	1	0	0	0	0	6
Utah:											
Salt Lake City	2	5	1	3	0	1	0	0	0	10	35
Nevada:											
Reno	0	1	0	0	0	0	0	0	0	0	2
PACIFIC											
Washington:											
Seattle	9	3	4	1	-------	-------	0	0	-------	28	-------
Spokane	4	27	5	14	-------	-------	0	0	-------	3	-------
Tacoma	3	3	3	0	0	1	0	0	0	1	26
Oregon:											
Portland	7	2	7	6	0	5	0	0	0	6	67
California:											
Los Angeles	21	39	4	0	0	33	1	2	0	22	256
Sacramento	2	3	0	5	0	5	1	1	0	0	32
San Francisco	13	18	4	1	0	18	1	0	0	22	160

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:									
Manchester	0	0	0	0	0	0	0	0	1
Massachusetts:									
Boston	1	2	0	0	0	0	1	0	0
Fall River	1	1	0	0	0	0	0	0	0
Springfield	1	1	0	0	0	0	0	1	1

City reports for week ended April 9, 1927—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	3	2	5	5	0	0	1	3	1
New Jersey:									
Camden	0	0	0	0	0	0	0	1	1
Trenton	0	0	0	1	0	0	0	0	0
Pennsylvania:									
Philadelphia	0	0	1	1	0	0	0	0	0
EAST NORTH CENTRAL									
Ohio:									
Cleveland	1	1	0	0	0	0	0	1	0
Illinois:									
Chicago	8	2	3	2	0	0	0	0	0
Michigan:									
Detroit	1	0	0	0	0	0	0	0	0
Wisconsin:									
Milwaukee	5	3	0	0	0	0	0	0	0
Racine	0	1	0	0	0	0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Duluth	2	1	0	0	0	0	0	0	0
Minneapolis	0	1	1	1	0	0	0	0	0
Missouri:									
St. Louis	0	1	0	0	0	0	0	0	0
SOUTH ATLANTIC									
South Carolina:									
Charleston	0	0	0	1	0	1	0	0	0
Columbia	0	0	0	0	0	1	0	0	0
Georgia:									
Savannah [1]	0	0	0	0	1	0	0	0	0
EAST SOUTH CENTRAL									
Tennessee:									
Nashville	0	0	0	0	1	1	0	0	0
Alabama:									
Birmingham	0	0	0	0	1	1	0	0	0
WEST SOUTH CENTRAL									
Louisiana:									
New Orleans	0	0	0	0	1	1	0	0	0
Texas:									
Houston	0	0	0	0	0	1	0	0	0
San Antonio	0	0	0	0	0	1	0	0	0
MOUNTAIN									
Colorado:									
Pueblo	0	1	0	0	0	0	0	0	0
Utah:									
Salt Lake City	1	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	2	-------	0	-------	0	-------	0	0	-------
Oregon:									
Portland	1	0	0	0	0	0	0	0	0
California:									
Los Angeles	1	1	1	0	0	0	0	0	0
Sacramento	3	1	0	0	0	0	0	0	0
San Francisco	0	0	0	0	0	0	0	1	0

[1] Rabies (human): 1 case and 1 death at Savannah, Ga.

The following table gives the rates per 100,000 population for 101 cities for the five-week period ended April 9, 1927, compared with those for a like period ended April 10, 1926. The population figures used in computing the rates are approximate estimates as of July 1, 1926 and 1927, respectively, authoritative figures for many of the cities not being available. The 101 cities reporting cases had estimated aggregate populations of approximately 30,440,000 in 1926 and 30,960,000 in 1927. The 95 cities reporting deaths had nearly 29,780,000 estimated population in 1926 and nearly 30,290,000 in 1927. The number of cities included in each group and the estimated aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, March 6 to April 9, 1927—Annual rates per 100,000 population, compared with rates for the corresponding period of 1926 [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Mar. 13, 1926	Mar. 12, 1927	Mar. 20, 1926	Mar. 19, 1927	Mar. 27, 1926	Mar. 26, 1927	Apr. 3, 1926	Apr. 2, 1927	Apr. 10, 1926	Apr. 9, 1927
101 cities	[2] 114	[2] 184	120	171	[3] 131	178	[2] 126	[2] 191	116	[4] 202
New England	78	128	127	137	139	130	80	137	125	181
Middle Atlantic	113	231	126	225	142	227	146	264	125	269
East North Central	[2] 107	[2] 166	98	157	102	179	[2] 113	[2] 160	88	[2] 170
West North Central	216	133	147	127	149	121	159	159	204	171
South Atlantic	86	156	69	141	[3] 62	147	95	157	86	[5] 126
East South Central	26	112	26	31	36	41	57	61	114	66
West South Central	103	193	103	164	155	176	60	180	69	340
Mountain	109	198	73	126	255	81	146	108	118	171
Pacific	147	199	281	165	238	194	201	170	137	126

MEASLES CASE RATES

101 cities	[2] 1,686	[2] 942	1,783	913	[3] 1,834	934	[2] 1,693	[2] 805	1,781	[4] 865
New England	1,964	197	1,722	211	1,344	197	1,460	204	1,568	269
Middle Atlantic	1,716	80	1,858	93	1,839	114	1,850	128	1,773	159
East North Central	[2] 2,135	[2] 1,104	1,994	1,160	2,091	1,092	[2] 1,504	[2] 884	1,572	[2] 920
West North Central	1,603	1,245	1,892	1,564	2,323	1,519	2,428	1,558	3,283	1,304
South Atlantic	2,248	786	2,772	1,015	[3] 2,731	977	2,649	1,096	2,630	[5] 1,008
East South Atlantic	1,407	459	2,260	443	2,906	438	2,875	285	3,020	611
West South Central	39	1,204	43	1,040	125	1,778	43	948	236	2,143
Mountain	337	9,116	328	5,412	310	5,088	556	3,452	419	2,796
Pacific	324	3,259	319	2,930	450	3,170	246	2,767	388	3,058

SCARLET FEVER CASE RATES

101 cities	[2] 303	[2] 446	300	433	[3] 324	424	[2] 296	[2] 439	274	[4] 398
New England	333	590	403	546	354	478	391	513	318	362
Middle Atlantic	192	585	202	573	210	581	210	614	176	595
East North Central	[2] 371	[2] 364	340	359	407	351	[2] 331	[2] 323	330	[2] 272
West North Central	968	472	815	427	897	401	789	469	845	435
South Atlantic	149	194	156	219	[3] 155	179	173	197	145	[5] 193
East South Central	140	280	145	209	140	163	217	173	165	178
West South Central	112	122	137	63	146	59	86	55	116	101
Mountain	219	1,115	246	1,340	210	1,133	146	1,214	100	944
Pacific	249	285	279	254	287	361	249	340	155	243

[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, 1926 and 1927, respectively.
[2] Madison, Wis., not included.
[3] Norfolk, Va., not included.
[4] Madison, Wis., Frederick, Md., Norfolk, Va., and Wilmington, N. C., not included.
[5] Frederick, Md., Norfolk, Va., and Wilmington, N. C., not included.

***Summary of weekly reports from cities, March 6 to April 9, 1927—Annual rates per 100,000 population, compared with rates for the corresponding period of 1926*—Continued.**

SMALLPOX CASE RATES

	Week ended—									
	Mar. 13, 1926	Mar. 12, 1927	Mar. 20, 1926	Mar. 19, 1927	Mar. 27, 1926	Mar. 26, 1927	Apr. 3, 1926	Apr. 2, 1927	Apr. 10, 1926	Apr. 9, 1927
101 cities	[2] 40	[2] 30	36	31	[3] 37	30	[2] 42	[2] 28	32	[4] 27
New England	0	0	0	0	0	0	0	2	0	0
Middle Atlantic	0	0	0	1	0	0	0	0	0	0
East North Central	[2] 19	[2] 34	26	35	10	29	[2] 17	[2] 34	18	[2] 37
West North Central	67	54	50	50	54	69	46	30	50	42
South Atlantic	48	54	60	51	[3] 95	42	41	62	67	[5] 28
East South Central	67	82	83	132	57	107	98	122	88	87
West South Central	142	71	137	46	142	75	90	63	133	105
Mountain	18	0	64	90	27	18	55	9	27	27
Pacific	260	94	163	84	209	99	346	68	137	55

TYPHOID FEVER CASE RATES

101 cities	[2] 8	[2] 8	6	7	[3] 8	8	[2] 10	[2] 8	7	[4] 8
New England	5	12	0	5	0	5	7	12	9	7
Middle Atlantic	7	8	4	6	10	7	8	6	5	6
East North Central	[2] 4	[2] 1	3	4	4	4	[2] 3	[2] 1	3	[2] 5
West North Central	4	4	2	0	2	4	8	2	10	2
South Atlantic	7	11	20	11	[3] 16	13	17	16	6	[5] 10
East South Central	5	31	21	20	16	41	31	20	10	36
West South Central	4	17	9	13	9	29	34	25	17	38
Mountain	146	0	9	9	27	0	36	0	18	0
Pacific	0	10	5	18	13	10	11	24	13	8

INFLUENZA DEATH RATES

95 cities	[2] 71	[2] 27	76	31	[3] 97	27	[2] 89	[2] 22	74	[4] 23
New England	24	12	45	19	68	7	108	12	83	7
Middle Atlantic	105	25	95	32	112	26	100	21	76	26
East North Central	[2] 32	[2] 16	65	18	104	16	[2] 110	[2] 14	81	[2] 9
West North Central	36	15	32	21	38	15	38	4	32	17
South Atlantic	78	72	51	79	[3] 83	63	59	37	59	[5] 42
East South Central	197	76	222	87	253	92	98	102	238	71
West South Central	97	47	146	22	115	26	102	30	66	52
Mountain	146	54	46	18	64	27	27	27	46	36
Pacific	21	7	18	14	14	28	21	24	14	17

PNEUMONIA DEATH RATES

95 cities	[2] 326	[2] 188	372	183	[3] 372	166	[2] 335	[2] 163	277	[4] 163
New England	217	188	356	172	429	156	467	156	358	139
Middle Atlantic	461	223	504	226	494	199	433	186	339	199
East North Central	[2] 289	[2] 159	355	142	352	141	[2] 322	[2] 148	245	[2] 132
West North Central	148	81	146	114	160	102	160	93	186	137
South Atlantic	303	278	352	254	[3] 333	215	291	224	236	[5] 158
East South Central	388	178	398	183	476	188	357	127	429	209
West South Central	238	159	260	190	163	116	185	159	159	142
Mountain	301	171	201	162	191	171	155	162	137	243
Pacific	92	148	99	93	117	110	57	128	148	117

[2] Madison, Wis., not included.
[3] Norfolk, Va., not included.
[4] Madison, Wis., Frederick, Md., Norfolk, Va., and Wilmington, N. C., not included.
[5] Frederick, Md., Norfolk, Va., and Wilmington, N. C., not included.

Number of cities included in summary of weekly reports, and aggregate population of cities in each group, approximated as of July 1, 1926 and 1927, respectively

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	
			1926	1927	1926	1927
Total	101	95	30,438,500	30,960,600	29,778,400	30,289,800
New England	12	12	2,211,000	2,245,900	2,211,000	2,245,900
Middle Atlantic	10	10	10,457,000	10,567,000	10,457,000	10,567,000
East North Central	16	16	7,644,900	7,804,500	7,644,900	7,804,500
West North Central	12	10	2,585,500	2,626,600	2,470,600	2,510,000
South Atlantic	21	20	2,799,500	2,878,100	2,757,700	2,835,700
East South Central	7	7	1,008,300	1,023,500	1,008,300	1,023,500
West South Central	8	7	1,213,800	1,243,300	1,181,500	1,210,400
Mountain	9	9	572,100	580,000	572,100	580,000
Pacific	6	4	1,946,400	1,991,700	1,475,300	1,512,800

FOREIGN AND INSULAR

THE FAR EAST

Report for week ended March 26, 1927.—The following report for the week ended March 26, 1927, was transmitted by the Eastern Bureau of the Health Section of the Secretariat of the League of Nations, located at Singapore, to the headquarters at Geneva:

Maritime towns	Plague		Cholera		Small-pox		Maritime towns	Plague		Cholera		Small-pox	
	Cases	Deaths	Cases	Deaths	Cases	Deaths		Cases	Deaths	Cases	Deaths	Cases	Deaths
Iraq: Basrah	0	0	0	0	1	0	Siam: Bangkok	3	0	15	12	8	4
Ceylon: Colombo	2	2	0	0	0	0	Dutch East Indies:						
British India:							Surabaya	1	1	0	0	0	0
Karachi	0	0	0	0	1	0	French Indo-China:						
Calcutta	----	0	----	67	424	300	Saigon	0	0	1	1	0	0
Rangoon	----	4	----	4	53	14	China: Shanghai	0	0	0	0	1	0
Bassein	----	3	----	4	0	0	Manchuria: Harbin	0	0	0	0	16	12
Madras	----	0	----	0	22	2							
Negapatam	----	0	----	0	1	0							

Telegraphic reports from the following maritime towns indicated that no case of plague, cholera, or smallpox was reported during the week:

ASIA

Arabia.—Aden, Jeddah, Perim, Kamaran.

Persia.—Mohammerah, Bender-Abbas, Bushire, Lingah.

British India.—Chittagong, Cochin, Tuticorin, Vizagapatam.

Portuguese India.—Nova Goa.

Federated Malay States.—Port Swettenham.

Straits Settlements.—Penang, Singapore.

Dutch East Indies.—Batavia, Sabang, Belawan-Deli, Pontianak, Semarang, Menado, Banjermasin, Cheribon, Padang, Palembang, Makassar, Samarinda.

Sarawak.—Kuching.

British North Borneo.—Sandakan, Jesselton, Kudat, Tawao.

Portuguese Timor.—Dilly.

French Indo-China.—Haiphong, Tourane.

Philippine Islands.—Manila, Iloilo, Jolo, Cebu, Zamboanga.

China.—Amoy.

Hongkong.

Macao.

Formosa.—Keelung, Takao.

Chosen.—Chemulpo, Fusan.

Manchuria.—Antung, Yingkow, Mukden, Changchun.

Kwantung.—Dairen, Port Arthur.

Japan.—Yokohama, Nagasaki, Niigata, Hakodate, Shimonoseki, Moji, Tsuruga, Osaka, Kobe.

AUSTRAL ASIA AND OCEANIA

Australia.—Adelaide, Melbourne, Sydney, Brisbane, Rockhampton, Townsville, Port Darwin, Broome, Fremantle, Carnarvon, Thursday Island, Cairns.

New Guinea.—Port Moresby.

New Britain Mandated Territory.—Rabaul and Kokopo.

New Zealand.—Auckland, Wellington, Christchurch, Invercargill, Dunedin.

Samoa.—Apia.

New Caledonia.—Noumea.

Fiji.—Suva.

Hawaii.—Honolulu.

Society Islands.—Papeete.

AFRICA

Egypt.—Port Said, Suez, Alexandria.

Anglo-Egyptian Sudan.—Port Sudan, Suakin.

Eritrea.—Massaua.

French Somaliland.—Djibouti.

British Somaliland.—Berbera.

Italian Somaliland.—Mogadiscio.

Zanzibar.—Zanzibar.

Tanganyika.—Dar-es-Salaam.

Seychelles.—Victoria.

Portuguese East Africa.—Mozambique, Beira, Lourenco-Marques.

Union of South Africa.—East London, Port Elizabeth, Cape Town, Durban.

Reunion.—St. Denis.

Mauritius.—Port Louis.

Madagascar.—Majunga, Tamatave.

Reports had not been received in time for publication from:

Kenya.—Mombasa.
British India.—Bombay.
Dutch East Indies.—Tarakan, Balikpapan.
U. S. S. R.—Vladivostok.

Belated information:

Week ending March 19.—*Pondicherry:* Cholera case 1.

Movement of infected ships:

Penang.—*S. S. Tilawa* arrived from Rangoon infected with smallpox.

Batavia.—A *steamship* (name undecipherable) arrived from Hongkong infected with cholera.

Other epidemiological information:

Papua.—An outbreak of measles and German measles is reported from Samarai.

ANGOLA (PORTUGUESE WEST AFRICA)

Disease prevalence—February 2–15, 1927.—During the two weeks ended February 15, 1927, prevalence of certain diseases was reported in Angola, Portuguese West Africa, as follows: Dysentery, 29 cases in one district; influenza, 7 cases in two districts; malaria, 39 cases in three districts and reported present in Benguela district; plague, 1 case at Port Alexander; and smallpox, 3 cases, 1 in Congo district and 2 in Malange district.

CANADA

Communicable diseases—Week ended April 9, 1927.—The Canadian ministry of health reports cases of certain communicable diseases from seven Provinces of Canada for the week ended April 9, 1927, as follows:

Disease	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	Total
Cerebrospinal fever				2				2
Influenza	43							43
Smallpox				6	2	3	14	25
Typhoid fever	3		451	6		4	1	465

CUBA

Communicable diseases—Habana—March 1–31, 1927.—During the month of March, 1927, communicable diseases were reported in Habana, Cuba, as follows:

Disease	New cases	Deaths	Remaining under treatment Mar. 31, 1927	Disease	New cases	Deaths	Remaining under treatment Mar. 31, 1927
Beriberi			2	Measles	28	1	28
Chicken pox	24		25	Paratyphoid fever	3		4
Diphtheria	13	1	8	Rabies	1	1	
Leprosy			11	Scarlet fever	9		5
Malaria [1]	59	1	41	Typhoid fever [1]	30	6	23

[1] Many of these cases from the interior.

EGYPT

Plague—March 12–18, 1927.—During the week ended March 18, 1927, a case of plague was reported in Egypt, occurring at Port Said. The total number of cases of plague reported in Egypt from January 1 to March 18, 1927, was 14, as compared with 3 cases reported for the corresponding period of the year 1926.

FINLAND

Communicable diseases—January-February, 1927.—Communicable diseases have been reported in the Republic of Finland as follows:

Disease	Cases		Disease	Cases	
	Jan. 1–31, 1927	Feb. 1–28, 1927		Jan. 1–31, 1927	Feb. 1–28, 1927
Diphtheria	79	127	Paratyphoid fever	19	4
Dysentery		5	Poliomyelitis	1	4
Influenza	14,509	25,014	Scarlet fever	230	276
Lethargic encephalitis	3		Typhoid fever	19	9

Population, census: 3,495,186.

GREECE

Plague—Piræus—April 2, 1927.—A case of plague was reported at Piræus, Greece, April 2, 1927.

JAMAICA

Smallpox (alastrim)—March 13–April 2, 1927.—During the period March 13 to April 2, 1927, 10 new cases of smallpox (alastrim) were reported in the Island of Jamaica, exclusive of Kingston.

Other communicable diseases.—Other communicable diseases were reported as follows:

Disease	Kingston		Other localities		Disease	Kingston		Other localities	
	Cases	Deaths	Cases	Deaths		Cases	Deaths	Cases	Deaths
Chicken pox	12		74		Puerperal fever			1	
Diphtheria	1				Tuberculosis	26		31	
Dysentery	8		31		Typhoid fever	33		65	
Leprosy			1						

Chicken pox—Increase in prevalence.—During the period under report, chicken pox showed an increase in prevalence in the island, with 13 new cases in the week ended March 26, only 1 case in the preceding week, and 60 cases in the week ended April 2, 1927. An increase in prevalence was also noted for typhoid fever, occurring in Kingston, with 1 case reported for the week ended March 19, 12 cases for the week ended March 26, and 20 cases for the week ended April 2, 1927.

UNION OF SOUTH AFRICA

Plague—Orange Free State—February 27–March 5, 1927.—During the week ended March 5, 1927, two fatal cases of plague were reported in the Orange Free State, in Bloemfontein district. The cases occurred in natives on a farm.

Typhus fever.—During the same period, fresh outbreaks of typhus fever were reported in the Mount Currie district, Cape Province.

VIRGIN ISLANDS

Communicable diseases—March, 1927.—During the month of March, 1927, communicable diseases were reported in the Virgin Islands of the United States as follows:

Island and disease	Cases	Remarks	Island and disease	Cases	Remarks
St. Thomas and St. John:			St. Croix:		
Chicken pox	4		Filariasis	6	Bancrofti.
Gonorrhea	3		Leprosy	1	
Pellagra	2		Tuberculosis	1	Chronic pulmonary.
Syphilis	2	Secondary.			
Tuberculosis	4	Chronic pulmonary.			

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 29, 1927 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
India				Feb. 6–12, 1927: Cases, 1,943; deaths, 1,086.
Calcutta	Mar. 6–12	47	41	
Madras	Mar. 13–19	2	1	
Rangoon	do	1	1	
Siam				Feb. 27–Mar. 5, 1927: Cases, 65; deaths, 52. Apr. 1, 1926–Mar. 5, 1927: Cases, 8,238; deaths, 5,454.
Bangkok	Feb. 27–Mar. 5	13	11	

PLAGUE

Angola:				
Mossamedes district—				
Port Alexander	Feb. 9–15	1		Portuguese West Africa.
Egypt	Jan. 1–Mar. 18	14		
Port Said	Mar. 12–18	1		
Greece:				
Piræus	Apr. 2	1		
India				Feb. 13–19, 1927: Cases, 2,164; deaths, 1,368.
Bombay	Mar. 6–12	2	2	
Madras Presidency	Feb. 20–26	100	58	
Rangoon	February, 1927			12 plague-infected rats found.
Java:				
Batavia	Feb. 27–Mar. 5	31	31	Province.
East Java and Madura	Feb. 12–19	2	2	
Mauritius:				
Port Louis	Jan. 1–31	5	3	
Senegal:				
Tavaouane	Mar. 21–27	2	2	Interior district.

[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 During Week Ended April 29, 1927—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Siam				Feb. 27-Mar. 5, 1927: 1 case, 1 death. Apr. 1, 1926-Mar. 5, 1927: Cases, 39; deaths, 30.
Bangkok	Feb. 27-Mar. 5	1	1	
Union of South Africa:				
Orange Free State—				
Bloemfontein district	do	2	2	

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Algeria:				
Oran	Mar. 21-31	1		
Angola:				
Congo	Feb. 2-15	1		District.
Malange	do	2		Do.
British South Africa:				
Northern Rhodesia	Feb. 26-Mar. 4	55	2	
Canada	Mar. 27-Apr. 9			Cases, 47.
Alberta	do	26		
Manitoba	Apr. 3-9	2		
Winnipeg	do	1		
Ontario	Mar. 27-Apr. 9	16		
Toronto	Apr. 3-9	5		
Saskatchewan	do	3		
China:				
Chungking	Feb. 20-26			Present.
Hongkong	Feb. 27-Mar. 12	23	21	
France:				
Paris	Mar 11-20	2		
Great Britain:				
England and Wales—				
Leeds	Mar. 27-Apr. 2	1		
Newcastle on Tyne	do	2		
Sheffield	Mar. 20-Apr. 2	20	1	
India				Feb. 13-19, 1927: Cases, 6,085; deaths, 1,423.
Bombay	Mar. 6-12	52	31	
Calcutta	do	258	179	
Madras	Mar. 13-19	29	1	
Rangoon	Mar. 6-12	32	6	
Indo-China:				
Cochin China—				
Saigon	Feb. 6-12	1		
Iraq:				
Baghdad	Feb. 20-Mar. 5	2	1	
Jamaica				Mar. 13-Apr. 2, 1927: Cases, 10. (Alastrim.)
Mexico:				
Mexico City	Mar. 20-26	1		Including municipalities in Federal district.
Senegal:				
Ouakam	Mar. 20-27	4		Vicinity of Dakar.
Siam				Feb. 27-Mar. 5, 1927: Cases, 14; deaths, 9. Apr. 1, 1926-Mar. 5, 1927: Cases, 775; deaths, 299.
Bangkok	Feb. 27-Mar. 5	7	3	
Spain:				
Valencia	Mar. 27-Apr. 2	2		

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria:				
Algiers	Mar. 11-20	11		
Oran	Mar. 21-31	7		
Egypt:				
Alexandria	Mar. 19-25	1		
Mexico:				
Mexico City	Mar. 20-26	10		Including municipalities in Federal district.
Poland				Jan. 31-Feb. 19, 1927: Cases, 176; deaths, 13.
Syria:				
Aleppo	Mar. 13-19	1		
Tunisia:				
Tunis	Mar. 21-31	3		

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

Reports Received from January 1 to April 22, 1927 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
China:				
Canton	Nov. 1-30	10	3	
Chungking	Nov. 14-20			Present.
Do	Jan. 2-Feb. 19			Do.
Tsingtao	Nov. 14-Dec. 11			Do.
Chosen	Sept. 1-Oct. 31	252	159	
French Settlements in India	Aug. 29-Dec. 18	131	97	
India	Oct. 10-Jan. 1			Cases, 20,298; deaths, 3,507.
Do	Jan. 2-Feb. 5			Cases, 13,919; deaths, 7,824
Bombay	Jan. 9-29	2	1	
Calcutta	Oct. 31-Jan. 1	385	313	
Do	Jan. 2-Mar. 5	495	375	
Madras	Dec. 26-Jan. 1	2	2	
Do	Jan. 2-Mar. 12	10	8	
Rangoon	Nov. 21-Jan. 1	11	7	
Do	Jan. 2-Mar. 12	48	43	
Indo-China	July 1-Aug. 31			Cases, 3,446; deaths, 2,276.
Saigon	Oct. 31-Nov. 13	2	2	
Province—				
Annam	July 1-Aug. 31	511	401	
Cambodia	do	727	472	
Cochin-China	do	432	349	
Kwang-Chow-Wan	do	703	361	
Laos	do	56	47	
Tonkin	do	1,017	646	
Japan:				
Hiogo	Nov. 14-20	3		
Philippine Islands:				
Manila	Oct. 31-Nov. 6	1		
Russia	Aug. 1-Sept. 30	8		
Siam	Apr. 1-Jan. 1			Cases, 7,847; deaths, 5,164.
Do	Jan. 2-Feb. 26			Cases, 268; deaths, 199.
Bangkok	Oct. 31-Jan. 1	16	5	
Do	Jan. 9-Feb. 26	27	10	
Straits Settlements	July 25-Oct. 16		60	
Singapore	Nov. 21-Jan. 1	14	8	
Do	Feb. 6-12	1		

PLAGUE

Algeria:				
Algiers	Reported Nov. 16	1		
Bona	Jan. 11-19	3	2	
Oran	Nov. 21-Dec. 10	32	22	
Tarafaraoui	Nov. 1-Dec. 9	10	9	Near Oran.
Angola:				
Benguela district	Oct. 1-Dec. 31	17	10	
Do	Jan. 19-31	1		At Cavaco.
Cuanza Norte district	Dec. 1-31	18	10	
Mossamedes district	Dec. 16-31	10		
Do	Jan. 19-31	3		At Port Alexander.
Argentina	Jan. 9-15	5		
Azores:				
St. Michaels Island—				
Furnas	Nov. 3-17	4	1	27 miles distant from port.
Brazil:				
Porto Alegre	Jan. 1-31	4	2	
Rio de Janeiro	Nov. 28-Dec. 4	2	2	
Do	Dec. 26-Jan. 1	1	1	On vessel in harbor.
Do	Jan. 2-8	1		
Sao Paulo	Nov. 1-14	1	1	
British East Africa:				
Kenya—				
Kisumu	Jan. 16-22	1	1	
Tanganyika Territory	Nov. 21-Dec. 18		12	
Uganda	Sept. 1-Oct. 31	162	152	
Canary Islands:				
Atarfe	Dec. 20	1	1	Vicinity of Las Palmas.
Las Palmas	Jan. 8-Feb. 12	2		
San Miguel	do	1		Vicinity of Santa Cruz de Teneriffe.

[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 January 1 to April 22, 1927—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Celebes:				
Makassar	Dec. 22			Outbreak.
Ceylon:				
Colombo	Nov. 14–Dec. 11	3	1	2 plague rodents.
Do	Jan. 2–Mar. 5	33	17	10 plague rodents.
China:				
Mongolia	Reported Dec. 21	500		
Nanking	Oct. 31–Dec. 18			Present.
Do	Feb. 6–Mar. 5			Do.
Ecuador:				
Guayaquil	Nov. 1–Dec. 31	26	8	Rats taken, 50,615; found infected, 184.
Do	Jan. 1–Feb. 15	43	10	Rats taken, 36,124; found infected, 129.
Egypt	Jan. 1–Dec. 9			Cases, 149.
	Jan. 1–28			Cases 13.
Alexandria	Nov. 19–Dec. 2	2		
Charkia Province	Jan. 5	1	1	At Zagazig (Tel el Kebir).
Gharbia Province	Jan. 4	1	1	
Kafr el Sheikh	Dec. 3–9	2		
Marsa Matrah	Dec. 23–29	10		
Do	Jan. 27	1		
Port Said	Mar. 16	1	1	
Tanta district	Nov. 19–Dec. 20	3		
Greece	Nov. 1–30	10	1	Athens and Piræus.
Athens	Nov. 1–Dec. 31	9	4	
Patras	Nov. 28–Dec. 4		1	
Pravi	Nov. 27	1	1	Province of Drama-Kevalla.
India	Oct. 10–Jan. 1			Cases, 16,162; deaths, 9,905.
Do	Jan. 2–Feb. 5			Cases, 7,533; deaths, 5,045.
Bombay	Nov. 21–27	1	1	
Do	Jan. 16–Mar. 5	9	8	
Madras	Jan. 31–Jan. 1	581	324	
Do	Oct. 2–Feb. 19	657	414	
Rangoon	Nov. 14–Dec. 25	11	9	
Do	Jan. 2–Mar. 5	44	40	
Indo-China	July 1–Aug. 31			Cases, 34; deaths, 19.
Province—				
Cambodia	do	10	10	
Cochin-China	do	14	9	
Kwang-Chow-Wan	do	10		July, 1925: Cases, 22; deaths, 18.
Iraq:				
Baghdad	Jan. 23–Feb. 5	2	1	
Java:				
Batavia	Nov. 7–Jan. 1	91	90	Province.
Do	Jan. 2–Feb. 26	202	195	
East Java and Madura	Oct. 24–Jan. 1	17	17	
Do	Jan. 2–Feb. 12	12	12	
Madagascar:				
Province—				
Ambositra	Dec. 16–31	10	10	
Do	Jan. 1–31	32	32	
Analalava	Oct. 16–31	1	1	
Antisirabe	Dec. 16–31	2	2	
Do	Jan. 1–31	17	17	
Diego-Suarez	do	7	7	
Itasy	Oct. 16–Dec. 31	39	39	
Do	Jan. 1–31	29	29	
Maevatanana	Oct. 16–31	10	10	
Majunga	do	3	1	
Moramanga	Oct. 16–Dec. 31	92	67	
Do	Jan. 1–31	42	40	
Tamatave	Oct. 16–Dec. 31	107	69	
Tananarive	do			Cases, 533; deaths, 497.
Do	Jan. 1–31	138	133	
Town—				
Tamatave	Nov. 16–30	2		
Tananarive	Oct. 16–Dec. 31	48	34	
Do	Jan. 1–31	11	11	
Mauritius:				
Plaines Wilhems	Oct. 1–Nov. 30	3	3	
Pamplemousses	Dec 1–31	3	3	
Port Louis	Oct. 1–Dec. 31	39	35	
Nigeria	Aug. 1–Nov. 30	999	902	

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

Reports Received from January 1 to April 22, 1927—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Peru	Nov. 1-Dec. 31			Cases, 90; deaths, 26.
Do	Jan. 1-Feb. 28	79	18	
Departments—				
Ancash	Dec. 1-31	6	6	
Do	Jan. 1-31			Present.
Cajamarca	do	36	6	
Ica—				
Chincha	Nov. 1-30	1		
Lambayeque	Feb. 1-28	6	2	
Chiclayo	Nov. 1-30	3		
Do	Jan. 1-31	2		
Libertad	Dec. 1-31	2		
Do	Jan. 1-Feb. 28	6		
Lima	Nov. 1-Dec. 31	42	14	
Do	Jan. 1-Feb. 28	66	16	
Piura	Feb. 1-28	1		
Portugal:				
Lisbon	Nov. 23-26	3	2	In suburb of Balem.
Russia	May 1-June 30	44		
Do	July 1-Sept. 30	64		
Senegal	July 1-31	178	162	
Diourbel	Nov. 20-30	12	1	
Tivaouane	Dec. 19-25	6	2	In interior.
Siam	Apr. 1-Jan. 1			Cases, 30; deaths, 22.
Do	Jan. 16-Feb. 26			Cases, 8; deaths, 6.
Syria:				
Beirut	Nov. 11-Dec. 20	4		
Do	Feb. 1-10	1		
Tunisia	Dec. 1-31			Cases, 48.
Do	Jan. 12-26			Cases, 34.
Acheche district	Feb. 11-14	14	14	Pneumonic.
Bousse	Jan. 12-26	8		
Djeneniana	Feb. 11-14	8		
Kairouan	do	3		
Mahares	do	15		
Sfax	Oct. 1-Dec. 31	304	128	
Turkey:				
Constantinople	Dec. 15-25	1		
Union of South Africa:				
Cape Province—				
Cradock district	Jan. 2-Feb. 19	3	1	
De Aar district	Nov. 21-27	1		Native.
Glen Gray district	Jan. 31-Feb. 12	8	8	
Hanover district	Nov. 14-Jan. 1	3	2	
Do	Jan. 2-8	1	1	
Middleburg district	Dec. 5-11	1	1	Do.
Orange Free State	do			Cases, 12; deaths, 2.
Bothaville district	Dec. 5-18	2	1	
Hoopstad district	Nov. 7-13	1	1	Native.
Do	Dec. 5-25	2	1	Do.
Do	Jan. 2-Feb. 12	4		
Vredefort district	Dec. 19-25	10	5	
Do	Feb. 6-12	2	1	
On vessel:				
S. S. Leconte de Lisle	Feb. 21-23	2		At Tamatave, Madagascar.

SMALLPOX

Algeria	Sept. 21-Dec. 31			Cases, 797.
Do	Jan. 1-20	86		
Algiers	Dec. 11-31	4		
Do	Jan. 1-Mar. 10	8		
Angola	Oct. 1-15			Present in Congo district.
Cuanza Norte	Nov. 1-15			Present.
Arabia:				
Aden	Dec. 12-18	1		Imported.
Belgium	Oct. 1-10	1		
Brazil:				
Bahia	Oct. 30-Dec. 18	12	8	
Para	Oct. 31-Nov. 6		1	
Do	Feb. 5-12		1	
Pernambuco	Oct. 17-Dec. 25	58	4	
Rio de Janeiro	Year 1926			Cases, 4,083; deaths, 2,180.
Do	Jan. 2-Mar. 19	63	31	
Sao Paulo	Aug. 23-Dec. 5	34	18	

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

Reports Received from January 1 to April 22, 1927—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
British East Africa:				
Kenya—				
Nairobi	Dec. 1-31	15	5	
Tanganyika Territory	Oct. 31-Nov. 20	2		
Do	Jan. 2-15	34	7	
Zanzibar	Oct. 1-31	23	12	
British South Africa:				
Northern Rhodesia	Nov. 27-Dec. 3			Cases, 200. In natives.
Bulgaria	Nov. 1-30	1		
Canada	Dec. 5-Jan. 1			Cases, 155.
Do	Jan. 2-Mar. 26			Cases, 501.
Alberta	Dec. 5-Jan. 1	132		
Do	Jan. 2-Mar. 26	177		
Calgary	Nov. 28-Dec. 25	12		
Do	Jan. 2-Apr. 2	40	1	
Edmonton	Dec. 1-31	4		
Do	Jan. 1-31	5		
British Columbia—				
Vancouver	Jan. 31-Mar. 20	7		
Manitoba	Dec. 5-Jan. 1	9		
Do	Jan. 2-Mar. 12	20		
Winnipeg	Dec. 19-25	1		
Do	Jan. 2-Mar. 5	7		
New Brunswick	Feb. 13-26	2		
Ontario	Dec. 5-Jan. 1	96		
Do	Jan. 2-Mar. 26	257		
Kingston	Jan. 1-Feb. 19	3		
Ottawa	Dec. 12-31	5		
Do	Jan. 9-Mar. 26	6		
Toronto	Dec. 14-25	14		
Do	Jan. 1-Apr. 2	74	1	
Saskatchewan	Dec. 5-Jan. 1	18		
Do	Jan. 2-Mar. 12	45		
Regina	Jan. 16-22	1		
Chile:				
Concepcion	Dec. 26-Jan. 1		5	
China:				
Amoy	Jan. 1-Feb. 26	2		
Canton	Nov. 1-Dec. 31	6		
Chefoo	Jan. 23-Feb. 19			Present.
Chungking	Nov. 7-Dec. 25			Do.
Do	Jan. 2-Feb. 19			Do.
Foochow	Nov. 7-Dec. 25			Do.
Hankow	Nov. 6-30			Do.
Hongkong	Jan. 23-Mar. 8	56	38	
Manchuria—				
Harbin	Dec. 16-31	3		
Do	Feb. 7-13	1		
Mukden	Dec. 5-11	1		
Nanking	Dec. 12-25			Do.
Do	Jan. 2-Mar. 5			Do.
Shanghai	Dec. 12-18		1	
Do	Jan. 20-Feb. 26		2	
Swatow	Nov. 21-27			Do.
Tientsin	Jan. 16-Feb. 26	20		
Chosen	Aug. 1-Nov. 30	53	19	
Seoul	Nov. 1-30	2		
Egypt:				
Alexandria	Jan. 8-14	1		
Cairo	June 11-Aug. 26	27	4	
Estonia	Oct. 1-30	2		
France	Sept. 1-Dec. 31	293		
Paris	Dec. 1-31	10	3	
Do	Jan. 1-Feb. 20	17	3	
French Settlements in India	Aug. 29-Dec. 18	118	118	
Germany:				
Stuttgart	Nov. 28-Dec. 4	7		
Gold Coast	Aug. 1-Nov. 30	59	14	
Great Britain:				
England and Wales	Nov. 14-Jan. 4			Cases, 2,262.
Do	Jan. 2-Mar. 26			Cases, 5,749.
Birmingham	Mar. 13-19	5		
Bradford	Jan. 9-22	2		
Cardiff	Feb. 13-19	1		
Dundee	Mar. 31	42		
Monmouthshire	Feb. 25	22		

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

Reports Received from January 1 to April 22, 1927—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Great Britain—Continued.				
England and Wales—Con.				
Newcastle-on-Tyne	Dec. 5-13	2		
Do	Jan. 2-Mar. 12	16		
Normanton	Dec. 30	1		9 miles from Leeds
Sheffield	Nov. 28-Jan. 1	60		
Do	Jan. 2-Mar. 19	523		
Wakefield	Jan. 30-Feb. 2	2		
Greece	Nov. 1-Dec. 31	25		
Athens	Dec. 1-31	14	2	
Guatemala:				
Guatemala City	Nov. 1-Dec. 31		15	
Do	Jan. 1-Feb. 28		51	
India	Oct. 10-Jan. 1			Cases, 22,946; deaths, 6,006.
Do	Jan. 2-Feb. 5			Cases, 25,386; deaths, 6,222.
Bombay	Nov. 7-Jan. 1	37	20	
Do	Jan. 2-Mar. 5	294	155	
Calcutta	Oct. 31-Jan. 1	449	311	
Do	Jan. 2-Mar. 5	1,340	961	
Karachi	Dec. 19-25	1	1	
Do	Jan. 2-Mar. 5	32	25	
Madras	Nov. 21-Jan. 1	32	2	
Do	Jan. 2-Mar. 12	213	6	
Rangoon	Nov. 28-Jan. 1	2	2	
Do	Jan. 2-Mar. 5	149	29	
Indo-China:				
Saigon	Dec. 26-Jan. 1	3		
Iraq:				
Baghdad	Oct. 31-Dec. 4	7	4	
Do	Jan. 23-Feb. 12	3		
Basra	Nov. 7-13	1	1	
Italy	Aug. 29-Jan. 1	28		
Genoa	Dec. 30-31	1		
Do	Jan. 1-10	2		
Jamaica	Nov. 26-Jan. 1	37		Reported as alastrim.
Do	Jan. 2-Feb. 12	95		Do.
Japan	Oct. 24-Dec. 25	25		
Kobe	Nov. 14-20	1		
Do	Jan. 23-Feb. 5	2		
Yokohama	Nov. 27-Dec. 3	2		
Java:				
Batavia	do	2		Province.
East Java and Madura	Oct. 24-Dec. 25	11	1	
Do	Jan. 2-27	4	3	
Lithuania	Nov. 1-30	2		
Luxemburg	Nov. 1-Dec. 31	2		
Mexico	July 1-Oct. 31		534	
Chihuahua	Dec. 31			Several cases; mild.
Do	Jan. 31-Feb. 6			Present.
Ciudad Juarez	Dec. 14-27		2	
Manzanillo	Mar. 5-Apr. 4		4	
Mazatlan	Feb. 14-20		2	
Mexico City	Nov. 23-Dec. 25	6		Including municipalities in Federal District.
Do	Dec. 26-Feb. 26	5		Do.
Nuevo Leon State—				
Cerralvo	Mar. 11			Epidemic.
Montemorelos	Feb. 24			Reported present.
Monterey	Feb. 24-Mar. 20	64	2	Other cases stated to exist.
Parral	Jan. 31-Feb. 6			Cases, 25. Unofficially reported.
Piedras Negras district	Feb. 25	68		At Nueva Rosita.
Saltillo	Feb. 6-12		1	
San Luis Potosi	Nov. 12-Dec. 18		3	
Do	Jan. 9-Apr. 2		25	
Tampico	Jan. 21-31	1		
Torreon	Nov. 28-Jan. 1		12	
Do	Jan. 2-Mar. 19		13	
Victoria	Feb. 24			Present.
Netherlands East Indies	Dec. 14			Island of Borneo; epidemic in two villages.
Nigeria	Aug. 1-Nov. 30	78	4	
Persia:				
Teheran	Nov. 22-Dec. 23		5	
Peru:				
Arequipa	Dec. 1-31		1	
Do	Jan. 1-31		1	
Laredo	Dec. 1			Severe outbreak; vicinity of Trujillo.

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

Reports Received from January 1 to April 22, 1927—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Poland	Oct. 11-Dec. 31			Cases, 32; deaths. 3.
Do	Jan. 1-8			Deaths, 1.
Portugal:				
Lisbon	Nov. 22-Jan. 1	43	4	
Do	Jan. 2-Mar. 26	31		
Rumania	Jan. 1-Sept. 30	7	1	
Russia	May 1-June 30	705		
Do	July 1-Sept. 30	884		
Senegal:				
Dakar	Jan. 9-Mar. 6	3		
Siam	Apr. 1-Jan. 1			Cases, 711; deaths, 265.
Do	Jan. 2-Feb. 26			Cases, 50; deaths, 21.
Bangkok	Oct. 31-Jan. 1	28	10	
Do	Jan. 2-Feb. 26	27	18	
Sierra Leone:				
Makeni	Feb. 22-28	3		
Nanowa	Dec. 1-15	1		Pendembu district.
Spain	July 1-Sept. 30		9	
Valencia	Feb. 8-Mar. 19	7		
Sumatra:				
Medan	Feb. 20-26	1		
Straits Settlements:				
Singapore	Oct. 31-Jan. 1	12	2	
Do	Jan. 2-15	3	3	
Tunisia	Oct. 1-Dec. 31	9		
Do	Jan. 1-20	8		
Tunis	Jan. 1-Mar. 10	3		
Turkey:				
Constantinople	Feb. 1-7		1	
Union of South Africa:				
Cape Province—				
Albany district	Jan. 23-29			Outbreaks.
Caledon district	Dec. 5-11			Do.
Steynsburg district	do			Do.
Stutterheim district	Nov. 21-27			Do.
Wodehouse district	Jan. 30-Feb. 12			Do.
Natal—				
Durban district	Nov. 7-27	9		Including Durban municipality. Total from date of outbreak: Cases, 62; deaths, 16.
Orange Free State	Nov. 14-27			Outbreaks.
Bothaville district	Nov. 21-27			Do.
Transvaal	Nov. 7-20	2		Europeans.
Bethel district	Jan. 23-29			Outbreaks.
Johannesburg	Nov. 14-20	1		
West Africa:				
French Guinea—				
Kissidougou	Feb. 19			Present.
French Sudan—				
Kayes	do			Do.
Yugoslavia	Nov. 1-Dec. 31	4	1	
Do	Jan. 1-31	3		

TYPHUS FEVER

Algeria	Sept. 21-Dec. 20	59	2	
Do	Jan. 1-20			Cases, 21.
Algiers	Feb. 1-Mar. 10	22		
Argentina:				
Rosario	Dec. 1-31		1	
Do	Jan. 25-31		3	
Bulgaria	July 1-Dec. 31	39	5	
Chile	Sept. 15-Nov. 15	39	4	
Concepcion	do	1		
Do	Jan. 23-29		1	
Lebu	Sept. 15-Nov. 15	6	2	
Linares	do	2		
Los Andes	do	8		
Santiago	do	18	2	
Valparaiso	Sept. 15-Dec. 25	10		
Do	Jan. 2-Mar. 19	5	1	

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

Reports Received from January 1 to April 22, 1927—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
China:				
Antung	Nov. 22-Dec. 5	4		
Chefoo	Oct. 24-Nov. 6			Present.
Chungking	Dec. 25-31			Do.
Chosen	Aug. 1-Nov. 30	43	2	
Seoul	Nov. 1-30	1		
Do	Jan. 1-31	2	1	
Czechoslovakia	Oct. 1-Dec. 31	10		
Do	Jan. 1-Feb. 28	48		
Egypt:				
Alexandria	Dec. 3-9		1	
Do	Jan. 22-28	1		
Cairo	Oct. 29-Nov. 4	1	1	
Estonia	Dec. 1-31	1		
Do	Jan. 1-31	7		
France	Nov. 1-30	1		
Gold Coast	Sept. 1-30	1	1	
Greece	Nov. 1-30			Cases, 12.
Athens	Nov. 1-Dec. 31	19	2	
Do	Feb. 1-28	4		
Drama	Dec. 1-31	2		
Kavalla	do	2		
Patras	Jan. 23-29		1	
Ravokan	do	1		
Saloniki	Jan. 25-31	1		
Indo-China:				
Tonkin	Aug. 1-31	2		
Ireland:				
Clare County—				
Tulla district	Jan. 9-15	1		Suspect.
Italy	Aug. 29-Sept. 23	3		
Japan:				
Tokyo Prefecture	Dec. 5-25	9		
Tokyo city	do	5	1	
Latvia	Jan. 1-31	2		
Lithuania	Sept. 1-Dec. 31	41	4	
Mexico	July 1-Oct. 31			Deaths, 534.
Aguascalientes	Jan. 9-Feb. 5	2		
Durango	Jan. 1-31		1	
Guadalajara	Jan. 25-31		1	
Mexico City	Dec. 5-11	3		Including municipalities in Federal district.
Do	Jan. 2-Mar. 19	60		Do.
Parral	Jan. 30-Feb. 5	1		
Nigeria	Sept. 1-30	1		
Palestine:				
Acre	Dec. 29-Jan. 3	1		
Beisan	Dec. 21-27	1		
Haifa	Nov. 23-Dec. 13	5		
Do	Dec. 28-Feb. 7	7		
Jaffa	Nov. 23-Dec. 27	7		
Do	Jan. 11-Feb. 21	3		
Majdal	Dec. 28-Jan. 3	1		
Nazareth	Nov. 16-Jan. 3	12		
Do	Mar. 1-7	1		
Ramleh	Jan. 31-Feb. 7	1		
Safad	Dec. 21-Jan. 3	2		
Peru:				
Arequipa	Dec. 1-31		2	
Poland	Oct. 11-Dec. 25			Cases, 341; deaths, 27.
Do	Jan. 1-Feb. 12			Cases, 414; deaths, 32.
Rumania	Aug. 1-Nov. 30	255	11	
Russia	May 1-June 30	6,043		
Do	July 1-Aug. 31	3,060		
Spain	July 1-Sept. 30		4	
Seville	Mar. 16-22		1	
Tunisia	Oct. 1-Dec. 27	30		
Do	Jan. 1-20	21		
Tunis	Jan. 21-31	1		
Turkey:				
Constantinople	Dec. 12-25	3		
Do	Jan. 16-22			1 death reported by press.
Union of South Africa	Oct. 1-Dec. 31			Cases, 233; deaths, 30.
Cape Province	do	47	7	
Do	Jan. 1-31	38	4	
East London	Nov. 21-27	1		Native. Imported.
Port St. Johns district	Dec. 5-11			Outbreaks. On farm.

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

Reports Received from January 1 to April 22, 1927—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Union of South Africa—Con.				
Natal	Oct. 1-31	1		
Do	Jan. 1-31	6		
Orange Free State	Oct. 1-Dec. 31	31	2	
Do	Jan. 1-Feb. 19	12	3	
Transvaal	Oct. 1-31	1		
Do	Jan. 1-31	1		Native.
Yugoslavia	Nov. 1-Dec. 31	30	2	
Do	Jan. 1-Feb. 28	65	4	

YELLOW FEVER

French Sudan	Dec. 19-25	1	1	
Gold Coast	Aug. 1-Nov. 30	10	5	
Nigeria	Sept. 1-Nov. 30	4	3	
Senegal	Dec. 19-25	3	3	
Diourbel	Dec. 6	1	1	
Do	Jan. 1-20	1	1	At N'Bake.
Guinguineo	Dec. 7	1	1	
Rufisque	Nov. 27-Dec. 29	2	1	In European.
Do	Jan. 2-8	3	3	
Upper Volta:				
Gaoua district	Oct. 25	2		

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