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IODIZATION OF PUBLIC WATER SUPPLIES FOR PREVENTION OF ENDEMIC GOITER

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GENERAL CONSIDERATIONS

The theory that endemic goiter is due principally, if not solely, to a relative or absolute deficiency of iodine is now widely accepted. The experimental evidence upon which this conception is based is so convincing and the practical applications are so successful that doubts concerning the tenability of the theory are steadily being dispelled.

Following the convincing demonstrations of Marine and his colleagues in preventing goiter among children and lower animals through the administration of small amounts of iodine, public health officials promptly turned their attention to the important matter of applying this new and effective weapon against a disease of long standing. However, in emulating the examples of these pioneer investigators it became apparent that successful prophylaxis is dependent upon the rigid observance of certain well defined and fundamental principles. These requisites for preventing endemic goiter may be stated as follows:

1. Minute dosage of iodine.
2. Palatability of the preparation used.
3. Efficiency.
4. Harmlessness.
5. Low cost.
6. Wide range and ease of administration.

Goiter prophylaxis versus treatment.—There is an unfortunate, as well as rather general, misconception of the distinction between goiter prevention and goiter treatment. To many persons the measures advocated for prophylaxis are regarded as being equally efficacious in the treatment of goiter. This erroneous belief is also entertained by many physicians, their goitrous patients being advised to partake of iodized salt or water in order to obtain relief from thyroid disease. Because of the confusion surrounding the subject, it is believed to be advisable to restate the conditions and expectations of goiter prophylaxis.

Prophylactic doses of iodine are intended solely, of course, for the maintenance of the equilibrium of the normal thyroid. The minute doses of iodine suitable for prophylactic purposes probably have little, if any, effect upon existing thyroid enlargements. If goitrous manifestations are reduced or entirely relieved while prophylactic measures are applied, the results may be regarded as incidental rather than usual.

The treatment of existing goiters is a matter entirely removed from the realm of prophylaxis. Treatment requires, first of all, the services of a physician with special skill and experience, particularly in the diagnosis of the different forms of goiter. Furthermore, the medical attendant must possess a keen appreciation of the poisonous potentialities of iodine. As the usefulness of iodine in treating goiter is definitely limited, the possibilities of causing irreparable damage through the use of this element must be thoroughly realized. Needless to say, the breach between goiter prophylaxis and treatment is a wide one. When the essential differences are more generally understood, both preventive and curative measures will be placed upon a more secure basis.

Water and salt as mediums for conveying iodine.—Inasmuch as the form in which iodine is conveyed to those in need of the prophylactic is apparently immaterial, numerous preparations, combinations, and methods have been proposed. However, from a practical standpoint it is essential that the iodine be administered in palatable form to all in need of it and with a minimum of administrative supervision. With these objectives in view, investigators began the search for a medium in which iodine could be conveniently distributed.

Water and salt, being the most frequently used articles of food, were naturally chosen early as suitable vehicles for the general distribution of iodine. Iodized table salt is now extensively used in some sections of the United States and Europe, particularly in Switzerland, Austria, and Italy. While the reports as to its efficiency and harmlessness are not in harmonious agreement, nevertheless iodized table salt may be considered a prophylactic of considerable promise, especially after the iodine content has been scientifically adjusted.

When McClendon and Hathaway announced, in 1924, the apparent existence of an inverse ratio between the incidence of endemic goiter and the amount of iodine in the drinking water of a given community, interest in goiter prophylaxis was still further increased. In view of the close relationship presumably existing between goiter and the amount of iodine in water, it was but natural that attention should be directed to the possibility of utilizing artificially treated water in preventing simple goiter.

It appears that Dr. G. W. Goler, health officer, in cooperation with Mr. B. C. Little, superintendent of the waterworks bureau of Rochester, N. Y., were the first to propose, and actually put into effect, the iodization of a public water supply for the prevention of simple goiter. Since that time several cities in the United States and England have instituted the same procedure. In the following discussion will be considered the various angles of the subject.

SPECIAL CONSIDERATIONS

Quantity of iodine required for prophylaxis.—Much of the objection which has arisen to the use of iodized water in preventing simple goiter is due to the difficulty in establishing and maintaining a suitable iodine content. Iodine must, of course, be present in sufficient quantity to satisfy the thyroid requirements and, at the same time, be incapable of inflicting damage upon the glands of hypersusceptible individuals. McClendon, after a number of years of intensive research, has concluded that the iodization of water supplies in goitrous sections is an acceptable and efficient means of supplying needed iodine. He believes that 0.01 milligram of iodine daily is sufficient for physiological requirements and, hence, is prophylactic in character. One-tenth of a pound of sodium iodide per million gallons of water would, in McClendon's opinion, be ample for the maintenance of thyroid equilibrium. Water so treated would contain 1 part of sodium iodide in about 100,000,000 parts of water. McClendon believes that the iodide may be supplied continuously or intermittently, the iodide being proportionately increased when the latter method is followed. By following these suggestions it is theoretically possible, at least, to have a proportion of 10 parts of sodium iodide to 1,000,000,000 parts of water. McClendon regards a region as amply supplied with iodine when the water contains 5 or more parts of iodine per 1,000,000,000 gallons. This line of demarkation between iodine rich and iodine poor water supplies may, in the absence of an established standard, be used as a point of departure in deciding whether the procedure is justified.

Iodization in Rochester, N. Y.—As iodization of drinking water has been carried out more scientifically in Rochester, N. Y., than elsewhere, the methods adopted in that city are of particular interest. Iodization was begun in Rochester in April, 1923, and has been continued twice a year since that time. The experience gained with the early iodization has resulted in considerable improvement and satisfaction with the later methods. At present there are 21 applications of sodium iodide twice a year, each of 16.6 pounds, the first in May and June, the second during October and November. The applications of sodium iodide are now made as follows: During

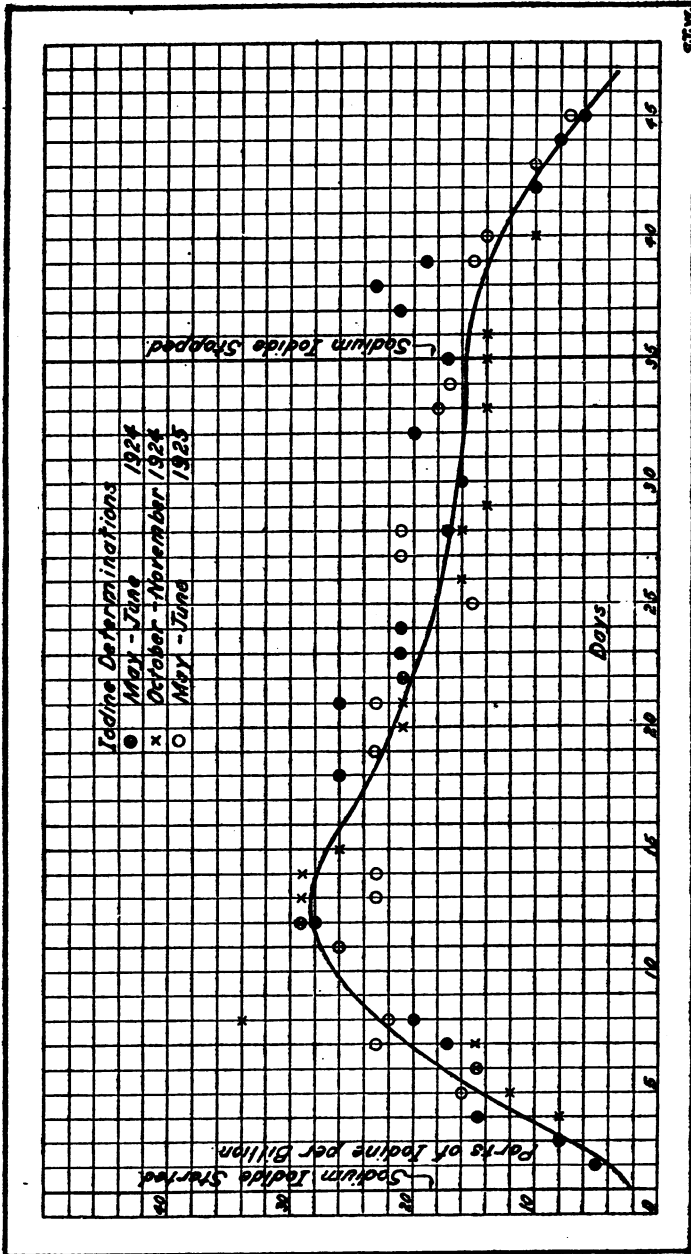


CHART 1.—Results of daily iodine determinations made on iodized drinking water at Rochester, N. Y., during three periods of iodization, May-June, 1924, October-November, 1924, and May-June, 1925.

the first week the salt is added daily. Thereafter the additions are made every other day until 21 have been completed. By this means a concentration of iodine ranging between 14 and 28 parts per billion is insured for a period of nearly five weeks. The results of daily iodine determinations made during three of the periods of iodization are shown graphically in chart 1. From the actual analyses of the water it is estimated that each person in Rochester ingests 3.1 milligrams of iodine in one year. This amount coincides rather closely with the annual quantity of iodine, 3.65 milligrams, recommended by McClendon.

In calculating the quantity of iodine present in water after treatment with an iodide it is necessary to remember that the element iodine is only a portion of the compound ordinarily used. Thus, the percentage of iodine in sodium iodide is approximately 85 per cent. Therefore, in estimating the parts per billion of iodine present in water, the calculations, in the instance of sodium iodide, must be made upon the basis of percentage composition.

Per capita water consumption and iodine dosage.—In the absence of accurate knowledge as to the average per capita consumption of water, it is obvious that the amount of iodine ingested from an iodized supply is uncertain. Ordinarily, it is estimated that two quarts of liquid are consumed each day by the average person, one-half of this amount being water, while the remainder is fluid in coffee, tea, and other beverages. Probably an additional quart of liquid per capita is used in cooking, thereby affording another source of iodide.

If each person in need of prophylaxis consumed definite quantities of iodized water and the amount of iodide was sufficient to insure results, this method of supplying the needed element could be relied upon to achieve results. Unfortunately, the consumption of water varies within a wide range, some individuals drinking considerable water while others use relatively small quantities. However, the amount of iodine present in properly treated water is so minute that no harm could possibly result from an excessive consumption of water. On the other hand, it is conceivable that these same minute doses of iodine will prevent simple enlargement of the thyroid gland. At the same time, it must be conceded that the iodine obtained from treated water is likely to be uncertain in quantity.

Objections to the use of iodized water.—The objections raised against the use of iodized drinking water as a means of preventing endemic goiter have been numerous. The strongest disapproval has come from the group which discredits all attempts of scientific medicine to minimize the prevalence of disease. Iodization of drinking water is termed by them a "doping" or poisoning process. In view of the minute quantities of iodide used, and the scientific premise on which the procedure is based, the objections of an organized minority may

be somewhat discounted. There are, however, certain apparently legitimate objections which deserve consideration. Among these may be mentioned the possibility of inaugurating toxicity in apparently benign goiters, excessive cost, waste, offensive taste, undesirable chemical combinations, and the like. Each of these objections may be considered separately.

Cost of iodizing public water supplies.—The cost of a public health measure is an item of obvious concern to administrators and taxpayers. It is manifest that goiter prevention should be allotted a fair proportion of public funds commensurate with its relative importance. Heretofore, estimates of the cost of iodizing public water supplies have varied within wide limits. However, the actual expenditures incurred by the city of Rochester for this purpose apparently form a reasonable point of departure for other calculations. Rochester spends approximately \$3,000 a year in iodizing its water. As the city has a population of 300,000, the annual per capita cost of the procedure is 1 cent. The sodium iodide used for treating the water costs about \$4.30 a pound, delivered in Rochester.

Anaconda, Mont., is another city in which iodization of the public water supply is being practised. The annual expenditure for sodium iodide in this city is \$600, or approximately \$0.05 per capita, the sodium iodide costing \$4.75 per pound f. o. b.

Kimball estimates that it would cost the city of Cleveland \$125,000 a year to iodize the drinking water. The health officials of Chicago estimate that \$57,120 a year would be required to increase the iodine content of Lake Michigan water to one-seventy-fifth grain per gallon. With sodium iodide costing \$3.75 a pound, delivered, Mellen estimated that the water supply of Minneapolis, Minn., could be iodized at a total annual cost of \$6,500, or a cent and a half per person. The cost in Duluth, Minn., would be less than \$2,000 a year.

Bolt and Wolman have prepared an informative summary of costs, shown in Table 1, based upon the expenditures in Rochester, N. Y., and Sault Ste. Marie, Mich., and the estimates of Ellms for Cleveland and of Bahlman for Cincinnati.

TABLE 1.—Estimated cost of iodization of public water supplies in 4 cities in the United States

City	Population, 1920	Average pumpage per day	Amount NaI per day	Cost NaI per pound	Cost per year, 3 weeks' dosage twice a year	NaI in the water	Cost per capita year (approximate)
		<i>M. g.</i>	<i>Pounds</i>			<i>P. p. b.</i>	<i>Cents</i>
Rochester, N. Y.-----	295,750	25	16.6	\$4.35	\$3,032.82	75	1.0
Sault Ste. Marie, Mich.-----	12,096	3	2	4.35	365.40	75	3.0
Cleveland, Ohio.-----	796,841	150	100	4.25	{ 12,180 18,270	75	{ 1.5 2.3
Cincinnati, Ohio.-----	401,247	56	37	4.35	{ 4,506.60 6,750.00	75	{ 1.1 1.6

1 2 weeks.

1 3 weeks.

The costs in this table are based upon the assumption that the quantities of sodium iodide used will be sufficient to secure a content of 75 parts of iodine per billion gallons of water.¹ However, in all probability a greater amount of sodium iodide, and consequently larger expenditures, would be required to secure this concentration. Most of the estimates which have been given indicate that the expense attached to iodization of public water supplies is reasonable, provided, of course, favorable results are forthcoming.

Waste.—To many persons the iodization of a public water supply appears to be a wasteful, and consequently an unnecessarily costly, method of conveying iodine to those in need of it. Inasmuch as less than one-half of 1 per cent of a water supply is used for drinking and cooking purposes, there would seem to be justification for the charge that most of the water is unnecessarily iodized. Obviously, nearly all of any water supply is used for sanitary purposes, laundering, boilers, street flushing, automobile washing, and numerous other purposes unassociated with disease prevention.

However, the same objections may reasonably be raised with regard to other methods of water improvement. The safeguarding of water supplies by filtration and chemical treatment is so well established as to be accepted as a necessity rather than an esthetic refinement or luxury. Thus, raw water supplies are subjected to coagulation, sedimentation, filtration, and disinfection, all expensive processes, in order that the fluid may be made safe for human consumption. Lime, alum, and chlorine are widely used in connection with such water treatment. For softening hard water, lime and soda are frequently employed, while copper sulphate is used as an algicidal agent. None of the water supplies treated with the chemicals just mentioned are now regarded as drugged, medicated, or doped. Quite on the contrary, the processes are generally conceded to be necessary for the safeguarding of comfort and health, even though only a comparatively small quantity of the water is actually consumed. Moreover, present day opposition to the chemical treatment of polluted or unsuitable raw waters is insignificant, permitting the steady extension of protective measures, with consequent lessening of water-borne diseases.

Reaction between iodine and chlorine.—In discussing the iodization of water before the Ohio Conference on Water Purification in 1924, Ellms intimated that an undesirable chemical reaction occurred

¹ It will be noted that there is a marked difference between the 5 parts of iodine per billion gallons of water regarded as sufficient by McClendon and the 75 parts per billion gallons upon which the cost data presented here are calculated. These estimates were, of course, made by different observers. Obviously, the proper amount of iodine to be conveyed in drinking water for prophylactic purposes is not definitely known. If, as McClendon contends, 5 parts of iodine per billion gallons of water is adequate, the cost of iodizing drinking water would be materially less than the amounts given in the table. It may also be pointed out that the Rochester experiment shows that the amount of iodine recoverable from water after the addition of sodium iodide is much less than the quantity added.

between the iodine and the chlorine, so commonly used for disinfection. Although his observation lacks confirmation, Ellms contended that chlorine has a tendency to decompose sodium iodide and liberate iodine. While the element would not be lost, its combination with organic matter, or reaction with other normal constituents, might adversely affect its prophylactic value. No objection of similar character has been noted in the literature.

Taste.—Much greater quantities of iodine than those ordinarily recommended could be placed in drinking water without imparting a detectable taste. Mellen, for example, states that he has drunk water containing one thousand times the amount of iodide proposed for Minneapolis (10 parts per billion), without being able to detect the taste. It is known, too, that individuals going from a district having water with a low iodine content to another locality with a high iodine content do not complain of an offensive taste. Moreover, there is no record of damage having been inflicted upon the thyroid by reason of removal from a district with low iodine content to one with a high content.

Hyperthyroidism.—The possibility of stimulating an apparently quiescent thyroid gland to hyperactivity and toxicity through the use of iodine is a contingency particularly to be guarded against while employing prophylactic measures. However, it is difficult to understand how the minute quantities of iodine available in iodized drinking water could exert such a detrimental effect. It would seem more reasonable to question the ability of the measure to exert any beneficial influence upon the normal thyroid gland. However, as there is convincing evidence that minute doses of iodine, in other combinations, aid in maintaining the thyroid equilibrium, it is likely that iodized water will, under fair conditions, do likewise.

No instances of hyperthyroidism following the use of iodized drinking water appear to have been recorded. The opinion of Dr. C. H. Mayo, concerning the harmlessness of iodized water, is typical of many expressions from physicians who have considered the matter. Doctor Mayo has said, in a communication addressed to the health commissioner of Minneapolis, "As there is no type of goiter which would be injured by the small amount of iodine obtained from the water, I do not believe there would be any risk whatever in such cases."

On the other hand it can not be denied that some physicians are apprehensive lest the "promiscuous distribution of iodine," as they term it, to those not in need of the element, cause a marked increase in hyperthyroidism. Manifestly, there is need for accurate information on this point.

PRACTICAL APPLICATIONS AND RESULTS

Cities using iodized water.—So far as can be learned from correspondence with all of the State, county, and city health officers (the last named in cities having populations in excess of 10,000) in the United States there are only two places in which iodization of drinking water is now practiced, Rochester, N. Y., and Anaconda, Mont. Iodization of the Rochester water supply began in April 24, 1923, and will be continued according to an announcement in the Rochester health bulletin of May, 1926, "until, through education or in some other way, we get the people to consume iodized salt."

Iodization of the Anaconda, Mont., water supply began in April, 1925, and was continued in October, 1925, April, 1926, and October, 1926. Children in the Anaconda schools are also receiving 10 milligram chocolate-iodine tablets once a week for 30 weeks during the school year. Iodization was practiced for a short time in Sault Ste. Marie, Mich., and Virginia, Minn., but was speedily abandoned because of numerous objections from residents.

The health and water works officials of Minneapolis, Minn., have repeatedly advocated iodization of the public water supply. Moreover, preparations were made to put the procedure into effect. Owing, however, to many objections the project never materialized. In Duluth, Minn., the water and light department of the division of public utilities, has been very active in advocating iodization of the water. According to the investigations made by McClendon, the Duluth water contains the least amount of iodine of any locality in the United States. However, objections have prevented the inauguration of the measure.

In the county of Derbyshire, England, iodization of drinking water was practiced on a limited scale during 1925, the results being reported by the school medical officer. According to J. A. Goodfellow, the water supplies of Ilkeston and Heanor are being treated with sodium iodide. In these last-named places the iodization is continuous, 2 pounds of sodium iodide being added weekly.

Method of adding iodide to water.—Owing to the readiness with which sodium and potassium iodide dissolve in water, no difficulty has attended the introduction of these salts in large public supplies. In Rochester the weighed amount of sodium iodide is placed in a bag and allowed to dissolve in the swiftly running water entering Rush Reservoir from Hemlock Lake. That the salt is disseminated throughout the reservoir is attested by the uniform iodine content of water from widely separated city taps. Apparently no special apparatus or means for insuring even distribution of iodine in a water supply are required.

Alleged collateral benefits of iodized water.—Quite aside from the beneficent influence presumably exerted upon the normal thyroid gland through the use of iodized water, may be mentioned the advantages possibly accruing in other directions. In extolling the cause of iodized water, the Water and Light Department of Duluth, Minn., makes the following statement (Bulletin 43, issued in April, 1926):

Everyone drinks water every day, uses it to water his garden, sprinkle his lawn, lay the dust in the street in front of his house, washes his floors, his clothes, his face and hands, and even bathes in it. If iodized and used on the garden it gives the vegetables and fruits their proper proportion of iodine. Some of it is evaporated into the air where it combats dust carriers of infection. Iodized water for the dairy herds helps to iodize the milk. It is beneficial, even if breathed into the lungs. However, most of it is washed into the sewers, where it is carried out into the lake, where it prevents goiter in our food fishes. None of the iodine is actually wasted or lost.

Whether, with our present incomplete knowledge of the subject, this enthusiastic view is justified, can only be conjectured.

Results.—The chief difficulty in appraising the efficiency of iodized water as a goiter prophylactic arises from lack of clear-cut statistical evidence. In most communities in which goiter is present to an extent sufficient to warrant the institution of prophylactic measures, iodine is available in several forms. In addition to iodized salt, iodine of some other form may be prescribed by the family physician. When the drinking water is also iodized, it is, of course, difficult to decide which of the several measures deserves credit for changes in goiter incidence.

According to the health authorities in Anaconda, Mont., endemic goiter is less prevalent than before prophylaxis was inaugurated. However, no accurate figures supporting this impression appear to be available. Owing to the fact that both iodized water and iodine tablets are being used by the school children, it is impossible to ascribe the lessened incidence definitely to either of the two methods.

The health authorities of Rochester, N. Y., claim a reduction in goiter incidence following the iodization of the public water supply. In 1923 there were 3,844 children with visible thyroid enlargements; in 1924, there were 1,766; and in 1925, 2,010. While there has apparently been a decrease in the number of instances of goiter observed, the testimony would be more convincing if percentages based upon the total annual numbers of children of each sex examined were available. Inasmuch as the use of iodized table salt has been recommended in Rochester, it is questionable whether any reduction in goiter incidence may be ascribed solely to the iodization of drinking water.

Derbyshire, England.—According to Ash, goiter increased among the boys and girls of four schools in Derbyshire County, England, following iodine prophylaxis. The experiments lasted approximately 10 months each, and included the use of iodized water alone, iodized tablets alone, and combinations of the two measures. In each instance Ash recorded a decided increase in the amount of goiter at the second examination. The results of the Derbyshire experiments have been arranged in tabular form in Table 2.

TABLE 2.—*The effects of one year's use of iodized drinking water and iodized tablets upon the thyroids of the pupils in four schools in the county of Derbyshire, England*

School	Time of examination, 1925	Iodine supplied in—	Ages	Sex	Number examined	Number of goiters	Per cent of goiters
1.....	Feb. 26.....	Tablets and water.....	9-14	Female....	306	75	24.5
	Dec. 10.....				287	192	66.9
2.....	Feb. 27.....	Water only.....	5-10	do.....	108	32	29.6
	Dec. 11.....				118	50	42.3
	Feb. 27.....		5-7	Male.....	59	11	18.6
3.....	Dec. 11.....	Tablets only during first half year.	7-14	Female....	50	13	26.0
	February.....				271	127	46.8
	January, 1926.....				Water only, during second half year.	283	146	51.6
4.....	March.....	Tablets only during second half of year.	10-18	do.....	151	62	41.3
	December.....				131	85	64.8

An increase in the prevalence of goiter among children following the use of iodine is most unusual and no similar incident has been recorded in the United States. As the numbers of children included in the experiments were small, and no parallel control groups were studied, the validity of the conclusions may be questioned. Iodized water alone was used in only one of the four experiments.

The results of the experiments in which both iodized water and iodized tablets, or iodized sweets, as Ash calls them, were used, are an indictment of iodine prophylaxis rather than the methods employed. It is felt that the time during which the experiments were carried on was too short to permit of an accurate appraisal of either of the methods employed. It would be interesting to learn something of the status of the several groups one year after the complete withdrawal of iodine.

Opinions of health officers concerning iodized water.—The proposal that endemic goiter be prevented through the medium of drinking water has created widespread interest. Health officers, especially, have manifested marked interest in the possibilities of the measure. In an effort to learn the attitude of county and city health officers toward iodized water, a questionnaire was addressed to 1,040 workers of this type in the United States. The replies, received from 56.3 per cent of this group indicate an uncertainty concerning both the justifiability and efficiency of treating drinking water with iodine.

The answers received from 566 health officers may be tabulated as follows:

Favorable to use of iodized water.....	159, or 28 per cent.
Undecided.....	105, or 18.5 per cent.
No opinion.....	202, or 35.7 per cent.
Opposed to measure.....	100, or 17.7 per cent.
Total.....	566

CONCLUSIONS

The iodization of public water supplies, in its present state of development, can not be recommended for widespread adoption. However, the measure appears to be theoretically sound and promising as a means of reducing goiter incidence when correctly used. The chief points in its favor are its comparatively low per capita cost, its apparent harmlessness even to existing goiters, and its wide range of applicability.

So far, there is considerable doubt as to the ability of iodized water to reduce the incidence of endemic goiter. This important point should be clearly established before further commendation of the measure can be forthcoming. However, the lack of convincing evidence of the efficiency of iodized water appears to be the result of poorly controlled experimental applications, rather than any inherent defect of the procedure itself.

While the measure can not be recommended for wider use until stronger evidence concerning its value is forthcoming, nevertheless, iodized water should not be condemned as worthless. Rather there is need for more precise experimental work, with careful and repeated thyroid examinations, both of children as well as adults. Comprehensive control experiments in nearby communities, among groups which are not consuming iodized water, are also essential. In conjunction with these precautions, it is also desirable that epidemiological observations be made for the purpose of learning whether other iodine preparations are being used. The results of such scientifically performed experiments would readily disclose the worth or worthlessness of iodized drinking water as a means of preventing simple goiter.

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MALARIA AMONG MEXICAN COTTON PICKERS IMPORTED INTO MISSISSIPPI

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The first considerable importation of Mexican labor for cotton picking in the Mississippi Delta occurred in the autumn of 1925, a year when the cotton crop was large and the amount of available labor scarce. According to the records of the local railway company, 461 persons were brought into 5 counties of the Delta, 273 of whom came to Leflore County. In addition, a few were brought in by automobile. Practically all of the laborers came from Texas, largely from the vicinity of San Antonio, Houston, Austin, and Dallas, where many of them had resided for some time.

The laborers were distributed widely over the county, usually groups of 50 or less being found on any one plantation. They were mostly men, but some brought their families with them. Among 191 whom we examined in 1925 there were 26 women and 13 children, the children being 10 years of age or under. Laborers were usually furnished with housing and firewood, but they supplied their own food and bedding. They lived in bunk houses or in renters' cabins scattered over the plantation. Their habitations were usually unscreened.

One plantation (plantation R. D.) had reported a good deal of malaria among the Mexican laborers, and on November 25, 1925, we made a survey there. We examined the blood of 47 laborers, nearly all men, and found 21.3 per cent with malaria parasites. Three or four were ill at the time of our visit, and 18—or 38.3 per cent—gave a history of illness after their arrival in Mississippi. Most of the histories suggested malaria, and the blood specimens of those ill at the time of our visit showed malaria parasites. There had been one death with symptoms of malaria. According to the information obtained from the plantation managers and from the laborers themselves, no malaria appeared among the Mexicans until two weeks or more after their arrival. They reached the plantation in late September and had been there about 60 days at the time of our visit. Most of them stated that they had not suffered from malaria in Texas.

Of the 10 cases positive for malaria parasites, 2 harbored the benign tertian type and 8 the estivo-autumnal. In 7 of the 8 estivo-autumnal cases crescents were found.

We then surveyed five other groups of Mexican cotton pickers on plantations in Leflore and Coahoma counties. Among 144 persons whose blood we examined, not one positive for malaria parasites was found. But few gave histories of any sickness, and we found little evidence of the presence of malaria in any group. The period of

residence on the plantations varied in the different groups. In one group of 18 persons it was only two or three weeks; in a group of 39 it varied from 36 to 46 days; in the remaining 87 persons it was 76 to 86 days. In many cases the exact time of arrival could not be ascertained.

In a summary of the observations of 1925, it appears that only one out of six groups suffered much from malaria in Mississippi. In one group, that on R. D. plantation, the evidence is almost conclusive that the laborers acquired malaria after their arrival on the plantation. The lack of parasites in the other laborers examined, many of whom had come from the same localities of Texas as did those on the R. D. plantation, indicates that the general parasite rate of the laborers on arrival was low.

During the autumn of 1926 Mexican labor was again imported. We examined for malaria parasites the blood of 68 shortly after their arrival in Mississippi in early October, and found 5 positive, 7.3 per cent, all harboring the benign tertian type. The 68 included a group of 15 (plantation K) from Donna, Tex., and a group of 53 (plantation W) from the vicinity of San Antonio, Tex.

Six weeks after the first examination we again visited both groups and found 47 of the original 53 laborers still present on plantation W and 13 of the original 15 on plantation K. The blood of these laborers was reexamined. Two of the five positive on the first examination were again found positive, both with the benign tertian type of parasite and both on plantation K. No other positive was found. One case of malaria had been reported on plantation W; none on plantation K. The endemic malaria rate is comparatively high in the local negro population on plantation W.

About 106 Mexican laborers were brought into Leflore County during the fall of 1926 and 76 into neighboring counties. A few who arrived in 1925 remained on the plantations in Mississippi, but the majority of those imported during both years returned to their homes within three months after arrival.

During the summer of 1926 we made a short malaria survey of the Rio Grande Valley in Texas. We found evidence of considerable malaria in the two lower counties of the valley; but our survey, as well as all other sources of information available, indicated that the malaria rate is comparatively low in counties farther west, both along the Rio Grande and in the interior of the State, counties from which most of our Mexican laborers come. That some laborers bring malaria with them from Texas, however, is shown by our surveys of laborers recently arrived in Mississippi.

The type of malaria parasite found in a group of immigrants does not, of course, give conclusive evidence of the origin of the infection; but it is noteworthy that of 35 positive specimens found by us in August, 1926, along the Rio Grande in Texas all were benign tertian.

The five positives found among Mexican laborers at the time of their arrival in Mississippi in 1926 were also benign tertian. However, all but 2 of the 10 positives found on the R. D. plantation in Mississippi in late November, 1925, were estivo-autumnal, the type most prevalent in the Delta region during late summer and autumn.

The presence or absence of acquired malaria in groups of immigrants little protected from mosquitoes should afford some indication of the amount of indigenous malaria prevalent in a region. It appears that on most of the plantations where the Mexican laborers were employed the amount of transmissible malaria was not great. The problem presents many variable factors, however—the time of arrival of laborers, character of the season, the anopheline intensity, and the more or less chance presence of gametocyte carriers—so that our study will have to be continued through more than two seasons before we can obtain wholly satisfactory information in regard to the malaria danger of different localities. The immunity enjoyed by the majority of the imported laborers indicates that, generally throughout the region, malaria danger has decreased, as immigrants to the Delta 30 or 40 years ago suffered severely.

SUMMARY

Eight groups of Mexican cotton pickers, comprising 259 persons, imported into the Mississippi Delta, were examined for malaria at different times during the autumns of 1925 and 1926. One group showed malaria in epidemic form, and the evidence—based on histories, parasite rate, and type of parasite—indicated that the disease had been acquired in Mississippi. The danger of malaria among such temporary laborers, although varying greatly with localities and seasons, exists here in sufficient amount to warrant attention. With increasing scarcity of labor, it should prove of financial advantage to employers to protect imported labor against malaria. Further, employers have a public as well as a private responsibility in such matters. Screening of bunk houses in which the laborers are housed would reduce the danger. In any case, plantation physicians and local health officers should keep such groups of laborers under close medical supervision and should guard against possible epidemics. Mexican laborers usually remain but a few weeks in Mississippi, but they work at a season when the danger of malaria, especially of the estivo-autumnal type, is comparatively great; and a group infected in Mississippi may remain long enough to spread the disease there. Migratory laborers are an efficient means of transmitting disease, and a group of persons infected in one State may carry malaria to regions in another State, previously exempt, and disseminate it there.

THE HEALTH BUDGET AND VITAL STATISTICS IN MONTREAL, CANADA

The following interesting information regarding health work and vital statistics in Montreal, as set forth in the annual report of the director of the department of health, is taken from a review of the report published in *The Medical Officer* for April 16, 1927:

The whole department is comprised of divisions, for example, "Contagious Diseases," "Child Hygiene," "Sanitation," "Food Inspection," etc., each under the control of a superintendent who contributes an independent account of the work of his division to the general report, while the director's own report is confined to a discussion of the movements of population, birth rate, death rate, marriage rate, and so on, with general remarks upon exceptional occurrences, new departures, and recent legislation. A feature * * * extremely interesting is the report of the division of municipal assistance, which takes up by far the largest share of the money allotted to the department. Under this heading we have an account of the handling of neglected children, juvenile delinquents, indigent persons, mendicants, the insane; also deportation and repatriation of immigrants. Details of the departmental budget occupy several pages, from which we gather that the total expenses of the health department for 1925 amounted, in round figures, to a million and a quarter dollars (say, £250,000), and of this sum, municipal assistance took over £168,000, while "hygiene" had to be content with £54,600. Worked out per head of population the figures quoted give approximately 1s. 7½d. for hygiene and 5s. 0½d. for municipal assistance.

The population of Montreal, including French and British, Canadians, Jews, and numerous other nationalities, is put at 669,800. The birth rate, which stood at 40.1 ten years ago, has steadily decreased and now stands at 32.81, with 5 per cent illegitimate; the marriage rate, however, remains fairly constant in the neighborhood of 9.5 per 1,000 population over the same period. Along with this must be considered the infant mortality rate, which is represented by the unfortunately high figure of 122.41; but even this is an improvement upon 180-190 ten years ago. Among the causes of death in this group, diarrhoea stands high, about 40 per cent of the total deaths, and the same proportion holds good in the age group 0-2 years. Substantial improvement in this matter is expected when the new milk laws have had time to operate; but it appears from another portion of the report that much yet remains to be done in the way of making the child welfare centers and clinics more popular. Compared with the foregoing, the general death rate presents much more satisfactory features. For the year under review it is 14.26 per 1,000, as compared with 18-20 in the past decade; but of the total deaths, until last year there has always been about one-third relating to infants. Among the infectious diseases, measles and scarlet fever alternate from year to year in accounting for the highest number of cases, while diphtheria comes next in order of frequency, but with the greater number of deaths. Typhoid fever in the past five years does not show much improvement, there being on an average 150-200 cases, with 50-60 deaths yearly; but smallpox has been absent except in 1921 (37 cases, no deaths) and in 1924 (9 cases, no deaths). With regard to housing, progress is rather handicapped by the laxity of the building by-laws, which allow flats to be erected on a 12½-foot frontage. This means that the rooms are built in line, and that only the front and the back room can obtain direct daylight, any intermediate room being indirectly lighted

through the others. These dwellings are rightly described as "dangerous for the people living therein, and for public health in general," because they are "lacking in air and light, conduce to overcrowding, and make control of contagious diseases difficult, not to say impossible." In spite of these adverse conditions, considerable progress has been made in the reduction of tuberculosis; thus, for the five years from 1915-1919, the average tuberculosis death rate (all forms) was 2.02, for the next five years it was 1.56, and for 1925 it was 1.40, a result due in no small measure to the antituberculosis campaign, which includes the utilization of hospitals, clinics, open-air camps, and home nursing.

One can extend a considerable amount of sympathy for those who are laboring for the health of the community against such odds, particularly the paucity of the funds allotted to purely health matters, and express the hope that the present report will help to make those who hold the purse strings realize that public health is largely a purchasable commodity which it pays to buy.

DOG BITES AND RABIES IN NEW YORK CITY DURING 1926

The number of dog bites and the number of rabid dogs in New York City show a large increase in 1926. The number of dog bites in the city has been increasing annually since 1918. In 1909 there were 5,168 dog bites reported in New York City. In 1914 there were 4,640, and the number declined to 2,771 in 1918. Since 1918, however, the number has been mounting rapidly each year, until it reached the record figure of 8,608 in 1926. The number of rabid animals discovered dropped from 330 in 1914 to 24 in 1916, from which year it remained well below 100 until 1926, when it rose to 463 (from 75 in 1925).

In asking the cooperation of all dog owners in eliminating the danger from rabid dogs, the Commissioner of Health of New York City makes the following statements in the Weekly Bulletin for April 9, 1927, issued by the city department of health:

In all, 83,009 dog bites were reported to the department during the years 1908 to 1926, inclusive. During this period the bureau of laboratories reported 2,291 cases of rabid animals. The special significance of this is the fact that there were 9 cases of human rabies during the period, all of whom died. This tells in brief the basis for our rigid enforcement of the regulation to muzzle dogs. Those living in more or less densely populated sections of the city are urged to keep their dogs on short leashes.

A study of the records shows that the number of animal bites during 1926 as compared with some of the preceding years was twice and even three times greater than the record of some of the years included in the study. The number of dog bites, 8,608, in the year 1926 and the number of rabid animals discovered by our laboratory examinations, 463, are the largest numbers recorded since 1908. The number of rabid animals during 1926 exceeds by 37 the total number discovered from 1916 to 1925, inclusive.

During the first quarter of 1927 there were 153 cases of animal rabies and 1,898 dog bites, as compared with 82 cases of animal rabies and 1,277 dog bites for the same period of 1926.

The eradication of rabies can be accomplished by two well-known methods—the muzzling of dogs and the Pasteur treatment. Rabies was entirely eradicated from Great Britain by excluding all dogs from entry into the country, and here, as in Germany, during the few years preceding the war, the simple method of enforcing the muzzling ordinance achieved brilliant results.

The danger to human beings of contracting rabies through a bite by a rabid dog depends upon many factors.

Doctor Williams, Assistant Director of the Bureau of Laboratories, is authority for the following statement: "After a small bite through clothing, practically no deaths have been reported. After a small bite over areas not richly provided with nerves, only an occasional death has been recorded; after other bites the deaths recorded have gradually increased, according to the site and intensity of the bite, but the average is estimated at 15 per cent. This risk may be very greatly reduced if the wounds can be thoroughly cauterized with concentrated fuming nitric acid within 24 hours after the bite. The specific treatment—the Pasteur vaccine—reduces the risk."

DEATH FROM RABIES IN JANUARY

In the Weekly Bulletin for April 2, 1927, the following report is made of a recent death from rabies in New York City following dog bite:

On January 16, 1927, J. M., male, 29 years old, was bitten severely by a shivering stray dog which he was feeding and nursing back to comfort. The dog promptly ran away. J. M. did not report the bite to the department of health, nor did he consult a physician. The wound healed and J. M. thought no more about it.

On or about March 16, 1927, J. M. began to feel pain and irritation at the site of the bite. These conditions became so aggravated that he went to a physician—still saying nothing about the bite. In spite of sedative treatment, his general condition rapidly grew worse. He became anxious and apprehensive. He was constantly in a highly excitable state; talking, entreating, gesticulating wildly; responding with convulsive starts and jumps to the slightest provocation or to no apparent provocation at all. His voice became husky. After initial difficulty in swallowing water he became unable to swallow anything. The mere sight of water threw him into an uncontrollable condition of frenzy. He was terror-stricken, and therefore dangerous to himself and to others.

He was removed to a hospital on March 21. By this time a breath of air, a touch of the bedclothes, would send him into a series of convulsions terrible in their intensity. He was put under restraint—medicinal and physical—lapsed into unconsciousness, and died March 22, 1927.

Such are the results of the bite of a stray dog. Let us summarize:

Initial excitation, subsequent depression, and ultimate destruction of all the functions of the central nervous system; convulsions of spinal origin brought on by overwhelming and overflowing reflex hyperexcitability and persisting with the utmost violence; paralysis of cerebral origin, beginning with inability to swallow and ending in failure of respiration.

Excitation shown by eye, voice, and gesture; terror; convulsions, constantly increasing in frequency and duration; delirium; paralysis; death.

A necropsy was done in this case. The brain was positive for rabies.

COURT DECISIONS RELATING TO PUBLIC HEALTH

Operation of garbage incinerator plant held to constitute a nuisance.—(New York Supreme Court; Nicoll et al. v. President and Trustees of Village of Ossining, 220 N. Y. S. 345; decided March 5, 1927.) An action to abate as a nuisance the operation of a village garbage incinerator plant was brought by persons living in the vicinity of the plant. The court held that the plaintiffs were entitled to the relief asked for, stating as follows:

The method and manner of operating the plant make it a nuisance to the people residing in its vicinity. Great discomfort is thereby caused to them, and they are prevented from properly enjoying the use of their property.

Erection and maintenance of city sewage disposal plant not enjoined.—(Texas Court of Civil Appeals; Boyd et al. v. City of San Angelo, 290 S. W. 833; decided January 19, 1927.) A suit was brought to enjoin the city of San Angelo from erecting and maintaining a sewage disposal plant on a site about 2½ miles from the city limits. The court held, however, that the evidence was insufficient to show that the proposed plant would constitute a nuisance. The court also was of the opinion that the case came clearly within the rule laid down in 29 Cyc. 1231 that "an injunction will not ordinarily be granted, where the erection complained of has a tendency to promote the public convenience, to an extent outweighing the private inconvenience resulting therefrom, where it is necessary to the welfare of the community generally, or where an injunction would cause serious injury to an individual or the community at large, and a relatively slight benefit to the party seeking such relief," and declared that "If operation of such plant, which is essential to the welfare of the community, damages appellants' property, they have their remedy at law, but that question must be left to the test of operation."

Ordinance forbidding retail sale in certain area of fresh meat or sea food except in city market held valid.—(North Carolina Supreme Court; Angelo et al. v. City of Winston-Salem et al., 136 S. E. 489; decided January 26, 1927.) The charter of the city of Winston-Salem provided:

The board of aldermen shall have the power to enact ordinances in such form as they may deem advisable, as follows: * * * To establish, regulate, and control the markets or market buildings; to fix the location of any market building, prescribe the time and manner and place within the city wherein marketable articles, such as meats, perishable vegetables, fish, game, and all other kinds of perishable food or diet shall be bought or sold.

An ordinance of the city, adopted June 18, 1926, made it unlawful from and after December 1, 1926, to sell at retail fresh meats or sea foods at any place within a defined area of the city except in the city market. The area involved extended approximately four-fifths of a mile from the city market in every direction and contained 2.1

square miles. The whole area of the city was 12.33 square miles. The city market was a new building with all modern sanitary equipment and was located as nearly in the center of the city as it was possible for it to be. The rentals for spaces in the market were fixed by the board of aldermen at fair and reasonable rates and efficient management was provided. The market was not operated by the city for revenue or profit but for the purpose of protecting the health and promoting the general welfare of the city, and, assuming the market operated at full capacity, there would still be a deficit to be met out of the general funds of the city. The plaintiffs were 21 market owners handling fresh meat and sea food in the area specified in the ordinance, and they asked that the defendants be permanently restrained from putting into effect the said ordinance. The lower court refused to grant a permanent restraining order and its judgment was affirmed by the supreme court. The following are extracts from the latter court's opinion:

A market house has always been held in this State to be a necessary expense for a municipality. * * *

Whatever we may think of the hardship involved, the ordinance is a valid exercise of police powers vested in the board of aldermen of Winston-Salem under the decisions of this court. * * *

It was a hardship on plaintiffs, but the law in this State and the great weight of authorities in the Nation, under the facts and circumstances of this case, are against the contention of plaintiffs. It is to be noted that the ordinance was passed on June 18, 1926, and went into effect December 1, 1926. The board of aldermen, realizing the hardship on plaintiffs, gave them time to close out their businesses as dealers in fresh meat and sea food, so that, if they desired, they could rent places in the city market and sell fresh meat and sea food or rent places for their businesses outside the four-fifths of a mile area from the city market. We have taken time to consider thoroughly a so far-reaching and important matter affecting the rights of plaintiffs.

From a careful review of the decisions of this State, the United States decisions, and those of other States, and from the facts and circumstances of this case, the forum of plaintiffs was with the governing body of Winston-Salem—the power was given them by legislative enactment.

Use of town jail restricted.—(Louisiana Supreme Court; Board of Health of State of Louisiana *v.* Town of De Quincy et al., 111 So. 789; decided February 28, 1927.) Section 2 of Act 251 of 1918 required that each and every municipal, parish, or State prison, lockup, or camp be of sufficient size and strength to hold and keep securely the prisoners contained there, and that, when used for both sexes and both races, such jail contain at least four separate apartments, one for white men, one for white women, one for colored men, and one for colored women. The State board of health applied for an injunction to restrain the authorities of the town of De Quincy from confining prisoners in the town jail, on the ground that the construction and maintenance of the jail were not in accordance with Act 251 of 1918. The jail contained only two cells, but it was shown

that white and colored people were never placed in the same cell, nor were men and women of either race ever locked up in the same cell. While the jail was an old one, it was, however, safe for the confinement of prisoners and had been kept in as sanitary a condition as the situation and circumstances would permit. The lower court granted the plaintiff's demand to the extent of enjoining the officers of the municipality from using the jail as constructed "for the purpose of confining more than two classes of prisoners, that is, from confining both men and women and people of the white and colored races." This judgment was affirmed by the supreme court, which said:

It will be observed that this requirement [of section 2] of the statute only applies and is only to be enforced where the jail is used for confinement of both sexes and both races. Otherwise, this provision and requirement is not mandatory.

As already stated, it had been the invariable custom of the town authorities not to confine in the same cell prisoners of different sexes or different races.

The trial judge took cognizance of this requirement of the statute and sustained the plaintiff's demand to that extent.

We are of the opinion that the court granted all the relief which the plaintiff board is entitled to, under the evidence and the conditions surrounding the subject matter at issue.

Regulations of State board of health held not legally adopted.—(Alabama Supreme Court; *Wheeler v. River Falls Power Co.*, 111 So. 907; decided November 18, 1926.) In an action by plaintiff, a private individual, against the defendant power company on account of the erection by the latter of a dam and the impounding of waters, the validity of regulations of the State board of health governing the impounding of waters was brought into question. By law the medical association of the State was the State board of health. When the State board of health was not in session the State committee of public health had power to adopt and promulgate rules and regulations. The State committee of public health was composed of the governor, who was ex officio a member and its chairman, and the State board of censors of the State medical association. The said committee, including the governor, had a total membership of 11. At the called meeting of the committee which undertook to adopt the regulations in question, four members were present. The absent members, who had been informed of the pendency of the proposed regulations and their contents, unanimously by mail certified their concurrence in the act of adoption. The supreme court held that such regulations did not have the authority of law. The following is quoted from the court's opinion:

There is no provision of statute law whereby a minority of the committee of public health may exercise the legislative power as to minor details of administration committed to it by the legislature, and it is clear that such power, having been committed to the aggregate of the members composing the committee,

can not by it be delegated elsewhere, or to any number of individuals acting separately. Of course, a quorum duly met may exercise the power of the committee. But a quorum is such number of the committee as is competent to transact its business, and that, according to the general law of such bodies, is a majority of the committee. The point here is that individual members of the committee, scattered about the State, can not be counted to constitute a quorum of a meeting of the committee which in fact they did not attend. This proposition has been often stated, is clearly restated by the Supreme Court of the United States in *United States v. Ballin*, 144 U. S. 1, 12 S. Ct. 507, 36 L. Ed. 321, and further argument is hardly necessary. The sum of it is that, in the absence of legislative authority to a different effect, a majority of the members must attend any meeting of the committee called for legislative purposes, otherwise there is no committee competent to act, but a majority of those present, when legally met, may bind all the rest. In other words, a major part of the whole is necessary to constitute a quorum, and a majority of the quorum may act.

City held liable for negligence of employee driving garbage truck.—(Michigan Supreme Court; *Foss v. City of Lansing*, 212 N. W. 952; decided April 1, 1927.) An action for damages was brought against the city of Lansing, the plaintiff alleging that a city employee who was driving a garbage truck had negligently run into her automobile, injuring her and damaging the automobile. The city's contention was that the employee was engaged in performing a governmental function when the accident occurred and that, therefore, it was not liable for his negligence. The city, in the disposal of garbage, made some profit, which helped to reduce the cost of disposal. In the trial court there was a directed verdict for the city, but the supreme court reversed the judgment of the lower court, saying:

Whatever the holdings may be elsewhere, we are of the opinion that the rule in Michigan is that, if a municipality is engaged in a governmental work with an incidental profit, it is liable the same as a private corporation would be.

PUBLIC HEALTH ENGINEERING ABSTRACTS

Water Supply and Main Drainage Districts. Clemens Herschel. *Journal of the American Water Works Association*, vol. 16, No. 5, November, 1926, pp. 531-541. (Abstract by Dana E. Kepner.)

Because groups of municipalities or districts have neither credit nor the right to eminent domain until they have been properly constituted by legislative action, problems arise in catering to their water supply and sewerage needs not encountered in dealing with those of the individual city. The Metropolitan Water Board of Massachusetts, created by chapter 488, acts of 1895, has functioned satisfactorily, supplying water in wholesale quantities to some 20 cities and towns. In California, the East Bay Municipal Utilities District, organized in 1924 under the 1921 Municipal Utilities District Act of that State, comprises nine municipalities which are engaged in the construction of a 35 million dollar public water supply.

In New Jersey, attempts since 1884 to organize and efficiently to operate such districts have repeatedly failed. Legislative acts in that State have resulted only in delays of execution, inefficiency, and consequent extravagant costs. The State Water Policy Commission, organized by Joint Resolution 8 of 1925, was

given \$35,000 and instructed to formulate a comprehensive State policy and to draft bills to effectuate its recommendations. The delay of this commission in responding forced the legislature to call a special session in 1926 to consider the recommendations; but, as the commission failed to comply with its instructions, the matter had to be referred to the 1927 legislature.

Elimination of Colloidal Interference by the Use of the Aluminate-Alum Method of Coagulation. A. R. Moberg. Bulletin No. 18, Research Department, Chicago Chemical Co. (Abstract by R. E. Tarbett.)

The sodium aluminate-alum method of coagulation was developed to offset the inhibitory influences of colloids in connection with coagulation of water. The presence of colloids may call for excessive amounts of "alum," with or without alkalis or acids, in order to produce proper coagulation. For the most part, colloids in waters of the United States have been found to be negatively charged, although a few have been found positively charged. Where colloids are negatively charged, the addition of alkalis inhibits the alum reaction and acid accelerates it. The reverse is true of positively charged colloids. A small amount of sodium aluminate in connection with alum treatment appears to offset the inhibitory action of the colloids and allows for smaller alum doses. Too great an excess of sodium hydroxide in the sodium aluminate solution will prevent the phenomenon, and the action will be the same if sodium hydroxide and alum are used.

The use of aluminate-alum with the reduced alum required does not appear to affect the pH values.

More Water for New York City. G. L. Hall. *Journal of the American Water Works Association*, vol. 17, No. 2, February, 1927, pp. 243-246. (Abstract by W. S. Mahlie.)

During the past nine years the water consumption of New York City increased at an average rate of over 31 m. g. d., making it imperative to secure additional supply before 1935, at which time the consumption will have reached the amount available.

In a report from the board of water supplies, Thaddeus Merriman, chief engineer, points out that he has studied all possible sources within 150 miles of the city. The nearest sources available are the east side tributaries of the Hudson River in Dutchess, Columbia, and Rensselaer Counties. It is recommended to develop a series of reservoirs extending from the Croton Reservoir almost to Troy. The aqueduct from these reservoirs will pass through the Croton watershed and make it possible to divert 121 m. g. d. from that source to the Kensico Reservoir. It is also proposed to build an aqueduct from Kensico to Hill View Reservoirs. The water from that proposed development is to be delivered to the city through a pressure tunnel 20 miles long and 17½ feet in diameter. This tunnel will be large enough to deliver the water from the new and additional source and a portion of the Catskill water.

The completion of the plan outlined will make available 1,534 m. g. d., sufficient for the city until about 1947. The construction program will be spread over a period of 15 years. The annual expenditures will vary from \$2,000,000 the first year, increasing to \$50,000,000 the fifth year, and diminishing during the remainder of the construction period.

Calcium and Magnesium Hydrates as Coagulating Agents. Martin E. Flontje, superintendent of filtration, Oklahoma City, Okla. *Journal of the American Water Works Association*, vol. 17, No. 2, February, 1927, pp. 253-260. (Abstract by O. M. Bakke.)

The water used at Oklahoma City is aerated, softened with lime, clarified with iron and alum, settled, carbonated with flue gas, filtered, and chlorinated. For-

merly only sufficient lime was added to reduce the alkalinity to 50 p. p. m., causing little or no reduction of magnesium.

For eight months sufficient lime was added to give excess from 6 to 12 p. p. m. This caused a reduction of from 15 to 20 p. p. m. of magnesium, reduced the amount of coagulants required to nearly one-third, and effected a saving of \$3.57 per million gallons. Jar tests, using the settled silt from the raw water with and without magnesium chloride and distilled water, showed that magnesium hydroxide acted strongly as a coagulating agent and was largely responsible for the effect.

Value of excess lime as a sterilizing agent was also considered, with the possibility of reduction of the chlorine dosage. Reduction of *B. coli* with this amount of lime was somewhat disappointing. Sufficient lime was also tried for complete magnesium precipitation and elimination of other coagulants. The increased cost of lime was greater than the cost of the coagulants.

Report of the Bureau of Food Inspection. Report of the Department of Health of the city of Chicago for 1923-1925, pp. 481-537. (Abstract by F. J. Moss.)

The division of food inspection on July 1, 1924, was reorganized by the establishment of three divisions—one charged with sanitary control of food stores, one with inspection and control of shellfish and miscellaneous foods, and the third with milk and dairy inspection. Previous to that date the general sanitary inspection of food establishments was also conducted by the bureau of food inspection, but upon reorganization this work was taken over by the bureau of inspection.

Division of food stores' inspection.—The classes of establishments covered by this division are—restaurants, lunch rooms, ice-cream parlors, candy stores, beverage parlors, drug stores, retail groceries, retail meat markets, retail fish markets, retail bakeries, delicatessen stores, roadside stands, and food-peddling outfits.

A list is given of those things which were stressed as matters of major sanitary importance in the inspection of food stores and establishments. The general working policy is stated as regards cooperation, license approval, and violations, and accounts are given of some of the various activities of the division.

Division of miscellaneous foods and shellfish inspection.—The major work over which this division has control is as follows: Meat inspection, wholesale markets, shellfish, soft-drink factories, canned goods' inspection, retail ice-cream factories, ice inspection, inspection of wholesale confectionery factories, and food poisoning.

A brief account is given of the typhoid fever epidemic which occurred during the latter part of 1923, some of the cases of which were considered as being probably due to infected oysters. An increase in the typhoid-fever rate early in December, 1924, again cast suspicion on shellfish, and a new policy was formulated by the commissioner of health with regard to shipments of shellfish intended for Chicago. Other work accomplished is also stated quite fully, and tables and charts are given in a number of cases.

Division of milk and dairy inspection.—The work of this division is divided into two main sections, namely, country dairy inspection and city milk inspection.

During the period covered by this report numerous improvements were brought about in connection with the production of raw milk, the transportation of raw milk, pasteurization, and the dispensing of milk in restaurants and similar places. On December 23, 1925, the city milk ordinance was amended so as to permit the sale of milk in the city of Chicago only from cattle which had been declared free from disease upon examination. The amended paragraphs of this ordinance are given and also the rules and regulations governing the manufacture of ice cream which went into effect on July 1, 1925. A detailed record of the various activities of the division is given, including many charts and tables,

giving such information as milk consumption, chemical and bacterial analyses of milk samples, bacterial analyses of ice cream samples, etc.

Smoke Abatement, Its Effects and Its Limitations. H. B. Meller. Paper presented at annual meeting of the American Society of Mechanical Engineers, December 6, 1926. 9 pages. (Abstract by Leonard Greenburg.)

This rather complete paper describes the problem of smoke abatement in some detail, making special reference to the development of the problem and its solution in Pittsburgh by way of example. The Pittsburgh ordinance is described in its bearing on the problem and reference is made to the studies conducted at the Mellon Institute along these lines.

The importance of draft, combustion space, and secondary air is treated at some length, for these have important bearing on the smokelessness of combustion; but so detailed is the discussion on these points that a summary here is impossible. The special problems of manufacturing plants and railroads are discussed, for these contribute very largely to the smoke problem. Each offending furnace is treated as a separate problem, which is settled by the city and plant officials in conference. That the railroad companies are cooperating in the solution of the problem is at once evident when one realizes that these companies employ twenty inspectors, whereas the city of Pittsburgh employs only four. The methods used in making smokeless fires in the locomotives are described.

The results of the smoke abatement campaign in Pittsburgh have been to decrease the amount of visible smoke in the atmosphere. It is estimated that 80 per cent of the dense smoke has been eliminated. A second soot fall survey was conducted over a period of eleven months. The interesting thing about this study is that it shows a great portion of the dense smoke to have been prevented; but, in spite of this, the quantity of solid matter deposited has been greatly increased, there having been an increase of 39 per cent in the insoluble matter deposited per square mile per month.

This interesting report closes by pointing out that in Pittsburgh but one-fourth of one per cent of the solid deposit consists of tar, which is the criterion of black smoke. Yet this is the only portion of the combustion products which inspection supervises and checks. The author apparently forgets that if the black smoke is reduced in amount, so, also, is the other material arising with it. Nevertheless, the emphasis placed on the harmful gases and solids which are blown from the stacks, even though light in color and hence within the regulations, serves to bring an important problem to the front.

Advances in Sewage Purification. Dr. K. Imhoff. Fortschritte der Abwasserreinigung. Second edition, 1926. Published by Carl Heymanns, Berlin, Germany. 136 pages. (Abstract by J. K. Hoskins.)

The treatment of the subject is divided as follows: (1) Processes for removal of sludge from the sewage and sludge handling; (2) processes for purification of the liquid sewage; and (3) miscellaneous topics, such as industrial wastes, house disposal systems, costs, bibliography and index.

The first section of the book, dealing with sludge separation and disposal, discusses (a) new sewage screens in America; (b) new Emscher (Imhoff) tank installations; (c) two-story settling tanks, or completely separate sludge digestion tanks; (d) flowing through digestion tanks; (e) trickling basins and partial dewatering; (f) ponding on land; (g) stream clarification applications; (h) storm water tanks; (i) recovery of gas from digestion tanks; (j) sludge lagoons; and (k) agricultural value of sludge.

Discussions of topics (a) and (b) are largely concerned with American practice. About 600 American cities and communities have installed Imhoff tanks for sewage treatment. Under (c) the advantages and disadvantages of the two methods of sludge digestion are compared and their relative importance is con-

sidered. Heat losses in the separate method result in unfavorable digestion progress, but may be overcome if the sludge chamber of the Emscher tank is divided into two parts, one of which is below the sedimentation chamber and the other, or digestion compartment, is adjacent to it.

Sickerbecken (trickling basins) are described as shallow basins with a layer of under-drained filtering material through which the liquid sewage is withdrawn after deposition of sludge has taken place by plain sedimentation of the sewage slowly flowing through. Such basins are constructed in groups so that some are in use, while others are being drained and sludge is drying and being removed. Their design and operating features are described in some detail.

Ponding (*f*) and stream clarification processes (*g*) are methods employed in special cases for providing plain sedimentation and deposition of sludge by the formation of pools on land or in stream channels, respectively, and are of limited application. Storm water tanks (*h*) provide sedimentation for flows in excess of the general volume of sewage flow of combined sewers and where complete treatment is not necessary.

Methods of gas recovery from digesting sludge (*i*) are discussed. The average amount of gas obtained from Emscher tanks is 8 liters per day, or 3 cubic meters per year per person contributing sewage. The gas is composed of the following: Methane, 80-85 per cent; carbonic acid, 7-20 per cent; nitrogen, 0-8 per cent; and hydrogen, 0 per cent.

The use of sludge lagoons (*j*) in America and Germany is briefly touched upon and the disadvantages of the method are clearly stated. Digested sludge is recommended for agricultural purposes (*k*) for reasons given. The use of raw sludge has numerous disadvantages which are enumerated.

Progress in Sewage Disposal. Dr. K. Imhoff. Fortschritte der Abwasserreinigung. Second edition, 1926. Published by Carl Heymanns, Berlin, Germany. Pp. 106-116. (Abstract by A. L. Dopmeyer.)

Industrial wastes.—In the treatment of industrial wastes not much progress has been made, and many of the difficulties encountered in treating such wastes are still being overcome by mixing the wastes with domestic sewage.

The common methods of removing sludge from tanks are described, including mechanical devices, such as the Fidler sludge remover, the Dorr thickener, and a suction dredge manufactured by a German firm, which is used for the same purpose. For disposing of sludge, the methods of placing it on porous beds and of lagooning are referred to.

Industrial wastes containing organic matter can usually be handled the same as domestic sewage, particularly wastes from the foodstuff industries. In this connection, as well as in the treatment of phenol wastes, the activated sludge process is stated as coming more and more into use.

According to the author, in the treatment of industrial wastes there is an increasing endeavor to make use of the effluent from the treatment plant, in the industry; and oftentimes in such cases the expensive treatment plant proves economical in the end.

Home sewage disposal.—The question of home sewage disposal, which was thought at one time to have been settled, became important again during the war, but to-day it is again realized that all houses should be connected to a public sewerage system when at all possible. A brief outline of the American practice in this respect is given. In Germany, pit privies are permitted, provided that the house is so located with respect to the privy that the drainage is away from the house. Small tanks of the Imhoff type are used for some houses which are connected to a water supply. The particular undesirable feature of this tank has been found to be its small size, which is considered the main reason for its neglect. There are a large number of medium and small sized towns in Germany which

have both public sewerage systems and many individual appurtenances, the latter consisting mainly of pits with illegal overflows into the city streets. In one case it was found that the sewage from a pit was pumped regularly each night into the street. In another case it was pumped into the street just before an expected rain. For these reasons it is believed that the individual plants have not contributed to the reduction of pollution of streams, but that more pollution is received into the stream in this way than if a public sewerage system is used throughout, with the simplest kind of treatment. In Leipzig and other large cities, in spite of the fact that a free sewerage system is available, there is still much collection and disposal of sewage on the premises, a common practice of removal being by trucks, about once a year.

It is suggested by the author that, instead of enforcing the law prohibiting the discharge of sewage into the streets, all owners of houses be forced to connect the house to the public sewerage system wherever possible.

Design and costs of disposal plants.—From the standpoint of the comfort of the residents in the vicinity of the disposal plant, it is desirable that there be no odor. Both in the United States and in Germany, a treatment plant is now demanded which does not give off offensive odors. For this reason, the septic tank, except for small installations, is coming into disuse.

From a health standpoint, the effectiveness of a treatment plant can be measured by the extent to which the danger of disease transmission is reduced. The content of putrescible organic matter is mentioned as being the most important factor for consideration, and the ordinary methods for preliminary and final treatment are briefly outlined.

A per capita comparison of initial costs, operating costs, etc., of a number of treatment processes is made by listing six comparable processes in a table. Such processes, where the costs are dependent in large measure on local conditions, are not mentioned; nor are those which are considered out of date or not used in Germany on account of their high cost.

The Jamaica Sewage Disposal Plant, the Second Largest Sewage Screening Plant in the World. Anon. *American City*, vol. 36, No. 3, March, 1927, pp. 331-334. (Abstract by Charles R. Cox.)

The Jamaica sewage screening plant was recently completed to screen and chlorinate the sewage from an area of 24,000 acres in the borough of Queens of New York City. The present plant is the first unit of a series of three, which will have a combined capacity of 240 m. g. d. The present plant consists of grit chambers, two sanitation disk screens, sewage pumps, chlorination equipment, and outfall sewer to Bergen Creek and Jamaica Bay.

The sewage passes through a bar screen into a four-compartment grit chamber 40 feet wide by 96 feet long and 33 feet deep. A clam-shell bucket is used in removing grit. The two screens may be used together or singly. They are 26 feet in diameter and are made up of sections made of numerous monel metal strips arranged radially in curves to conform to the path of the brushes. These strips are $\frac{1}{4}$ inch wide, $\frac{3}{8}$ inch thick, and are set on edge $\frac{3}{8}$ of an inch apart. The free area of the screen is 69 per cent of the total area. The pumping equipment consists of 4 main, motor-driven, horizontal, single-suction, mixed-flow, centrifugal pumps of 120 m. g. d. capacity. The chlorination equipment consists of 5 Wallace & Tiernan automatic, solution feed machines with sufficient capacity to treat 10 to 80 m. g. d. Automatic control is secured by the use of solenoid-operated valves connected with the motor circuits.

The grit and screenings are elevated by mechanical means to storage hoppers, from which the material can be discharged into trucks and hauled away and dumped. Eventually the screenings will be hauled or conveyed to a municipal incinerator adjacent to the sewage disposal plant.

PATIENTS IN INSTITUTIONS FOR THE FEEBLE-MINDED

Data for October, 1926

Reports for the month of October, 1926, were received from 30 institutions for the care of the feeble-minded.

The following tables give a summary and analysis of the reports:

Movement of patient population in 30 institutions for the feeble-minded, October, 1926

	Male	Female	Total
Number of institutions included:			
Public.....			29
Private.....			1
Total.....			30
Patients on books Oct. 1, 1926:			
In institutions.....	11,892	11,623	23,515
On temporary leave.....	2,075	1,571	3,646
Total.....	13,967	13,194	27,161
Admitted during October:			
First admissions.....	171	126	297
Readmissions.....	5	5	10
Admitted by transfer.....	0	44	44
Not accounted for.....	1	1	2
Total received during October.....	177	176	353
Total on books during month.....	14,144	13,370	27,514
Discharged or placed on indefinite parole during October:			
Transferred.....	46	34	80
Died during October.....	1	45	46
Total discharged, transferred, and died during October.....	75	105	180
Patients on books Oct. 31, 1926:			
In institutions.....	12,637	11,730	23,767
On temporary leave.....	2,033	1,535	3,567
Total.....	14,069	13,265	27,334

Analysis of movement of patient population of 30 institutions for the feeble-minded, October, 1926

	Male	Female	Total
Per cent change in number of patients during October:			
Total (increase).....	0.73	0.54	0.64
In institutions (increase).....	1.22	.82	1.07
On temporary leave (decrease).....	2.07	2.29	2.17
Per cent of total patients absent on leave:			
Oct. 1.....	14.85	11.91	13.42
Oct. 31.....	14.44	11.57	13.05
Per cent of total admissions (excluding transfers and not accounted for) which were:			
First admissions.....	97.16	96.18	96.74
Readmissions.....	2.84	3.82	3.26
Per cent of total patients discharged during October (based on average number for the month).....	.33	.26	.29
Male patients per 1,000 females, Oct. 31.....			1,061
Deaths per 1,000 patients under treatment (annual basis).....	25.32	22.89	23.12

Examination for Entrance Into the Regular Corps of the United States Public Health Service

Examinations of candidates for entrance into the Regular Corps of the United States Public Health Service will be held at the following-named places on the dates specified:

Washington, D. C.....	August 8, 1927
Chicago, Ill.....	Do.
New Orleans, La.....	Do.
San Francisco, Calif.....	Do.

Candidates must be not less than 23 nor more than 32 years of age, and they must have been graduated in medicine at some reputable medical college, and have had one year's hospital experience or two years' professional practice. They must pass satisfactorily oral, written, and clinical tests before a board of medical officers and undergo a physical examination.

Successful candidates will be recommended for appointment by the President, with the advice and consent of the Senate.

Requests for information or permission to take this examination should be addressed to the Surgeon General, United States Public Health Service, Washington, D. C.

DEATHS DURING WEEK ENDED MAY 7, 1927

Summary of information received by telegraph from industrial insurance companies for week ended May 7, 1927, and corresponding week of 1926. (From the Weekly Health Index, May 11, 1927, issued by the Bureau of the Census, Department of Commerce)

	Week ended May 7, 1927	Corresponding week 1926
Policies in force.....	65, 776, 147	64, 290, 279
Number of death claims.....	13, 623	14, 240
Death claims per 1,000 policies in force, annual rate..	10. 8	11. 5

Deaths from all causes in certain large cities of the United States during the week ended May 7, 1927, infant mortality, annual death rate, and comparison with corresponding week of 1926. (From the Weekly Health Index, May 11, 1927, issued by the Bureau of the Census, Department of Commerce)

City	Week ended May 7, 1927		Annual death rate per 1,000 corresponding week, 1926	Deaths under 1 year		Infant mortality rate, week ended May 7, 1927 ¹
	Total deaths	Death rate ¹		Week ended May 7, 1927	Corresponding week, 1926	
Total (68 cities).....	7,473	13.2	14.3	836	955	69
Akron.....	50			9	8	97
Albany.....	43	18.7	22.3	6	5	125
Atlanta.....	58			5	13	
White.....	33			3	6	
Colored.....	25	(⁶)		2	7	
Baltimore.....	242	15.4	15.8	18	22	56
White.....	189		14.4	10	16	39
Colored.....	53	(⁶)	24.1	8	6	124
Birmingham.....	59	14.3	20.3	9	20	
White.....	27		18.3	3	12	
Colored.....	32	(⁶)	23.2	6	8	
Boston.....	213	14.0	18.0	26	42	73
Bridgeport.....	27			3	8	56
Buffalo.....	150	14.2	14.5	20	22	84
Cambridge.....	17	7.1	9.8	2	0	36
Camden.....	31	12.2	12.3	4	2	69
Canton.....	24	11.1	12.8	1	5	24
Chicago.....	720	12.1	13.7	88	100	76
Cincinnati.....	138	17.5	17.4	6	17	37
Cleveland.....	179	9.5	11.8	13	32	34
Columbus.....	84	15.1	13.4	10	7	93
Dallas.....	49	12.2	14.4	7	7	
White.....	43		11.9	7	6	
Colored.....	6	(⁶)	30.9	0	2	
Dayton.....	47	13.6	15.6	4	5	66
Denver.....	74	13.3	11.9	6	9	
Des Moines.....	30	10.5	15.0	3	3	50
Detroit.....	205	11.9	15.4	40	77	63
Duluth.....	21	9.5	9.2	3	1	65
El Paso.....	28	12.8	15.8	8	9	
Erie.....	22			3	6	59
Fall River.....	34	13.3	10.3	5	3	88
Flint.....	28	10.2	10.4	4	3	65
Fort Worth.....	28	8.9	9.5	5	0	
White.....	20		7.8	5	0	
Colored.....	8	(⁶)	22.0	0	0	
Grand Rapids.....	31	10.2	16.0	4	6	59
Houston.....	39			5	4	
White.....	22			1	4	
Colored.....	17	(⁶)		4	0	
Indianapolis.....	113	15.8	13.5	7	8	55
White.....	93		13.4	5	7	45
Colored.....	20	(⁶)	14.2	2	1	122
Jersey City.....	66	10.7	13.9	9	8	67
Kansas City, Kans.....	29	12.9	8.5	1	3	19
White.....	20		7.0	0	3	0
Colored.....	9	(⁶)	15.3	1	0	152
Kansas City, Mo.....	89	12.1	13.3	10	1	
Knoxville.....	24	12.3		1		
White.....	17			0		
Colored.....	7	(⁶)		1		
Los Angeles.....	241			26	22	74
Louisville.....	85	13.9	14.8	5	6	43
White.....	58		12.4	3	5	29
Colored.....	27	(⁶)	27.7	2	1	140
Lowell.....	28	13.2	18.0	2	9	39
Lynn.....	28	13.0	14.0	0	2	0
Memphis.....	65	18.9	19.1	8	8	
White.....	28		14.6	4	4	
Colored.....	37	(⁶)	27.3	4	4	
Milwaukee.....	133	13.2	14.6	19	15	89
Minneapolis.....	80	10.5	15.0	7	16	39
Nashville.....	40	15.1	19.8	4	4	
White.....	24		13.3	3	3	
Colored.....	16	(⁶)	36.1	1	1	
New Bedford.....	23	10.0	16.6	3	13	52
New Haven.....	42	11.8	12.6	3	4	42

(See footnotes at end of table)

Deaths from all causes in certain large cities of the United States during the week ended May 7, 1927, infant mortality, annual death rate, and comparison with corresponding week of 1926. (From the Weekly Health Index, May 11, 1927, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended May 7, 1927		Annual death rate per 1,000 corresponding week, 1926	Deaths under 1 year		Infant mortality rate, week ended May 7, 1927 ¹
	Total deaths	Death rate ¹		Week ended May 7, 1927	Corresponding week, 1926	
New Orleans.....	153	18.8	19.8	18	7	-----
White.....	88		15.3	14	2	-----
Colored.....	65	(²)	32.5	4	5	-----
New York.....	1,536	13.4	13.4	193	168	80
Bronx Borough.....	195	11.0	9.2	18	11	57
Brooklyn Borough.....	516	11.8	12.0	74	72	77
Manhattan Borough.....	633	18.2	18.6	76	74	89
Queens Borough.....	149	9.6	9.6	20	8	85
Richmond Borough.....	43	15.3	15.0	5	3	93
Newark, N. J.....	96	10.7	13.1	9	13	45
Oakland.....	70	13.7	7.0	7	4	82
Oklahoma City.....	22			1	2	-----
Omaha.....	55	13.1	16.4	3	10	33
Paterson.....	26	9.4	15.0	5	5	88
Philadelphia.....	485	12.4	15.0	38	72	51
Pittsburgh.....	213	17.3	17.2	44	18	154
Portland, Oreg.....	76			3	2	32
Providence.....	81	15.0	14.2	12	11	102
Richmond.....	46	12.5	16.0	5	12	66
White.....	24		13.2	2	8	40
Colored.....	22	(²)	22.8	3	4	114
Rochester.....	93	15.9	13.5	18	7	151
St. Louis.....	199	12.4	14.4	17	18	-----
St. Paul.....	51	10.6	14.5	5	1	45
Salt Lake City ⁴	36	13.8	14.1	0	6	0
San Antonio.....	77	19.0	15.8	21	14	-----
San Diego.....	45	20.4	15.2	2	4	43
San Francisco.....	144	13.0	13.5	8	10	31
Schenectady.....	16	9.0	7.8	2	1	60
Seattle.....	74			6	3	63
Somerville.....	26	13.3	9.9	3	3	108
Spokane.....	26	12.4	13.9	4	5	100
Springfield, Mass.....	44	15.6	11.1	2	2	31
Syracuse.....	51	13.5	17.5	5	8	64
Tacoma.....	28	13.6	15.7	1	1	24
Toledo.....	84	14.4	13.3	8	15	77
Trenton.....	43	16.4	15.6	3	5	52
Utica.....	22	11.1	18.7	1	1	23
Washington, D. C.....	158	15.3	15.3	16	17	93
White.....	124		12.8	9	12	76
Colored.....	34	(²)	22.6	7	5	129
Waterbury.....	20			4	6	94
Wilmington, Del.....	27	11.2	10.1	4	5	99
Worcester.....	38	10.2	14.6	6	6	72
Yonkers.....	26	11.4	9.9	2	6	45
Youngstown.....	49	15.1	14.2	6	6	84

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, May 6, 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, Richmond 32, and Washington, D. C., 25.

MEASLES—continued

	Cases
Kansas.....	1,029
Louisiana.....	53
Maine.....	119
Maryland ¹	26
Massachusetts.....	392
Michigan.....	299
Minnesota.....	168
Montana.....	19
Nebraska.....	255
New Jersey.....	111
New Mexico.....	211
New York ²	891
North Carolina.....	1,987
Oklahoma ³	323
Oregon.....	264
Pennsylvania.....	692
Rhode Island.....	2
South Carolina.....	411
South Dakota.....	71
Tennessee.....	85
Utah ¹	24
Vermont.....	139
Washington.....	338
West Virginia.....	185
Wisconsin.....	457
Wyoming.....	108

MENINGOCOCCUS MENINGITIS

California.....	3
Illinois.....	11
Maryland ¹	1
Massachusetts.....	2
Michigan.....	2
Minnesota.....	1
Montana.....	2
New Jersey.....	1
New York ²	2
North Carolina.....	1
Oklahoma ³	1
Oregon.....	1
Pennsylvania.....	2
Tennessee.....	1
Washington.....	3
Wisconsin.....	13

POLIOMYELITIS

Arizona.....	1
California.....	5
Florida.....	1
Georgia.....	1
Illinois.....	2
Massachusetts.....	2
Mississippi.....	1
New York ¹	2
Pennsylvania.....	1
South Carolina.....	1
Wisconsin.....	3

SCARLET FEVER

Alabama.....	5
Arizona.....	34
Arkansas.....	6

SCARLET FEVER—continued

	Cases
California.....	213
Colorado.....	158
Connecticut.....	105
Delaware.....	4
Florida.....	5
Georgia.....	11
Idaho.....	8
Illinois.....	247
Indiana.....	154
Kansas.....	101
Louisiana.....	4
Maine.....	45
Maryland ¹	56
Massachusetts.....	421
Michigan.....	279
Minnesota.....	184
Mississippi.....	1
Missouri.....	91
Montana.....	19
Nebraska.....	31
New Jersey.....	312
New Mexico.....	11
New York ²	290
North Carolina.....	11
Oklahoma ³	25
Oregon.....	22
Pennsylvania.....	559
Rhode Island.....	14
South Carolina.....	11
South Dakota.....	52
Tennessee.....	23
Utah ¹	23
Vermont.....	7
Washington.....	49
West Virginia.....	39
Wisconsin.....	166
Wyoming.....	23

SMALLPOX

Alabama.....	20
Arizona.....	1
California.....	34
Colorado.....	13
Florida.....	51
Georgia.....	27
Idaho.....	6
Illinois.....	26
Indiana.....	134
Kansas.....	15
Louisiana.....	4
Michigan.....	42
Minnesota.....	1
Mississippi.....	45
Missouri.....	19
Montana.....	16
Nebraska.....	10
New Mexico.....	8
New York ²	13
North Carolina.....	33
Oklahoma ³	31
Oregon.....	14
South Carolina.....	21

¹ Week ended Friday.

² Exclusive of New York City.

³ Exclusive of Oklahoma City and Tulsa.

⁴ Twenty additional cases reported unofficially.

SMALLPOX—continued

	Cases
South Dakota.....	13
Tennessee.....	6
Utah ¹	1
Virginia.....	4
Washington.....	41
West Virginia.....	26
Wisconsin.....	13
Wyoming.....	2

TYPHOID FEVER

Alabama.....	24
Arizona.....	2
Arkansas.....	30
California.....	6
Florida.....	21
Georgia.....	24
Illinois.....	15
Indiana.....	4
Kansas.....	2
Louisiana.....	16

TYPHOID FEVER—continued

	Cases
Maryland ¹	5
Massachusetts.....	6
Michigan.....	5
Minnesota.....	1
Mississippi.....	12
Missouri.....	7
Nebraska.....	1
New Jersey.....	4
New Mexico.....	7
New York ²	7
North Carolina.....	11
Oklahoma ¹	18
Oregon.....	3
Pennsylvania.....	16
South Carolina.....	42
Tennessee.....	18
Washington.....	2
West Virginia.....	1
Wisconsin.....	6

Reports for Week Ended May 7, 1927

DIPHTHERIA

	Cases
District of Columbia.....	20
Georgia.....	9
Nebraska.....	3
North Dakota.....	2

INFLUENZA

District of Columbia.....	2
Georgia.....	156

MEASLES

District of Columbia.....	12
Georgia.....	200
Nebraska.....	391
North Dakota.....	111

SCARLET FEVER

	Cases
District of Columbia.....	24
Georgia.....	17
Nebraska.....	34
North Dakota.....	32

SMALLPOX

Georgia.....	24
Nebraska.....	6

TYPHOID FEVER

District of Columbia.....	1
Georgia.....	15
Nebraska.....	1
North Dakota.....	1

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	Small-pox	Typhoid fever
<i>January, 1927</i>										
New Mexico.....	0	14	25		70		1	111	7	5
<i>March, 1927</i>										
Hawaii Territory...	1	38	75		300		3	24	0	6
<i>April, 1927</i>										
Arizona.....	0	13	5		370		3	67	4	3
Connecticut.....	3	115	21	1	396		2	424	6	2
Florida.....	5	87	60	22	897	25	3	50	307	76
Nebraska.....	2	25	25		1,855		0	314	124	6
Vermont.....	0	7			566		0	47	0	1

January, 1927

New Mexico:	Cases
Chicken pox.....	130
Conjunctivitis.....	20
German measles.....	24
Mumps.....	52
Puerperal septicaemia.....	1
Rabies in animals.....	2
Trachoma.....	1
Whooping cough.....	32

March, 1927

Hawaii Territory:	
Chicken pox.....	27
Conjunctivitis.....	35
Dysentery (amebic).....	2
Leprosy.....	3
Tetanus.....	1
Trachoma.....	17
Whooping cough.....	40

April, 1927

Anthrax:	
Connecticut.....	1
Chicken pox:	
Arizona.....	73
Connecticut.....	285
Florida.....	243
Nebraska.....	252
Vermont.....	133
Conjunctivitis:	
Connecticut.....	8
Dengue:	
Florida.....	1
Dysentery:	
Florida.....	11

April, 1927—Continued

German measles:	Cases
Nebraska.....	362
Hookworm disease:	
Florida.....	212
Lethargic encephalitis:	
Connecticut.....	4
Florida.....	1
Malta fever:	
Arizona.....	1
Mumps:	
Arizona.....	17
Connecticut.....	167
Florida.....	66
Nebraska.....	256
Vermont.....	347
Paratyphoid fever:	
Connecticut.....	2
Rabies in animals:	
Connecticut.....	6
Vermont.....	4
Septic sore throat:	
Connecticut.....	11
Nebraska.....	2
Tetanus:	
Connecticut.....	1
Florida.....	17
Trachoma:	
Arizona.....	2
Whooping cough:	
Arizona.....	11
Connecticut.....	120
Florida.....	129
Nebraska.....	64
Vermont.....	34

**Number of Cases of Certain Communicable Diseases Reported for the Month
of February, 1927, by State Health Officers**

State	Chick- en pox	Diph- theria	Measles	Mumps	Scarlet fever	Small- pox	Tuber- culosis	Ty- phoid fever	Whoop- ing cough
Alabama.....	222	161	718	101	70	224	328	67	205
Arizona.....	108	12	76	9	94	2	83	5	22
Arkansas.....	209	24	80	210	49	22	130	23	198
California.....	3,092	601	1,514	991	1,156	110	720	24	459
Colorado ¹									
Connecticut.....	438	128	408	120	438	0	139	4	179
Delaware ¹									
District of Columbia.....	262	104	16		78	3	116	3	72
Florida.....	207	121	272	48	65	281	70	31	65
Georgia.....	266	90	553	107	84	442	81	28	139
Idaho.....	57	6	1,312	52	163	40	13	6	34
Illinois.....	1,630	532	8,469	1,623	1,584	118	1,175	61	806
Indiana.....	630	172	933	8	1,342	586	138	13	247
Iowa.....	235	101	2,545	62	339	38	52		252
Kansas.....	694	79	2,458	242	763	197	155	8	56
Kentucky ¹									
Louisiana.....	78	89	506	54	53	21	100	32	87
Maine.....	201	9	735	40	105	0	22	10	188
Maryland.....	630	208	112	116	341	1	217	41	420
Massachusetts.....	1,244	424	855	1,306	2,129	0	585	26	543
Michigan.....	1,123	485	956	461	1,424	180	342	31	532
Minnesota.....	656	162	1,300		1,136	37	179	17	107
Mississippi.....	842	56	2,323	639	101	35	297	52	1,595
Missouri.....	524	229	1,033	212	693	79	182	27	190
Montana.....	122	28	308	73	444	37	28	1	6
Nebraska.....	254	20	676	202	266	65	44	8	123
Nevada ¹									
New Hampshire.....		3			53	0		0	
New Jersey.....	1,278	442	218		1,432	0	450	20	990
New Mexico ¹									
New York.....	3,153	1,583	3,343	3,303	4,135	31	1,642	82	1,618
North Carolina.....	865	123	1,427		176	259		21	2,612
North Dakota.....	53	10	468	29	302	18	10	6	12
Ohio.....	1,859	692	604	431	2,063	206	668	23	1,039
Oklahoma ¹	226	85	796	93	201	166	58	49	64
Oregon.....	174	63	354	101	214	120	61	20	58
Pennsylvania.....	3,390	806	3,721	1,449	2,742	1	490	87	1,231
Rhode Island.....	126	48	5	54	116	0	40	1	41
South Carolina.....	427	181	93	3	46	67	211	31	431
South Dakota.....	107	14	1,103	24	418	23	8	7	38
Tennessee.....	390	72	775	33	213	71	131	43	385
Texas ²									
Utah ¹									
Vermont.....	146	5	367	191		0	10	6	177
Virginia.....	1,026	146	2,414		224	162	199	22	1,844
Washington.....	443	103	974	369	492	211	135	8	73
West Virginia.....	391	107	632		254	97	46	72	477
Wisconsin.....	1,107	171	3,099	910	929	58	145	10	586
Wyoming.....	43	7	938	42	103	1		1	2

¹ Pulmonary.² Report not received at time of going to press.³ Reports received weekly.⁴ Reports received annually.⁵ Exclusive of Oklahoma City and Tulsa.

Case Rates per 1,000 Population (Annual Basis) for the Month of February, 1927

State	Chick- en pox	Diph- theria	Measles	Mumps	Scarlet fever	Small- pox	Tuber- culosis	Ty- phoid fever	Whoop- ing cough
Alabama.....	1.14	0.82	3.67	0.52	0.36	1.15	1.68	0.34	1.05
Arizona.....	3.07	.34	2.16	.26	2.67	.06	2.36	.14	.63
Arkansas.....	1.42	.16	.54	1.42	.33	.15	1.20	.16	1.34
California.....	9.09	1.77	33.86	2.91	3.40	.32	2.12	.07	1.35
Colorado ¹									
Connecticut.....	3.49	1.02	3.25	.96	3.49	.00	1.11	.03	1.43
Delaware ¹									
District of Columbia.....	6.32	2.51	.39	.....	1.88	.07	2.80	.07	1.74
Florida.....	1.98	1.16	2.60	.46	.62	2.69	.67	.30	.83
Georgia.....	1.09	.37	2.27	.44	.35	1.82	.33	.12	.57
Idaho.....	1.39	.15	32.03	1.27	3.08	.98	1.07	.15	.83
Illinois.....	2.91	.95	15.13	2.90	2.83	.21	2.10	.11	1.60
Indiana.....	2.61	.71	3.86	.03	5.55	2.42	.57	.05	1.02
Iowa.....	1.26	.54	13.68	.33	1.82	.20	.28	.....	.28
Kansas.....	4.95	.56	17.53	1.73	5.44	1.40	1.11	.06	2.11
Kentucky ¹									
Louisiana.....	.53	.60	3.41	.36	.36	.14	1.67	.22	.59
Maine.....	3.30	.15	12.06	.06	1.78	.00	1.36	.16	3.09
Maryland.....	5.14	1.70	.91	.95	2.78	.01	1.77	.33	3.43
Massachusetts.....	3.82	1.30	2.63	4.01	6.54	.00	1.80	.08	1.67
Michigan.....	3.26	1.41	2.78	1.34	4.13	.52	.99	.09	1.54
Minnesota.....	3.18	.79	6.31	.....	5.51	.18	.87	.08	.52
Mississippi.....	6.13	.41	16.91	4.65	.74	.25	2.16	.39	11.61
Missouri.....	1.95	.85	3.84	.79	2.57	.29	.68	.10	.71
Montana.....	2.23	.51	5.62	1.53	8.11	.65	.51	.02	.15
Nebraska.....	2.37	.19	6.31	1.89	2.48	.61	.41	.07	1.15
Nevada ¹									
New Hampshire.....		.09	.....	.....	1.52	.00	.....	.00	.....
New Jersey.....	4.44	1.54	.76	.....	4.98	.00	1.56	.07	3.44
New Mexico ²									
New York.....	3.60	1.81	3.81	3.77	4.72	.04	1.87	.09	1.85
North Carolina.....	3.89	.55	6.42	.....	.79	1.17	.....	.09	11.75
North Dakota.....	1.08	.20	9.51	.59	6.14	.37	.20	.12	2.24
Ohio.....	3.61	1.34	1.17	.84	4.01	.40	1.30	.04	2.02
Oklahoma ³	1.39	.52	4.89	.57	1.23	1.02	.36	.30	.39
Oregon.....	2.55	.92	5.19	1.48	3.13	1.76	.89	.29	.85
Pennsylvania.....	4.54	1.08	4.99	1.94	3.67	.00	.66	.12	1.65
Rhode Island.....	2.33	.89	.09	1.00	2.15	.00	.74	.02	.76
South Carolina.....	3.02	1.28	.66	.02	.32	.47	1.49	.22	3.05
South Dakota.....	2.90	.26	20.66	.45	7.83	.43	.15	.13	.71
Tennessee.....	2.05	.38	4.07	.17	1.12	.37	.69	.23	2.02
Texas ⁴									
Utah ³									
Vermont.....	5.40	.18	13.57	7.65	.....	.60	1.37	.22	6.55
Virginia.....	5.25	.75	12.36	.....	1.15	.83	1.51	.11	9.44
Washington.....	3.70	.86	8.13	3.08	4.11	1.76	1.13	.07	.61
West Virginia.....	3.01	.82	4.86	.....	1.95	.75	.35	.55	3.67
Wisconsin.....	4.94	.76	13.84	4.06	4.15	.26	.65	.04	2.62
Wyoming.....	2.33	.38	.74	2.27	5.57	.05	.....	.05	.11

¹ Pulmonary.
² Report not received at time of going to press.
³ Reports received weekly.
⁴ Reports received annually.
⁵ Exclusive of Oklahoma City and Tulsa.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 101 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 30,900,000. The estimated population of the 95 cities reporting deaths is more than 30,280,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended April 30, 1927, and May 1, 1926

	1927	1926	Esti- mated expect- ancy		1927	1926	Esti- mated expect- ancy
<i>Cases reported</i>				<i>Cases reported—Contd.</i>			
Diphtheria:				Typhoid fever:			
41 States.....	1, 517	1, 211	-----	41 States.....	260	209	-----
101 cities.....	1, 018	641	851	101 cities.....	50	54	63
Measles:				<i>Deaths reported</i>			
39 States.....	14, 562	24, 996	-----	Influenza and pneumo- nia:			
101 cities.....	3, 800	9, 971	-----	95 cities.....	941	1, 198	-----
Poliomyelitis:				Smallpox:			
41 States.....	19	18	-----	95 cities.....	0	3	-----
Scarlet fever:				New Orleans.....	0	1	-----
41 States.....	4, 533	4, 153	-----	Los Angeles.....	0	1	-----
101 cities.....	2, 005	1, 707	1, 189	San Francisco.....	0	1	-----
Smallpox:							
41 States.....	720	713	-----				
101 cities.....	125	153	128				

City reports for week ended April 30, 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	Chick- en pox, cases re- ported	Diphtheria		Influenza		Meas- les, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths re- ported
			Cases, esti- mated expect- ancy	Cases re- ported	Cases re- ported	Deaths re- ported			
NEW ENGLAND									
Maine:									
Portland.....	75, 333	4	1	0	0	1	1	3	1
New Hampshire:									
Concord.....	22, 546	0	0	0	0	0	7	0	3
Manchester.....	83, 097	0	2	0	0	0	0	0	2
Vermont:									
Barre.....	10, 008	1	0	0	0	0	0	2	0
Burlington.....	24, 089	1	1	0	0	0	11	2	0
Massachusetts:									
Boston.....	779, 620	73	51	19	1	0	108	119	40
Fall River.....	128, 993	5	3	2	1	0	0	2	1
Springfield.....	142, 065	3	2	4	0	0	8	5	7
Worcester.....	190, 757	32	4	2	2	0	0	6	7
Rhode Island:									
Pawtucket.....	69, 760	0	1	1	0	0	0	0	2
Providence.....	267, 918	0	10	3	0	2	2	0	5
Connecticut:									
Bridgeport.....	(¹)	0	5	7	1	0	9	2	6
Hartford.....	160, 197	5	6	1	0	0	2	8	4
New Haven.....	178, 927	9	2	2	0	0	2	8	3
MIDDLE ATLANTIC									
New York:									
Buffalo.....	538, 016	22	9	10	-----	3	7	18	16
New York.....	5, 873, 356	277	219	348	45	19	59	358	200
Rochester.....	316, 786	11	9	5	-----	1	13	6	7
Syracuse.....	182, 003	22	5	0	-----	0	189	19	6

¹ No estimate made.

City reports for week ended April 30, 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			
MIDDLE ATLANTIC—CON.									
New Jersey:									
Camden.....	128,642	3	4	32	0	1	4	3	2
Newark.....	452,513	83	15	12	7	2	2	78	12
Trenton.....	132,020	1	3	2	1	0	0	2	8
Pennsylvania:									
Philadelphia.....	1,979,364	96	71	57	-----	9	47	190	59
Pittsburgh.....	631,563	83	16	25	-----	7	166	5	29
Reading.....	112,767	9	2	1	-----	0	42	69	3
EAST NORTH CENTRAL									
Ohio:									
Cincinnati.....	409,333	7	7	6	0	2	3	14	13
Cleveland.....	936,485	94	22	41	0	0	3	59	17
Columbus.....	279,836	23	3	6	0	0	7	1	2
Toledo.....	287,380	72	4	1	0	0	0	14	4
Indiana:									
Fort Wayne.....	97,846	9	2	5	0	0	16	0	1
Indianapolis.....	358,819	34	4	3	0	3	18	82	9
South Bend.....	80,091	3	1	1	0	0	35	0	1
Terre Haute.....	71,071	1	1	0	0	0	14	0	1
Illinois:									
Chicago.....	2,965,229	56	77	66	14	8	679	105	77
Peoria.....	81,564	8	1	0	0	0	9	3	0
Springfield.....	63,923	3	0	0	0	0	11	0	2
Michigan:									
Detroit.....	1,245,824	86	46	52	4	1	14	172	30
Flint.....	130,316	24	3	4	0	0	13	5	9
Grand Rapids.....	153,693	7	4	0	0	1	11	0	2
Wisconsin:									
Kenosha.....	50,891	12	1	0	0	0	12	58	1
Madison.....	46,385	4	0	1	0	0	11	4	1
Milwaukee.....	509,192	115	11	18	0	0	126	111	14
Racine.....	67,707	6	2	3	0	0	5	13	1
Superior.....	39,671	0	0	0	0	0	1	0	3
WEST NORTH CENTRAL									
Minnesota:									
Duluth.....	110,502	6	1	0	0	0	19	1	2
Minneapolis.....	425,435	93	15	4	0	2	9	0	4
St. Paul.....	246,001	38	15	2	0	2	24	4	6
Iowa:									
Davenport.....	52,469	0	0	0	0	-----	7	1	-----
Des Moines.....	141,441	0	2	1	0	-----	0	0	4
Sioux City.....	76,411	3	1	2	0	-----	34	8	-----
Waterloo.....	36,771	2	0	0	0	-----	9	1	-----
Missouri:									
Kansas City.....	367,481	0	6	24	0	2	86	8	5
St. Joseph.....	78,342	0	1	0	0	0	23	0	3
St. Louis.....	821,543	22	37	47	0	0	25	92	-----
North Dakota:									
Fargo.....	26,403	0	0	0	0	0	17	3	1
Grand Forks.....	14,811	0	0	0	0	-----	0	0	-----
South Dakota:									
Aberdeen.....	15,036	3	0	0	0	-----	5	0	-----
Sioux Falls.....	30,127	1	0	0	0	-----	28	0	-----
Nebraska:									
Lincoln.....	60,941	6	1	1	0	0	103	14	1
Omaha.....	211,768	4	2	0	0	0	59	19	4
Kansas:									
Topeka.....	55,411	15	1	0	1	0	314	0	2
Wichita.....	88,367	11	0	1	0	0	0	0	0
SOUTH ATLANTIC									
Delaware:									
Wilmington.....	122,049	3	2	2	0	0	5	1	5
Maryland:									
Baltimore.....	796,296	94	22	24	9	6	6	29	34
Cumberland.....	33,741	0	1	0	0	0	1	0	0
Frederick.....	12,035	0	0	1	0	0	0	0	0
District of Columbia:									
Washington.....	497,906	63	11	16	2	3	6	0	15

City reports for week ended April 30, 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			
SOUTH ATLANTIC—CON.									
Virginia:									
Lynchburg.....	30,395	17	0	1	0	0	21	0	2
Norfolk.....	(1)	19	0	2	0	0	131	0	7
Richmond.....	186,403	1	2	1	0	0	142	3	5
Roanoke.....	58,208	6	1	0	0	1	2	0	0
West Virginia:									
Charleston.....	49,019	3	0	1	1	1	1	2	0
Wheeling.....	56,208	3	1	2	0	0	26	0	0
North Carolina:									
Raleigh.....	30,371	9	0	0	0	1	46	0	1
Wilmington.....	37,061	1	0	0	0	0	28	10	2
Winston-Salem.....	69,031	3	1	1	156	0	0	0	3
South Carolina:									
Charleston.....	73,125	1	0	0	24	0	7	0	2
Columbia.....	41,225	4	0	0	0	0	0	5	0
Greenville.....	27,311	0	1	0	0	0	2	0	1
Georgia:									
Atlanta.....	(1)	4	1	1	25	1	41	5	6
Brunswick.....	16,800	0	0	0	0	0	1	12	0
Savannah.....	93,134	1	0	3	28	3	5	1	1
Florida:									
Miami.....	69,754	11	3	0	0	0	2	11	1
St. Petersburg.....	26,847	0	0	0	0	0	0	0	0
Tampa.....	94,743	1	1	3	1	0	93	0	1
EAST SOUTH CENTRAL									
Kentucky:									
Covington.....	58,300	0	1	4	0	0	0	0	3
Louisville.....	305,935	4	3	2	2	0	1	7	12
Tennessee:									
Memphis.....	174,533	7	3	4	0	2	5	5	4
Nashville.....	136,220	6	1	1	0	3	1	2	2
Alabama:									
Birmingham.....	205,670	7	2	4	8	0	39	2	4
Mobile.....	65,965	2	1	0	0	2	2	1	0
Montgomery.....	46,481	1	0	0	2	0	26	0	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith.....	31,643	3	0	1	0	0	40	1	0
Little Rock.....	74,216	0	0	3	1	1	4	0	1
Louisiana:									
New Orleans.....	414,493	1	7	20	6	4	23	0	15
Shreveport.....	57,857	4	1	0	0	1	14	8	3
Oklahoma:									
Oklahoma City.....	(1)	2	1	2	7	0	27	0	4
Tulsa.....	124,478	16	1	1	0	0	240	40	0
Texas:									
Dallas.....	194,450	7	3	5	1	1	133	1	2
Galveston.....	48,375	0	0	1	0	0	0	0	1
Houston.....	164,954	1	2	7	0	0	1	0	3
San Antonio.....	198,069	1	1	6	0	4	8	1	4
MOUNTAIN									
Montana:									
Billings.....	17,971	0	0	0	0	0	6	0	1
Great Falls.....	29,863	1	0	0	0	0	14	0	0
Helena.....	12,037	0	0	0	0	0	0	0	2
Missoula.....	12,668	0	0	0	0	0	1	0	0
Idaho:									
Boise.....	23,042	0	0	0	0	0	4	1	0
Colorado:									
Denver.....	280,911	21	11	6	0	1	76	4	7
Pueblo.....	43,787	3	1	0	0	0	53	0	3
New Mexico:									
Albuquerque.....	21,000	0	0	0	1	1	3	8	0
Utah:									
Salt Lake City.....	130,948	28	3	5	0	0	17	1	8
Nevada:									
Reno.....	12,065	0	0	0	0	0	1	0	0

1 No estimate made.

City reports for week ended April 30, 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			
PACIFIC									
Washington:									
Seattle.....	(¹)	70	5	2	0	-----	67	72	-----
Spokane.....	108, 897	11	2	1	0	0	6	0	-----
Tacoma.....	104, 455	8	1	2	0	2	9	0	1
Oregon:									
Portland.....	282, 383	15	6	10	0	1	248	3	4
California:									
Los Angeles.....	(¹)	57	36	55	8	2	401	14	26
Sacramento.....	72, 260	10	2	4	0	0	6	9	1
San Francisco.....	557, 530	46	20	8	1	2	96	144	0

¹ No estimate made.

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.....	3	3	0	0	0	2	0	0	0	0	28
New Hampshire:											
Concord.....	0	0	0	0	0	1	0	0	0	0	10
Manchester.....	2	0	0	0	0	0	0	0	0	0	17
Vermont:											
Barre.....	1	0	0	0	0	0	0	0	0	0	6
Burlington.....	1	2	0	0	0	1	0	0	0	0	5
Massachusetts:											
Boston.....	61	108	0	0	0	18	1	1	0	17	246
Fall River.....	3	1	0	0	0	10	1	0	0	2	-----
Springfield.....	5	6	0	0	0	1	1	0	0	16	50
Worcester.....	7	12	0	0	0	11	0	0	0	7	49
Rhode Island:											
Pawtucket.....	1	1	0	0	0	1	0	0	0	0	22
Providence.....	9	9	0	0	0	1	1	1	0	2	58
Connecticut:											
Bridgeport.....	9	16	0	0	0	1	0	0	0	0	30
Hartford.....	4	11	0	0	0	0	0	0	0	5	23
New Haven.....	9	6	0	0	0	2	1	0	0	1	47
MIDDLE ATLANTIC											
New York:											
Buffalo.....	18	30	0	0	0	7	0	0	1	9	141
New York.....	262	638	1	0	0	127	10	5	0	86	1, 499
Rochester.....	14	14	0	0	0	3	0	1	1	4	73
Syracuse.....	10	4	0	0	0	0	0	1	0	7	45
New Jersey:											
Camden.....	5	8	0	0	0	1	1	0	0	0	35
Newark.....	24	43	0	0	0	9	0	2	0	42	131
Trenton.....	3	3	0	0	0	3	0	1	0	1	41
Pennsylvania:											
Philadelphia.....	82	142	0	0	0	55	4	1	0	34	555
Pittsburgh.....	28	24	0	0	0	11	1	0	1	8	190
Reading.....	3	1	0	0	0	0	0	0	0	1	33
EAST NORTH CENTRAL											
Ohio:											
Cincinnati.....	15	42	2	6	0	13	1	1	1	8	138
Cleveland.....	35	46	0	0	0	12	1	1	0	32	192
Columbus.....	10	6	2	0	0	5	0	0	0	18	87
Toledo.....	14	6	4	1	0	7	0	0	0	8	80

¹ Pulmonary tuberculosis only.

City reports for week ended April 30, 1927—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
EAST NORTH CENTRAL—CON.											
Indiana:											
Fort Wayne...	4	3	2	0	0	0	0	1	0	5	19
Indianapolis...	10	28	12	36	0	10	0	0	0	20	115
South Bend...	4	6	0	2	0	0	0	0	0	1	1
Terre Haute...	3	4	1	0	0	2	0	0	0	1	15
Illinois:											
Chicago.....	112	113	3	0	0	67	3	2	0	75	760
Peoria.....	3	3	1	0	0	2	0	0	0	1	19
Springfield...	2	3	0	1	0	0	0	0	0	0	26
Michigan:											
Detroit.....	84	87	2	1	0	23	2	3	0	74	338
Flint.....	6	24	1	2	0	1	1	0	0	4	29
Grand Rapids...	7	17	1	1	0	0	0	0	0	4	23
Wisconsin:											
Kenosha.....	3	12	1	0	0	1	0	0	0	3	9
Madison.....	3	0	0	0	0	2	1	0	0	23	13
Milwaukee.....	26	39	2	1	0	0	0	1	0	25	127
Racine.....	4	3	0	0	0	1	1	0	0	12	11
Superior.....	3	1	1	0	0	1	0	0	0	2	10
WEST NORTH CENTRAL											
Minnesota:											
Duluth.....	5	14	0	1	0	0	0	1	0	1	22
Minneapolis...	38	54	8	0	0	3	1	0	0	3	99
St. Paul.....	26	26	4	0	0	2	0	0	0	5	63
Iowa:											
Davenport.....	2	0	3	0	0	0	0	0	0	0	0
Des Moines.....	6	12	2	1	0	1	0	0	0	0	0
Sioux City.....	2	2	1	2	0	0	0	0	0	2	0
Waterloo.....	1	0	1	0	0	0	0	0	0	2	0
Missouri:											
Kansas City...	11	16	1	10	0	9	1	0	0	23	133
St. Joseph.....	2	7	0	1	0	2	0	0	0	1	31
St. Louis.....	33	32	4	1	0	12	1	1	0	42	205
North Dakota:											
Fargo.....	2	4	0	0	0	0	0	0	0	0	16
Grand Forks...	0	5	0	0	0	0	0	0	0	0	0
South Dakota:											
Aberdeen.....	3	0	0	0	0	0	0	0	0	0	0
Sioux Falls...	1	1	1	0	0	0	0	0	0	0	0
Nebraska:											
Lincoln.....	2	1	1	0	0	0	0	0	0	0	13
Omaha.....	3	9	9	4	0	0	0	0	0	1	60
Kansas:											
Topeka.....	3	1	1	0	0	0	0	0	0	11	17
Wichita.....	2	3	2	0	0	2	0	0	0	3	33
SOUTH ATLANTIC											
Delaware:											
Wilmington...	4	13	0	0	0	1	0	0	0	0	34
Maryland:											
Baltimore.....	34	39	1	0	0	17	2	3	0	50	224
Cumberland...	0	2	0	0	0	1	0	0	0	0	14
Frederick.....	1	1	0	0	0	0	0	0	0	0	6
District of Colum- bia:											
Washington...	24	29	1	0	0	14	1	0	0	5	141
Virginia:											
Lynchburg.....	1	0	1	0	0	0	0	0	0	1	12
Norfolk.....	2	3	0	0	0	2	1	0	0	11	0
Richmond.....	3	9	0	0	2	1	0	0	2	2	54
Roanoke.....	1	0	2	5	0	1	0	0	0	1	8
West Virginia:											
Charleston...	1	3	1	1	0	1	0	3	0	7	16
Wheeling.....	2	0	0	0	0	0	0	0	0	2	12
North Carolina:											
Raleigh.....	0	2	1	0	0	0	0	0	0	13	11
Wilmington...	0	0	1	0	0	0	0	0	0	12	12
Winston-Salem	1	0	5	0	0	2	0	0	0	62	20
South Carolina:											
Charleston...	0	0	0	0	0	0	1	0	0	0	21
Columbia.....	0	0	1	0	0	0	1	0	0	16	4
Greenville...	1	0	1	0	0	1	0	0	0	1	6

City reports for week ended April 30, 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		
SOUTH ATLANTIC—continued											
Georgia:											
Atlanta.....	3	4	3	3	0	6	1	1	0	11	74
Brunswick.....	0	0	0	0	0	1	0	0	0	1	3
Savannah.....	1	1	0	1	0	3	0	0	0	0	32
Florida:											
Miami.....	1	0	0	0	0	3	1	0	0	17	28
St. Petersburg.....	0	0	0	0	0	0	0	0	0	10	10
Tampa.....	0	1	0	1	0	3	1	0	0	4	28
EAST SOUTH CENTRAL											
Kentucky:											
Covington.....	1	4	0	0	0	0	1	0	0	0	20
Louisville.....	6	9	1	2	0	4	1	1	0	34	74
Tennessee:											
Memphis.....	4	20	3	8	0	8	1	0	0	8	62
Nashville.....	2	2	1	0	0	5	0	3	0	6	50
Alabama:											
Birmingham.....	2	3	9	3	0	11	1	1	0	8	-----
Mobile.....	0	0	1	0	0	1	0	1	0	0	17
Montgomery.....	1	0	2	0	0	0	0	0	0	10	-----
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith.....	0	0	0	0	-----	-----	0	0	1	8	3
Little Rock.....	0	0	0	0	0	4	0	0	0	0	-----
Louisiana:											
New Orleans.....	5	5	2	0	0	20	2	1	1	7	152
Shreveport.....	0	0	1	0	0	2	1	1	0	0	25
Oklahoma:											
Oklahoma City.....	2	2	4	7	0	1	0	0	0	2	31
Tulsa.....	1	8	2	1	-----	-----	0	0	-----	13	-----
Texas:											
Dallas.....	2	0	3	2	0	2	0	0	1	7	39
Galveston.....	0	0	0	0	0	0	0	0	0	0	12
Houston.....	1	2	1	4	0	5	1	0	0	0	57
San Antonio.....	1	1	0	0	0	11	1	1	0	0	61
MOUNTAIN											
Montana:											
Billings.....	1	2	0	0	0	0	0	0	0	0	3
Great Falls.....	1	7	1	0	0	0	0	0	0	0	8
Helena.....	1	2	0	1	0	0	0	0	0	0	9
Missoula.....	1	3	0	0	0	0	0	0	0	0	6
Idaho:											
Boise.....	1	1	0	0	0	0	0	0	0	0	4
Colorado:											
Denver.....	11	54	2	0	0	8	0	1	0	7	87
Pueblo.....	1	18	0	0	0	0	0	0	0	0	18
New Mexico:											
Albuquerque.....	1	4	0	0	0	1	1	1	0	0	7
Utah:											
Salt Lake City.....	2	19	1	0	0	3	0	0	0	33	40
Nevada:											
Reno.....	0	0	0	0	0	0	0	0	0	0	0
PACIFIC											
Washington:											
Seattle.....	8	9	4	0	-----	-----	1	3	-----	40	-----
Spokane.....	4	12	5	6	-----	-----	0	0	-----	4	-----
Tacoma.....	2	1	3	15	0	0	0	0	0	0	24
Oregon:											
Portland.....	7	13	6	5	0	4	1	0	0	8	76
California:											
Los Angeles.....	20	26	5	0	0	32	1	2	0	25	271
Sacramento.....	2	0	0	4	0	3	0	1	0	0	21
San Francisco.....	13	28	4	0	0	15	1	1	0	18	163

City reports for week ended April 30, 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
NEW ENGLAND									
New Hampshire:									
Manchester.....	0	1	0	0	0	0	0	0	0
Massachusetts:									
Boston.....	1	2	1	0	0	0	0	0	0
Rhode Island:									
Providence.....	1	1	2	0	0	0	0	0	0
MIDDLE ATLANTIC									
New York:									
New York.....	6	3	11	2	0	1	1	4	2
EAST NORTH CENTRAL¹									
Ohio:									
Columbus.....	0	0	0	1	0	0	0	0	0
Illinois:									
Chicago.....	9	3	3	0	1	1	0	1	0
Michigan:									
Detroit.....	0	0	0	1	0	0	0	0	0
Wisconsin:									
Milwaukee.....	7	5	0	0	0	0	0	1	0
WEST NORTH CENTRAL									
Minnesota:									
Duluth.....	0	1	0	0	0	0	0	0	0
Minneapolis.....	0	0	1	2	0	0	0	0	0
St. Paul.....	0	0	0	1	0	0	0	0	0
Missouri:									
Kansas City.....	2	2	0	0	0	0	0	0	0
North Dakota:									
Fargo.....	1	2	0	1	0	0	0	1	0
SOUTH ATLANTIC									
District of Columbia:									
Washington.....	0	1	0	0	0	0	0	0	0
South Carolina:									
Charleston.....	0	0	0	0	1	1	0	0	0
Georgia:									
Atlanta ¹	0	0	0	0	1	0	0	0	0
Savannah.....	0	0	0	0	4	2	0	0	0
Florida:									
Miami.....	0	0	0	0	2	0	0	0	0
WEST SOUTH CENTRAL									
Arkansas:									
Little Rock.....	0	0	0	0	0	1	0	0	0
Louisiana:									
New Orleans.....	0	0	1	0	0	0	0	1	1
Texas:									
Dallas.....	0	0	0	0	6	4	0	0	0
Houston ¹	0	0	0	0	0	1	0		
MOUNTAIN									
Colorado:									
Denver.....	1	0	0	0	0	0	0	0	0
Pueblo.....	0	1	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle.....	1		0		0		0	0	
Spokane.....	1		0		0		0	0	
California:									
Los Angeles.....	2	1	0	0	0	0	0	0	0
Sacramento.....	3	1	0	0	0	0	0	0	0
San Francisco.....	1	0	1	1	0	0	0	0	0

¹ Rabies (human): 1 death at Indianapolis, Ind., 1 case and 1 death at Atlanta, Ga., and 1 case and 1 death at Houston, Tex.

The following table gives the rates per 100,000 population for 101 cities for the five-week period ended April 30, 1927, compared with those for a like period ended May 1, 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 27 to April 30, 1927—Annual rates per 100,000 population, compared with rates for the corresponding period of 1926¹

DIPHTHERIA CASE RATES

	Week ended—									
	Apr. 3, 1926	Apr. 2, 1927	Apr. 10, 1926	Apr. 9, 1927	Apr. 17, 1926	Apr. 16, 1927	Apr. 24, 1926	Apr. 23, 1927	May 1, 1926	Apr. 30, 1927
101 cities.....	126	191	116	202	110	175	118	180	110	171
New England.....	80	137	125	181	47	104	73	135	83	95
Middle Atlantic.....	146	264	125	269	119	271	162	270	114	243
East North Central.....	113	160	88	170	86	136	87	132	98	138
West North Central.....	159	159	204	171	246	109	182	141	204	159
South Atlantic.....	95	157	86	126	89	141	67	136	67	105
East South Central.....	57	61	114	66	47	87	26	31	72	76
West South Central.....	60	180	60	340	30	143	47	126	56	180
Mountain.....	146	108	118	171	191	108	82	189	118	99
Pacific.....	201	170	137	126	134	115	145	157	163	188

MEASLES CASE RATES

101 cities.....	1,693	2,805	1,781	2,864	1,770	2,762	1,792	785	1,708	640
New England.....	1,460	204	1,568	269	1,809	223	1,663	295	1,526	323
Middle Atlantic.....	1,850	128	1,773	159	1,702	173	1,596	146	1,420	221
East North Central.....	1,504	284	1,572	290	1,471	261	1,459	778	1,458	638
West North Central.....	2,428	1,558	3,283	1,304	3,354	1,318	4,148	1,556	4,060	1,229
South Atlantic.....	2,649	1,096	2,630	1,003	2,919	1,317	2,516	1,596	2,507	1,022
East South Central.....	2,875	285	3,020	611	2,772	397	3,434	520	2,875	377
West South Central.....	43	948	236	2,143	133	1,019	163	1,267	159	935
Mountain.....	556	3,452	419	2,796	529	2,086	1,075	1,798	866	1,546
Pacific.....	246	2,767	388	3,058	372	2,212	501	2,107	664	1,532

SCARLET FEVER CASE RATES

101 cities.....	296	439	274	397	307	391	284	363	292	338
New England.....	391	513	318	362	373	423	222	346	281	402
Middle Atlantic.....	210	614	176	595	187	583	201	529	221	448
East North Central.....	331	323	330	272	343	280	288	296	290	282
West North Central.....	789	469	845	435	910	397	899	343	879	334
South Atlantic.....	173	197	145	189	181	159	158	161	216	194
East South Central.....	217	173	165	178	150	219	228	168	171	194
West South Central.....	86	55	116	101	133	60	172	42	146	34
Mountain.....	146	1,214	100	944	173	953	210	935	219	953
Pacific.....	249	340	155	243	338	243	260	209	204	199

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 Madison, Wis., and Norfolk, Va., not included.

⁴ Norfolk, Va., not included.

Summary of weekly reports from cities, March 27 to April 30, 1927—Annual rates per 100,000 population, compared with rates for the corresponding period of 1926—Continued

SMALLPOX CASE RATES

	Week ended—									
	Apr. 3, 1926	Apr. 2, 1927	Apr. 10, 1926	Apr. 9, 1927	Apr. 17, 1926	Apr. 16, 1927	Apr. 24, 1926	Apr. 23, 1927	May 1, 1926	Apr. 30, 1927
101 cities.....	42	23	32	27	26	24	31	33	26	21
New England.....	0	2	0	0	0	0	0	0	0	0
Middle Atlantic.....	0	0	0	0	0	0	0	0	0	0
East North Central.....	17	34	13	37	14	32	22	29	19	33
West North Central.....	40	30	50	42	42	56	44	40	30	38
South Atlantic.....	41	62	67	47	43	27	47	65	28	20
East South Central.....	98	122	88	87	52	97	98	163	98	66
West South Central.....	90	63	133	105	65	88	112	96	146	26
Mountain.....	55	9	27	27	27	27	46	54	36	9
Pacific.....	346	63	137	55	137	26	139	97	102	65

TYPHOID FEVER CASE RATES

101 cities.....	10	8	7	8	7	8	8	7	9	8
New England.....	7	12	9	7	9	9	5	0	5	5
Middle Atlantic.....	8	6	5	6	7	5	8	7	6	5
East North Central.....	13	1	3	5	2	1	1	3	4	6
West North Central.....	8	2	10	2	4	12	6	4	6	4
South Atlantic.....	17	16	6	10	4	13	7	11	19	16
East South Central.....	31	20	10	36	0	36	26	31	21	31
West South Central.....	34	25	17	38	34	17	26	13	17	13
Mountain.....	36	0	18	0	9	9	0	27	18	9
Pacific.....	11	24	13	8	13	18	21	10	27	19

INFLUENZA DEATH RATES

95 cities.....	89	22	74	23	53	22	38	18	33	18
New England.....	103	12	83	7	52	16	40	12	35	7
Middle Atlantic.....	100	21	76	26	59	21	34	20	27	21
East North Central.....	110	14	81	9	67	11	42	11	46	10
West North Central.....	38	4	32	17	23	12	32	21	17	12
South Atlantic.....	59	37	59	41	43	39	30	22	28	29
East South Central.....	98	102	238	71	47	87	103	55	98	36
West South Central.....	102	30	66	52	53	43	62	31	26	47
Mountain.....	27	27	46	36	46	18	46	0	9	9
Pacific.....	21	24	14	17	21	14	4	10	11	21

PNEUMONIA DEATH RATES

95 cities.....	335	163	277	163	241	154	201	159	177	144
New England.....	467	156	358	139	302	156	233	151	210	183
Middle Atlantic.....	433	186	339	199	288	176	240	199	219	169
East North Central.....	322	148	245	132	233	142	192	135	152	128
West North Central.....	160	93	186	137	133	129	137	125	103	50
South Atlantic.....	291	224	236	159	208	188	206	180	178	156
East South Central.....	357	127	429	209	331	132	259	153	233	127
West South Central.....	185	159	159	142	181	78	123	78	150	125
Mountain.....	155	162	137	243	155	153	109	162	118	189
Pacific.....	57	128	148	117	117	117	71	97	74	117

¹ Madison, Wis., not included.

² Madison, Wis., and Norfolk, Va., not included.

³ Norfolk, Va., 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 April 16, 1927.—The following report for the week ended April 16, 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: Basra.....	0	0	0	0	1	0	French Indo-China:						
British India:							Saigon and Cholon..	0	0	16	13	0	0
Karachi.....		0	0	0	1	1	Haiphong.....	0	0		8	0	0
Bombay.....		9		1	69	47	China:						
Calcutta.....		0		127	184	166	Canton.....	0	0	0	0	11	
Rangoon.....		4		1	66	16	Macao.....	0	0	0	0		1
Bassein.....		2		7	0	0	Hong Kong.....	0	0	0	0		7
Madras.....		0		1	9	1	Japan: Hakodate.....	0	0	0	0		1
Tuticorin.....		0		0	4	0	Kwantung: Dairen.....	0	0	0	0		3
Straits Settlements:							Egypt: Alexandria.....	1	0	0	0		1
Singapore.....	1	1	0	0	0	0							
Siam: Bangkok.....	0	0	19	20	2	2							

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

ASIA

Arabia.—Jeddah, Perim, Kamaran, Aden.
Persia.—Mohammerah, Bender-Abbas, Bushire, Lingah.
British India.—Chittagong, Cochin, Vizagapatam, Negapatam.
Portuguese India.—Nova Goa.
Federated Malay States.—Port Swettenham.
Straits Settlements.—Penang.
Sarawak.—Kuching.
British North Borneo.—Sandakan, Jesselton, Kudat, Tawao.
Portuguese Timor.—Dilly.
French Indo-China.—Tourane.
Philippine Islands.—Manila, Iloilo, Jolo, Cebu, Zamboanga.
China.—Amoy, Tientsin, Shanghai.
Formosa.—Keelung, Takao.
Chosen.—Chemulpo, Fusan.
Manchuria.—Yingkow, Antung, Changchun, Harbin, Mukden.
Kwantung.—Port Arthur.
Japan.—Yokohama, Nagasaki, Niigata, Shimonezaki, Moji, Tsuruga, Kobe, Osaka.

AUSTRALASIA AND OCEANIA

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

AUSTRALASIA AND OCEANIA—continued

New Guinea.—Port Moresby.
New Britain Mandated Territory.—Rabaul and Kokopo.
New Zealand.—Auckland, Wellington, Christchurch, Invercargill, Dunedin.
Samoa.—Apia.
New Caledonia.—Nouméa.
Fiji.—Suva.
Hawaii.—Honolulu.
Society Islands.—Papeete.

AFRICA

Egypt.—Port Said, Suez.
Anglo-Egyptian Sudan.—Port Sudan, Suakin.
Eritrea.—Massaua.
French Somaliland.—Djibouti.
British Somaliland.—Berbera.
Italian Somaliland.—Mogadiscio.
Zanzibar.—Zanzibar.
Kenya.—Mombasa.
Tanganyika.—Dar-es-Salaam.
Seychelles.—Victoria.
Portuguese East Africa.—Mozambique, Beira, Lourenço-Marques.
Union of South Africa.—East London, Port Elizabeth, Cape Town, Durban.
Reunion.—Saint Denis.
Mauritius.—Port Louis.
Madagascar.—Majunga, Tamatave, Diégo-Suarez.

Reports had not been received in time for publication from:

Ceylon.—Colombo.

Dutch East Indies.—All ports.

Union of Socialist Soviet Republics.—Vladivostok.

Belated information:

Week ended April 9: *Surabaya*, 1 fatal plague case. Other ports of Dutch East Indies, Colombo, and *Mombasa*, nil.

Movement of infected ships:

Singapore.—The steamship *Kumsang* arrived on April 15, from Hongkong, infected with smallpox.

Cape Town.—The Health Service of the Union of South Africa states on April 19: No further plague case developed on board steamship *Armadale* or ashore. No clue to source of infection discovered.

BRAZIL

Typhoid fever prevalence—Sao Paulo—November 29–December 26, 1926.—Decreased prevalence of typhoid fever has been noted at Sao Paulo, Brazil, over that reported during the previous two years. The total number of cases during the period under report was 55, with 17 deaths, in a total mortality of 1,289 deaths. Population, 846,725. It was stated that a chlorination system for the water supply of the city was in operation.

CANADA

Communicable diseases—Week ended April 30, 1927.—The Canadian Ministry of Health reports cases of certain communicable diseases from six Provinces of Canada for the week ended April 30, 1927, as follows:

Disease	Nova Scotia	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	Total
Influenza.....	12						12
Smallpox.....			7		2	7	16
Typhoid fever.....		115	11	5			131

Communicable diseases—Ontario—April, 1927 (Comparative).—During the month of April, 1927, communicable diseases were reported in the Province of Ontario, Canada, as follows:

Disease	1927		1926		Disease	1927		1926	
	Cases	Deaths	Cases	Deaths		Cases	Deaths	Cases	Deaths
Cerebrospinal meningitis.....	4	1	2		Mumps.....	183		158	
Chancroid.....			2		Pneumonia.....		167		319
Chicken pox.....	623		395		Puerperal fever.....		1		
Diphtheria.....	221	16	122	12	Scarlet fever.....	843	5	526	7
German measles.....	914		361		Septic sore throat.....	8	1		
Goiter.....	5	2			Smallpox.....	44		52	
Gonorrhoea.....	126		78		Tuberculosis.....	141	69	171	105
Influenza.....	60	24		164	Typhoid fever.....	84	4	22	1
Lethargic encephalitis.....	1		1	1	Whooping cough.....	257	1	255	9
Measles.....	1,346	2	1,880	7					

Smallpox.—Smallpox was reported present in 8 localities, the greatest number of cases, viz, 23, being reported at Toronto. At Ottawa 7 cases were reported.

Communicable diseases—Quebec—Weeks ended April 30, and May 7, 1927.—The Bureau of Health of the Province of Quebec reported cases of certain communicable diseases for the weeks ended April 30 and May 7, 1927, as follows:

WEEK ENDED APR. 30

Disease	Cases	Disease	Cases
Chicken pox.....	9	Scarlet fever.....	69
Diphtheria.....	51	Tuberculosis.....	70
German measles.....	34	Typhoid fever.....	115
Influenza.....	2	Whooping cough.....	17
Measles.....	157		

WEEK ENDED MAY 7

Disease	Cases	Disease	Cases
Chicken pox.....	18	Scarlet fever.....	73
Diphtheria.....	34	Tuberculosis.....	53
German measles.....	32	Typhoid fever.....	112
Measles.....	93	Whooping cough.....	19

CUBA

Communicable diseases—Habana—April 1-30, 1927.—During the month of April, 1927, communicable diseases were reported in Habana, Cuba, as follows:

Disease	New cases	Deaths	Remain- ing under treatment Apr. 30, 1927	Disease	New cases	Deaths	Remain- ing under treatment Apr. 30, 1927
Beri-beri.....			2	Malaria ¹	31		30
Chicken pox.....	54		56	Measles.....	50		51
Diphtheria.....	14		7	Paratyphoid fever.....	1	1	4
Filariasis.....	2		1	Scarlet fever.....	7		3
Leprosy.....	1		12	Typhoid fever ¹	24	3	27

¹ Many of these cases from the interior.

ECUADOR

Plague—Guayaquil—February 16-28, 1927—March, 1927.—Plague has been reported at Guayaquil as follows: February 16 to 28, 1927—cases, 13; deaths, 3. March, 1927—cases, 23; deaths, 9.

Plague-infected rats found.—During the period February 16 to 28, 1927, of 11,036 rats taken 22 rats were found infected, and during the month of March, 1927, of 24,357 rats taken 86 were found infected.

HAITI

Typhoid fever—Port au Prince—April 10–30, 1927.—Typhoid fever has been reported at Port au Prince, Haiti, during the period April 10–30, 1927, with two cases reported for the first two weeks of the period and 11 cases with 5 deaths during the week ended April 30. Previous reports from the beginning of the year 1927 show for the week ended January 29, one case, and for the week ended February 26, one fatality from typhoid fever.

PERU

Disease prevalence—La Oroya—January–March, 1927.—Reports received from La Oroya, Peru, for the three months ended March 31, 1927, show parotiditis (mumps) to be epidemic among the native Indian population and smallpox and typhus fever present, with an unreported number of cases. The town is situated in the Andean region of Peru.

Plague—March, 1927.—During the month of March, 1927, 13 cases of plague with 5 deaths were reported in Peru, the occurrence being distributed in the departments of Ancash, Cajamarca, Callao, and Lima. The greatest number of cases, viz, 5, with 4 deaths occurred in the city of Lima.

SENEGAL

Plague—April 1–20, 1927.—During the period April 1–20, 1927, plague was reported in Senegal as follows: April 1–10, 1927—10 cases occurring 150 kilometers from Dakar. April 1–20, 1927—23 cases, with 6 deaths, occurring in the district of Tivaouane, and 14 cases, with 10 deaths, in the district of Thies, both localities being situated in the interior of Senegal.

UNION OF SOUTH AFRICA

Plague—Typhus fever—Cape Province—March 20–26, 1927.—During the week ended March 26, 1927, a fatal case of plague, native, was reported on a farm in Cradock District, Cape Province, Union of South Africa. During the same period fresh outbreaks of typhus fever were reported in Xalanga District, Cape Province.

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 May 20, 1927¹**CHOLERA**

Place	Date	Cases	Deaths	Remarks
India: Rangoon.....	Mar. 27-Apr. 2.....	2	1	Mar. 20-26, 1927: Cases, 56; deaths, 44. Apr. 1, 1926-Mar. 26, 1927: Cases, 8,466; deaths, 5,508.
Siam: Bangkok.....	Mar. 20-26.....	15	12	

PLAGUE

Ceylon: Colombo.....	Mar. 27-Apr. 2.....	4	2	Rats taken, 11,036; found infected, 22. Rats taken, 24,357; found infected, 86.
Ecuador: Guayaquil.....	Feb. 16-28.....	13	3	
Do.....	Mar. 1-31.....	23	9	
Greece: Athens and Piraeus.....	Jan. 1-Mar. 31.....	24	3	March, 1927: Cases, 13; deaths, 5. At Chimbote; in districts. Present at San Juan. In districts. At Huacho.
India: Madras Presidency.....	Mar. 13-19.....	68	28	
Rangoon.....	Mar. 27-Apr. 2.....	3	2	
Iraq: Baghdad.....	Mar. 6-12.....	2		
Peru: Department— Ancash.....	Mar. 1-31.....	3		
Cajamarca— Cajamarca Province.....	do.....			
Callao— Callao.....	do.....	1	1	
Lima— Canete Province.....	do.....	2		
Chancay Province.....	do.....	2		
Lima Province— Lima City.....	do.....	5	4	
Senegal: Dakar.....	Apr. 1-10.....	10		At locality 150 kilometers from Dakar.
Thies.....	Apr. 1-20.....	14	10	Interior districts.
Tivaouane.....	do.....	23	6	Do.
Siam: Bangkok.....	Mar. 20-26.....	1	1	Mar. 20-26, 1927: Cases, 1; deaths, 1. Apr. 1, 1926-Mar. 26, 1927: Cases, 42; deaths, 33.
Union of South Africa: Cape Province— Cradock District.....	do.....	1	1	In native on farm.

SMALLPOX

Algeria: Algiers.....	Apr. 1-10.....	2		Native. Cases, 16. Apr. 24-30, 1927: Cases, 7. April, 1927: Cases, 44. Corresponding period, year 1926: Cases, 55. Apr. 1-30, 1927: Cases, 23. Apr. 24-30, 1927: Cases, 2.
Oran.....	Apr. 11-20.....	9		
Brazil: Rio de Janeiro.....	Apr. 3-16.....	3		
British South Africa: Rhodesia.....	Mar. 19-25.....	1		
Canada: Alberta.....	Apr. 24-30.....			
Calgary.....	Apr. 17-30.....	7		
British Columbia— Vancouver.....	Apr. 18-24.....	2		
Manitoba— Winnipeg.....	May 1-7.....	1		
Ontario: Do.....	Apr. 24-30.....	7		
Toronto.....	do.....	5		
Saskatchewan.....	do.....			

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 May 20, 1927—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
China:				
Anshan.....	Mar. 21-27.....	3	-----	
Antung.....	.....do.....	1	-----	
Hong Kong.....	Mar. 27-Apr. 2.....	10	10	
Manchuria—				
Kai-yuan.....	Mar. 20-27.....	2	-----	
Tientsin.....	Mar. 27-Apr. 2.....	2	-----	
France:				
Paris.....	Apr. 1-10.....	4	1	
Great Britain:				
England and Wales.....	Apr. 17-23.....	358	-----	
Bradford.....	.....do.....	4	-----	
Leeds.....	Apr. 10-16.....	1	-----	In vicinity.
Newcastle-on-Tyne.....	Apr. 10-23.....	2	-----	
Scotland—				
Dundee.....	Apr. 17-23.....	9	-----	
Guatemala:				
Guatemala.....	Mar. 1-31.....	-----	23	
India:				
Karachi.....	Apr. 3-9.....	4	-----	Imported.
Madras.....	.....do.....	10	-----	
Rangoon.....	Mar. 27-Apr. 2.....	48	13	
Iraq:				
Baghdad.....	.....do.....	2	-----	
Basra.....	Mar. 20-26.....	1	-----	
Japan:				
Yokohama.....	Mar. 26-Apr. 1.....	3	-----	
Mexico:				
Manzanillo.....	Apr. 18-25.....	-----	1	
Mexico City.....	Apr. 17-23.....	1	-----	Including municipalities in Federal district.
Portugal:				
Lisbon.....	Apr. 10-23.....	4	-----	
Senegal:				
Gueudel.....	Apr. 11-17.....	1	-----	Village in Rufisque.
Kebener.....	.....do.....	1	-----	
Niger Colony.....	Apr. 1-20.....	3	-----	At two localities.
Tivaouane.....	Apr. 11-17.....	2	-----	
Siam:				
-----				Mar. 20-26, 1927: Cases, 26; deaths, 10.
-----				Apr. 1, 1926-Mar. 26, 1927: Cases, 849; deaths, 316.
Bangkok.....	Mar. 20-26.....	8	4	
Spain:				
Valencia.....	Apr. 17-23.....	1	-----	

TYPHUS FEVER

Algeria:				
Algiers.....	Apr. 1-10.....	8	-----	
Oran.....	Apr. 11-20.....	1	-----	
Chile:				
Iquique.....	Apr. 3-9.....	-----	1	
Valparaiso.....	Apr. 10-16.....	1	1	
Iraq:				
Baghdad.....	Mar. 6-19.....	2	2	
Mexico:				
Mexico City.....	Apr. 3-23.....	22	-----	Including municipalities in the Federal district.
Union of South Africa:				
Cape Province—				
Xalanga district.....	Mar. 20-26.....	-----	-----	Outbreaks.

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

Reports Received from January 1 to May 13, 1927¹

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.
(Hosen)	Sept. 1-Oct. 31	252	159	
French Settlements in India	Aug. 29-Dec. 18	131	97	
Do.	Jan. 2-22	10	7	
India	Oct. 10-Jan. 1			Cases, 20, 298; deaths, 13,507.
Do.	Jan. 2-Feb. 12			Cases, 15,862; deaths, 8,910.
Bombay	Jan. 9-29	2	1	
Calcutta	Oct. 31-Jan. 1	385	313	
Do.	Jan. 2-Mar. 19	601	468	
Madras	Dec. 26-Jan. 1	2	2	
Do.	Jan. 2-Mar. 19	12	9	
Rangoon	Nov. 21-Jan. 1	11	7	
Do.	Jan. 2-Mar. 26	60	51	
Indo-China	July 1-Dec. 31			Cases, 8,508.
Do.	Jan. 1-31	490		
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-Mar. 19			Cases, 506; deaths, 351.
Bangkok	Oct. 31-Jan. 1	16	5	
Do.	Jan. 9-Mar. 19	81	44	
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-Feb. 28	8		
Port Alexander	Feb. 9-15	1		
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	
Mombasa	Feb. 27-Mar. 19	7	7	
Tanganyika Territory	Nov. 21-Dec. 18		12	
Uganda	Sept. 1-Oct. 31	162	152	

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 May 13, 1927—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
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 Tenerife.
Celebes:				
Makassar.....	Dec. 22.....			Outbreak.
Ceylon:				
Colombo.....	Nov. 14-Dec. 11.....	8	1	2 plague rodents.
Do.....	Jan. 2-Mar. 26.....	43	24	13 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:				
Do.....	Jan. 1-Dec. 9.....			Cases, 149.
Alexandria.....	Jan. 1-Mar. 18.....			Cases, 14.
Do.....	Nov. 19-Dec. 2.....	2		
Do.....	Apr. 2-5.....	2	1	
Charkia Province.....	Jan. 5.....	1	1	At Zagazig (Tel el Kebir).
Gharbia Province.....	Jan. 4.....	1	1	
Guerga district.....	Apr. 5.....	1	1	
Kafir el Sheikh.....	Dec. 3-9.....	2		
Marsa Matrah.....	Dec. 23-29.....	10		
Do.....	Jan. 27.....	1		
Port Said.....	Mar. 12-18.....	2	1	
Tanta district.....	Nov. 19-Dec. 20.....	3		
Greece:				
Athens and Piræus.....	Nov. 1-Dec. 31.....	19	5	
Patras.....	Nov. 28-Dec. 4.....		1	
Prævi.....	Nov. 27.....	1	1	Province of Drama-Kevalla.
India:				
Do.....	Oct. 10-Jan. 1.....			Cases, 16,162; deaths, 2,905.
Do.....	Jan. 2-Feb. 19.....			Cases, 9,696; deaths, 7,413.
Bombay.....	Nov. 21-27.....	1	1	
Do.....	Jan. 16-Mar. 26.....	22	10	
Madras.....	Oct. 31-Jan. 1.....	581	324	
Do.....	Jan. 2-Mar. 12.....	897	542	
Rangoon.....	Nov. 14-Dec. 25.....	11	9	
Do.....	Jan. 2-Mar. 26.....	82	48	Rats found plague infected, 12.
Indo-China:				
Do.....	July 1-Dec. 31.....			Cases, 52; deaths, 34.
Do.....	Jan. 1-31.....	12		
Province—				
Cambodia.....	do.....	16	16	
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-Mar. 26.....	244	237	Do.
East Java and Madura.....	Oct. 24-Jan. 1.....	17	17	
Do.....	Jan. 2-Mar. 5.....	18	18	
Madagascar:				
Province—				
Ambositra.....	Dec. 16-31.....	10	10	
Do.....	Jan. 1-Feb. 15.....	46	44	
Anakalava.....	Oct. 16-31.....	1	1	
Antsirabe.....	Dec. 16-21.....	2	2	
Do.....	Jan. 1-Feb. 15.....	54	54	
Diego-Suarez.....	do.....	7	7	
Itasy.....	Oct. 16-Dec. 31.....	39	39	
Do.....	Jan. 1-Feb. 15.....	92	86	
Maevatanana.....	Oct. 16-31.....	10	10	
Majunga.....	do.....	3	1	
Moramanga.....	Oct. 16-Dec. 31.....	92	67	
Do.....	Jan. 1-Feb. 15.....	50	48	
Tamatave.....	Oct. 16-Dec. 31.....	107	60	
Tananarive.....	do.....			Cases, 333; deaths, 467.
Do.....	Jan. 1-Feb. 15.....	352	346	
Town—				
Tamatave.....	Nov. 16-30.....	2		
Tananarive.....	Oct. 16-Dec. 31.....	48	47	
Do.....	Jan. 1-Feb. 15.....	19	18	

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

Reports Received from January 1 to May 13, 1927—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Mauritius:				
Plaines Wilhems	Oct. 1–Nov. 30	3	3	
Pamplemousses	Dec. 1–31	3	3	
Port Louis	Oct. 1–Dec. 31	39	35	
Do	Jan. 1–31	5	3	
Nigeria				
	Aug. 1–Nov. 30	999	902	
Peru				
Do	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	
Russia				
	May 1–June 30	44		
Do	July 1–Sept. 30	64		
Senegal				
	July 1–31	178	162	
Dicourbel	Nov. 20–30	12	1	
Thies	Mar. 28–Apr. 3	2	5	
Tivaouane	Dec. 19–25	6	2	In interior.
Do	Mar. 21–Apr. 3	4	4	Do.
Siam				
	Apr. 1–Jan. 1			Cases, 30; deaths, 22.
Do	Jan. 16–Mar. 19			Cases, 11; deaths, 9.
Bangkok	Feb. 27–Mar. 5	1	1	
Syria:				
Beirut	Nov. 11–Dec. 20	4		
Do	Feb. 1–10	1		
Tunisia				
	Dec. 1–31			Cases, 43.
Do	Jan. 12–26			Cases, 34.
Acheche district	Feb. 11–14	14	14	Pneumonia
Bousse	Jan. 12–26	8		
Djeniana	Feb. 11–14	8		
Kairouan	do.	3		
Mahares	do.	15		
Stax	Oct. 1–Dec. 31	304	128	
Turkey:				
Constantinople	Dec. 15–25	1		
Union of South Africa:				
Cape Province—				
Craddock 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. 6–11	1	1	Do.
Richmond district	Mar. 6–12	3	2	
Orange Free State				
Bloomfontein district	Feb. 27–Mar. 19	3	3	Cases, 12; deaths, 2.
Bothaville district	Dec. 6–18	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 Tammtave, Madagascar.

SMALLPOX

Algeria	Sept. 21–Dec. 31			Cases, 797.
Do	Jan. 1–Feb. 20			Cases, 327.
Algiers	Dec. 11–31	4		
Do	Jan. 1–Mar. 31	12		
Oran	Mar. 21–Apr. 10	22		

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

Reports Received from January 1 to May 13, 1927—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Angola.....	Oct. 1-15.....			Present in Congo district.
Congo.....	Feb. 2-15.....	1		
Cuanza Norte.....	Nov. 1-15.....			Present.
Malange.....	Feb. 2-15.....	2		
Arabia:				
Aden.....	Dec. 12-18.....	1		Imported.
Do.....	Apr. 3-9.....	1		
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, 4,033; deaths, 2,180
Do.....	Jan. 2-Apr. 2.....	74	34	
Sao Paulo.....	Aug. 23-Dec. 5.....	34	18	
British East Africa:				
Kenya—				
Nairobi.....	Dec. 1-31.....	15	5	
Tanganyika Territory.....	Oct. 31-Nov. 20.....	2		
Do.....	Jan. 2-Mar. 5.....	34	21	
Zanzibar.....	Oct. 1-31.....	23	12	
British South Africa:				
Northern Rhodesia.....	Nov. 27-Dec. 3.....			Cases, 200. In natives.
Do.....	Feb. 26-Mar. 18.....	130	4	
Bulgaria.....	Nov. 1-30.....	1		
Canada.....	Dec. 5-Jan. 1.....			Cases, 155.
Do.....	Jan. 2-Apr. 23.....			Cases, 589.
Alberta.....	Dec. 5-Jan. 1.....	132		
Do.....	Jan. 2-Apr. 23.....	230		
Calgary.....	Nov. 28-Dec. 25.....	12		
Do.....	Jan. 2-Apr. 16.....	47	1	
Edmonton.....	Dec. 1-31.....	4		
Do.....	Jan. 1-Mar. 31.....	18		
British Columbia—				
Vancouver.....	Jan. 31-Apr. 17.....	8		
Manitoba.....	Dec. 5-Jan. 1.....	9		
Do.....	Jan. 2-Apr. 23.....	23		
Winnipeg.....	Dec. 19-25.....	1		
Do.....	Jan. 2-Apr. 22.....	9		
New Brunswick.....	Feb. 13-26.....	2		
Ontario.....	Dec. 5-Jan. 1.....	96		
Do.....	Jan. 2-Apr. 23.....	282		
Kingston.....	Jan. 1-Feb. 19.....	3		
Ottawa.....	Dec. 12-31.....	5		
Do.....	Jan. 9-Apr. 23.....	9		
Toronto.....	Dec. 14-25.....	14		
Do.....	Jan. 1-Apr. 23.....	88	1	
Saskatchewan.....	Dec. 5-Jan. 1.....	18		
Do.....	Jan. 2-Apr. 23.....	55		
Regina.....	Jan. 16-22.....	1		
Chile:				
Concepcion.....	Dec. 26-Jan. 1.....		5	
Iquique.....	Mar. 1-15.....	2		
China:				
Amoy.....	Jan. 1-Mar. 26.....	8		
Canton.....	Nov. 1-Dec. 31.....	6		
Chefoo.....	Jan. 23-Mar. 20.....			Present.
Chungking.....	Nov. 7-Dec. 25.....			Do.
Do.....	Jan. 2-Mar. 12.....			Do.
Foochow.....	Nov. 7-Dec. 25.....			Do.
Do.....	Feb. 27-Mar. 19.....			Do.
Hankow.....	Nov. 6-30.....			Do.
Hong Kong.....	Jan. 23-Mar. 26.....	88	50	
Manchuria—				
Dairen.....	Feb. 20-Mar. 6.....	6		
Harbin.....	Dec. 16-31.....	3		
Do.....	Feb. 7-13.....	1		
Kai-Yuan.....	Mar. 20-26.....	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-Mar. 26.....	1	2	
Swatow.....	Nov. 21-27.....			Do.
Tientsin.....	Jan. 16-Mar. 26.....	23		

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

Reports Received from January 1 to May 13, 1927—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Chosen	Aug. 1-Nov. 30	53	19	
Do	Jan. 21-Feb. 20	7	1	
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-Mar. 31	20	3	
French Settlements in India	Aug. 29-Jan. 1	127	127	
Do	Jan. 2-22	24	24	
French Sudan:				
Kita	Mar. 28-Apr. 3			Present.
Germany:				
Stuttgart	Nov. 28-Dec. 4	7		
Gold Coast	Aug. 1-Nov. 30	59	14	
Great Britain:				
England and Wales	Nov. 14-Jan. 1			Cases, 2,262.
Do	Jan. 2-Apr. 16			Cases, 5,850
Birmingham	Mar. 13-19	5		
Bradford	Jan. 9-22	2		
Cardiff	Feb. 13-19	1		
Leeds	Mar. 27-Apr. 2	1		
London	Reported Apr. 28	6		
Monmouthshire	Feb. 25	22		
Newcastle-on-Tyne	Dec. 5-13	2		
Do	Jan. 2-Apr. 9	19		
Normanton	Dec. 30	1		9 miles from Leeds.
Sheffield	Nov. 28-Jan. 1	60		
Do	Jan. 2-Apr. 2	543	1	
Wakefield	Jan. 30-Feb. 2	2		
Scotland				
Dundee	Mar. 31-Apr. 16	88		
Greece	Nov. 1-Dec. 31	25		
Athens	Dec. 1-31	14	2	
Do	Mar. 1-31	9		Including Piræus.
Guatemala:				
Guatemala City	Nov. 1-Dec. 31		15	
Do	Jan. 1-Feb. 28		51	
India:				
Do	Oct. 10-Jan. 1			Cases, 22,946; deaths, 6,006.
Do	Jan. 2-Feb. 19			Cases, 31,471; deaths, 7,645.
Bombay	Nov. 7-Jan. 1	37	20	
Do	Jan. 2-Mar. 26	464	204	
Calcutta	Oct. 31-Jan. 1	449	311	
Do	Jan. 2-Mar. 19	1,876	1,372	
Karachi	Dec. 19-25	1	1	
Do	Jan. 2-Apr. 2	38	25	
Madras	Nov. 21-Jan. 1	32	2	
Do	Jan. 2-Apr. 2	284	11	
Rangoon	Nov. 28-Jan. 1	2	2	
Do	Jan. 2-Mar. 26	261	58	
Indo-China:				
Saigon	Dec. 26-Jan. 1	3		
Do	Feb. 6-12	1		
Iraq:				
Baghdad	Oct. 31-Dec. 4	7	4	
Do	Jan. 23-Mar. 5	5	1	
Basra	Nov. 7-13	1	1	
Italy	Aug. 29-Jan. 1	28		
Do	Jan. 2-15	2		
Genoa	Dec. 30-31	1		
Do	Jan. 1-10	2		
Jamaica	Nov. 26-Jan. 1	37		Reported as alastrim.
Do	Jan. 2-Apr. 2	105		Do.
Japan	Oct. 24-Jan. 1	27		
Do	Jan. 2-9	28		
Kobe	Nov. 14-20	1		
Do	Jan. 23-Apr. 2	3		
Yokohama	Nov. 27-Dec. 3	2		
Java:				
Batavia	do	2		Province.
Do	Mar. 13-19	1		
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		

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

Reports Received from January 1 to May 13, 1927—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
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	
Matatlan.....	Feb. 14-Apr. 17.....		3	
Mexico City.....	Nov. 23-Dec. 25.....	6		Including municipalities in Federal District.
Do.....	Dec. 26-Mar. 26.....	6		Do.
Nuevo Leon State—				
Cerraivo.....	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-Apr. 9.....		2	
San Luis Potosi.....	Nov. 12-Dec. 18.....		3	
Do.....	Jan. 9-Apr. 9.....		27	
Tampico.....	Jan. 21-31.....	1		
Torrecon.....	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-Dec. 31.....	165	40	
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.
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-Apr. 2.....	33		
Rumania.....	Jan. 1-Sept. 30.....	7	1	
Russia.....	May 1-June 30.....	705		
Do.....	July 1-Sept. 30.....	884		
Senegal:				
Dakar.....	Jan. 9-Apr. 3.....	4		
Ouakam.....	Mar. 20-27.....	4		Vicinity of Dakar.
Siam.....	Apr.-Jan. 1.....			Cases, 711; deaths, 265.
Do.....	Jan. 2-Mar. 5.....			Cases, 64; deaths, 30.
Bangkok.....	Oct. 31-Jan. 1.....	28	10	
Do.....	Jan. 2-Mar. 5.....	34	21	
Sierra Leone:				
Makeni.....	Feb. 22-28.....	3		
Nanowa.....	Dec. 1-15.....	1		Pendembu district.
Spain.....	July 1-Sept. 30.....		9	
Valencia.....	Feb. 8-Apr. 2.....	9		
Sumatra:				
Medan.....	Feb. 20-26.....	1		
Straits Settlements:				
Singapore.....	Oct. 31-Jan. 1.....	12	2	
Do.....	Jan. 2-Feb. 26.....	4	3	
Tunisia.....	Oct. 1-Dec. 31.....		9	
Do.....	Jan. 1-Feb. 20.....	18		
Tunis.....	Jan. 1-Mar. 10.....	3		
Turkey:				
Constantinople.....	Feb. 1-7.....		1	
Union of South Africa:				
Cape Provinces—				
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		

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

Reports Received from January 1 to May 13, 1927—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
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-Feb. 20.....			Cases, 84; deaths, 7.	
Algiers.....	Feb. 1-Mar. 31.....	38			
Oran.....	Mar. 21-31.....	7			
Angola:					
Benguela district.....	Feb. 16-28.....	1			
Argentina:					
Rosario.....	Dec. 1-31.....		1		
Do.....	Jan. 25-31.....		5		
Bulgaria.....	July 1-Dec. 31.....	39	3		
Do.....	Jan. 1-31.....	7	3		
Chile.....	Sept. 15-Nov. 15.....	39	4		
Chilian.....	Jan. 1-31.....	4	3		
Concepcion.....	Sept. 15-Nov. 15.....	1			
Do.....	Jan. 23-29.....		1		
Lebu.....	Sept. 15-Nov. 15.....	6	2		
Linares.....	do.....	2			
Los Andes.....	do.....	8			
Santiago.....	Sept. 15-Dec. 31.....	25	2		
Do.....	Feb. 1-28.....	3			
Valparaiso.....	Sept. 15-Dec. 25.....	10			
Do.....	Jan. 2-Mar. 19.....	5	1		
China:					
Antung.....	Nov. 22-Dec. 5.....	4		Present.	
Chefoo.....	Oct. 24-Nov. 6.....				Do.
Chungking.....	Dec. 25-31.....				Do.
Do.....	Feb. 27-Mar. 12.....				
Chosen.....	Aug. 4-Dec. 31.....	54	5		
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-Apr. 7.....	5	2		
Cairo.....	Oct. 29-Nov. 4.....	1	1		
Estonia.....	Dec. 1-31.....	1			
Do.....	Jan. 1-Feb. 28.....	13			
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-Mar. 31.....	17	3		
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—				Suspect.	
Tulla district.....	Jan. 9-15.....	1			
Donegal County—				Rural district.	
Litterkenny.....	Mar. 27-Apr. 2.....	5			
Milford.....	do.....	3			
Italy.....	Aug. 29-Sept. 23.....	3			
Japan.....	Jan. 2-29.....			Cases, 2.	
Tokyo prefecture.....	Dec. 5-25.....	9			
Tokyo City.....	do.....	5	1		
Latvia.....	Jan. 1-31.....	2			
Lithuania.....	Sept. 1-Dec. 31.....	41	4		
Do.....	Jan. 1-31.....	24			

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

Reports Received from January 1 to May 13, 1927—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Mexico.....	July 1-Nov. 30.....	.....	.....	Deaths, 576.
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-Apr. 2.....	74	.....	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.....	6	.....
Do.....	Dec. 28-Feb. 7.....	7	.....
Jaffa.....	Nov. 23-Dec. 27.....	7	.....
Do.....	Jan. 11-Feb. 21.....	3	.....
Majdal.....	Dec. 28-Jan. 3.....	1	.....
Do.....	Apr. 5-11.....	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.....	Year, 1926.....	.....	9	District.
Lima.....	Jan. 1-31.....	.....	1	
Poland.....	Oct. 11-Dec. 25.....	.....	.....	Cases, 341; deaths, 27.
Do.....	Jan. 1-Mar. 5.....	.....	.....	Cases, 542; deaths, 55.
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	
Syria:				
Aleppo.....	Mar. 13-19.....	1	.....
Tunisia.....	Oct. 1-Dec. 27.....	30	.....
Do.....	Jan. 1-Feb. 20.....	72	.....
Tunis.....	Jan. 21-Mar. 31.....	4	.....
Do.....	Reported Apr. 13.....	3	.....
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-Feb. 28.....	51	4	
Do.....	Mar. 13-19.....	.....	.....	Outbreaks.
Clydesdale.....	Mar. 6-12.....	.....	.....	Do.
East London.....	Nov. 21-27.....	1	.....	Native. Imported.
Port St. Johns district.....	Dec. 5-11.....	.....	.....	Outbreaks. On farm.
Natal.....	Oct. 1-31.....	1	.....
Do.....	Jan. 1-31.....	6	.....
Orange Free State.....	Oct. 1-Dec. 31.....	31	2	
Do.....	Jan. 1-Feb. 28.....	17	3	
Do.....	Mar. 13-19.....	.....	.....	Outbreaks.
Transvaal.....	Oct. 1-31.....	1	.....
Do.....	Jan. 1-31.....	1	.....	Native.
Yugoslavia.....	Nov. 1-Dec. 31.....	30	2	
Do.....	Jan. 1-Mar. 31.....	74	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.
Guineo.....	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	.....