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AN ESTIMATE OF THE MONETARY VALUE TO INDUSTRY OF PLANT MEDICAL AND SAFETY SERVICES

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In an article on sickness among employees from an employer's viewpoint, Edward A. Filene[1] shows the importance of finding out how much sickness there is in an organization, and then deciding what can be done about it. If an organization does more than it can afford to do for its employees, he points out, some other organization which does not do so much will undersell it, and presently there will be no business and no resources with which to do anything. It is therefore necessary for a company to confine itself to some course which will be good for the business and by which it can continue to prosper. He states also that a lot of life-saving is involved in a matter-of-fact approach to health and accident problems in industry. The most notable advances were made in the safety movement, he states, not by humanitarian agitation, but by the business discovery that safety devices were cheaper in the long run than accidents.

In an endeavor to ascertain how much money an industrial organization can afford to spend for the prevention of disability from sickness and accidents and for the treatment of minor illnesses and injuries among its employees, the trend in occupational accident rates in this country during recent years was reviewed as well as the rates of disabling sickness among the employees of a few corporations which maintain morbidity records. An important item in calculating profitable expenditure for health and accident protection is the extent of reduction in disability frequency and time-lost rates which may be achieved through medical and engineering control of industrial health and accident problems.

TREND OF INDUSTRIAL ACCIDENT RATES

In the iron and steel industry a steady decrease has occurred in the frequency of occupational accidents during the 26 years for which the record is available (1907–32).[2]

Five-year moving averages show no increases in frequency throughout this period. The average rate for the 5 years 1907–11 was 69.2 accidents per million hours' exposure; during the 5 years 1928–32 the average rate was 21.1, a decrease of 70 percent. During this

[1] Filene, Edward A.: How I got that way. The Survey Graphic, Vol. 23, No. 12, December 1934.

[2] Accident experience in the iron and steel industry to the end of 1932. Monthly Labor Review, Bureau of Labor Statistics, U. S. Department of Labor, Vol. 37, No. 3, September 1933.

period the accident severity rate (time loss) was reduced by more than 50 percent. That accident frequency in the steel industry has not yet reached stabilization approaching irreducible minimum rates is indicated by the fact that the rate of decrease in recent years has not become markedly less than in the earliest years of record, i. e., 20 to 25 years ago. For the 5 years 1928–32 the frequency rate of accidents in the steel industry was 16.0 percent below the rate for the period 1924 to 1928. For 1911 to 1915 the rate was 20.8 percent below that for 1907–11, although the general level of accident frequency was about three times as great during the period 1907–15 as in recent years.

That irreducible rates have not yet been reached is further substantiated by the finding that the frequency of accidents was only 8.1 per million hours' exposure in 1932 in a group of companies in the industry which followed the best practices in efforts to reduce occupational injuries, as against 18.1 accidents per million hours' exposure for the industry as a whole.

Similar results are shown by other industrial accident statistics, especially those published by the National Safety Council, but the experience of the steel industry suffices for a brief review of accomplishment in accident prevention and for indications that the rates may be reduced still further.

SAVINGS TO THE EMPLOYER FROM REDUCTION IN ACCIDENTS

The answer to the question concerning the sum an employer can afford to spend for more intensive safety work depends to a considerable extent on the number of accidents which would be prevented by an enlarged industrial safety program. In 1931, after years of intensive accident-prevention work, industrial injuries among employees of the Edison Electric Illuminating Co., of Boston, occurred at the rate of 16.3 cases causing disability for 1 full day or longer per 1,000 employees. Two years later (1933) the rate was 14.1, a decrease of 13.5 percent. Obviously this is an isolated example, but it checks so well with the accident experience in the steel industry and with the results in other industries that a reduction of 10 to 15 percent within a 2- or 3-year period seems to be an attainable goal for a safety organization competently manned. For the purpose of computing savings to the employer, a reduction of 12½ percent in the frequency of compensable accidents will be assumed. The computations are based on compensable accidents, because their cost has been more accurately ascertained than that of noncompensable accidents. A decrease in the frequency of compensable injuries may be expected when the frequency of *all* occupational accidents causing disability for 1 day or longer is appreciably reduced.[3]

[3] *Cf.* Trend of disabling sickness among employees of a public utility. Reprint No. 1239 from the Public Health Reports of July 27, 1928, table 6.

The cost of industrial accidents has been studied in considerable detail by engineers of the Travelers Insurance Co. They estimated that the indirect or hidden cost of industrial accidents averages about *four times* the cost of compensation and medical services.[4] In other words, compensation and medical payments constitute only one-fifth of the total employer accident cost. This estimate is based upon research covering approximately 10,000 cases taken at random from claim files. Heinrich[5] states that its accuracy has been demonstrated by application to scores of specific plants.

From data available at the United States Bureau of Labor Statistics, it is estimated that the total amount of compensation paid to injured workers is about $240,000,000 per year An additional $72,000,000 is paid for hospital treatment and medical aid. This constitutes a total of $312,000,000, incurred on account of approximately 2,107,000 injuries among an estimated 20,000,000 workers.[6] From these data the average direct cost under compensation is estimated to be about $148 per compensable injury. To this sum, Heinrich states, there should be added certain legal and administrative costs, including such items as services of claim investigators, taxes and other overhead expense, and miscellaneous incidentals. These costs are usually included in the compensation-insurance premium paid by the employer to his insurance carrier. In industrial concerns which are self-insurers, similar costs must be met, as such companies are obliged to set up clerical procedure, employ legal talent, make their own investigations, and disburse compensation payments. The total direct cost of the average compensable injury is thus increased to $246. This sum, however, was found to represent only one-fifth of the cost to the employer.[7] Total cost to the employer is estimated at $1,230 per compensable injury. When this figure is multiplied by the estimated annual total of 2,107,000 com-

[4] Heinrich, H. W.: Cost of industrial accidents to the State, the employer, and the man. Monthly Labor Review, Bureau of Labor Statistics, U. S. Department of Labor, vol. 31, no. 5, November 1930.

[5] Ibid., p. 73.

[6] For the number of persons covered by workmen's compensation laws, no reliable estimate is available. The 20,000,000 quoted above is probably an overstatement, which would underestimate rather than overestimate the employer's cost per 1,000 workers.

[7] The indirect or hidden costs to the employer studied by the Travelers Insurance Co. included such factors as cost of lost time of injured employee; cost of time lost by other employees who stopped work out of curiosity, out of sympathy, to assist the injured employee, or for other reasons; cost of time lost by foremen, supervisors, or other executives to assist injured employee, to investigate the cause of the accident, making arrangements for a substitute to take the place of the injured employee; selecting, training, or breaking in a new employee to replace the injured worker; preparing State accident reports, or attending hearings before industrial commissioners; cost of time spent on the case by first-aid attendant and hospital department staff when this time is not compensated by insurance; cost due to injury to the machine, tools, or other property, or to the spoilage of material; cost due to interference with production, failure to fill orders on time, loss of bonuses, payment of forfeits, and other similar causes; cost under employee welfare and benefit systems; cost in continuing the wages of the injured employee in full, after his return, even though the services of the employee who is not fully recovered may for a time be worth only about half of their normal value; cost due to the loss of profit on the injured employee's productivity and on idle machines; cost of subsequent injuries that occur in consequence of the excitement or weakened morale due to the original accident; overhead cost—the expense of light, heat, rent, and certain other items—which continues while the injured employee is a nonproducer.

pensable injuries, the cost is found to exceed 2½ billion dollars per year. On the assumption that there are 20 million persons in the United States covered by workmen's compensation laws, the cost of compensable accidents to the employer thus becomes approximately $125,000 per year per 1,000 employees on the pay roll. A 12½ percent reduction in the frequency of these injuries would represent an annual saving to the employer of about $15,600 per 1,000 persons on the pay roll.

This figure is applicable, however, only to those establishments having an accident rate which is about the same as the average for all industries functioning under workmens' compensation. What estimate should be used for the many establishments having an accident experience more favorable than this average? For such establishments as a group it seems reasonable to assume a reduction of one-half as much as for the plants included in the data of the Bureau of Labor Statistics previously quoted. This would mean a decrease of six to seven compensable accidents a year per 1,000 employees. Basing the computation on a reduction of seven compensable accidents a year per 1,000 workers, one finds that the saving to the employer at $1,230 per compensable injury is about $8,600 annually per 1,000 on the pay roll. If the rate of compensable accidents is already so low that a further reduction of seven per year per 1,000 employees appears overoptimistic, the equivalent of the $8,600 saving mentioned above might be obtained by the prevention of four compensable accidents, for example, at a cost reduction of $4,900, with the remaining $3,700 saved by the prevention of a relatively small number of noncompensable injuries and no-injury accidents which destroy raw material or damage tools and machinery. In any event, the estimated cost reduction of $8,600 annually per 1,000 workers appears as a reasonable credit to place against the debit for services and equipment necessary for greater control of occupational accident hazards.

In the example cited, the savings indicated are not predicated on a reduction in the rate each year; instead, it is merely assumed that the specified decrease in accident frequency would be made within a 2- or 3-year period, and that the lower rate would be maintained thereafter. It is the general experience, however, that well-organized safety work has resulted in almost continuously declining accident rates, exemplified in the 5-year moving averages mentioned in the comment on accident frequency in the iron and steel industry. Such a trend obviously would increase materially the savings estimated above.

TREND IN SICKNESS TIME-LOST RATES

The records of time lost on account of sickness and nonindustrial injuries show no such spectacular decreases as those achieved in the industrial accident field. The sickness problem obviously is more

difficult on account of the many nonindustrial factors involved. Nevertheless, among the employees of certain companies the trend in sickness time-lost rates has been definitely downward in recent years. Three-year moving averages of the annual number of days of disability from sickness and nonindustrial accidents per man on the factory pay roll of a large rubber company in New England show no increases in the rate (with one very minor exception) during the decade ending December 31, 1930. Also among the women on the factory pay roll of this company the time lost from work on account of sickness decreased during the same period, although there was greater irregularity in the downward movement of their rates. In a public utility in Massachusetts employing about 3,000 persons there has been no appreciable decrease in sickness time-lost rates since the company's medical department was established in 1913, but the mortality rate has declined more rapidly than among persons at the same ages in the general population of the State. Comparing the mortality in 1925–29 with 1913–24, one finds that the rate of death among male employees of the company between the ages of 15 and 65 decreased approximately 14 percent more than among males at these ages in the State at large. If the period 1925–29 is compared with the 5 preceding years, i. e., 1920–24, it is found that the decrease in the death rate among males on the company's pay roll exceeded that in Massachusetts as a whole by about 22 percent. In another public utility farther south on the Atlantic seaboard, the number of calendar days of disability from sickness and nonindustrial accidents averaged 5.19 days per year per person during the 2 years ending December 31, 1931; during the 2 years ending December 31, 1934, the annual rate was 4.55, or a decrease of 0.64 day per year per person on the pay roll.

From these results it appears that a decrease of at least two-thirds of a day of disability per annum per person on the pay roll or the equivalent of such a saving through reduced mortality may be obtained within a few years by competent industrial medical service.

An essential requirement for such accomplishment is a personnel trained and experienced in dealing effectively with health problems; no permanent betterment in morbidity and mortality rates can be anticipated if little thought or time is devoted to the preventive aspects of industrial medicine.

Fortunately, the sickness time-lost rate may be reduced without preventing a single case of illness. A number of companies attack the problem by attempting, first, to get an accurate diagnosis of an employee's illness, and then see to it that the most appropriate treatment is instituted as soon as possible. Opportunities for reducing the duration of illness have been found to be plentiful, especially among those workers who do not know the most capable physicians in the

different specialties, or among those who drift into the hands of charlatans and quacks, or who believe in patent-medicine panaceas, or pursue worthless self-medication. Another important saving in time results from the removal of the economic barrier between patient and physician. An employee usually feels that he cannot afford to consult a physician every time he has (or what appears to him as) a minor illness. When he can consult a doctor without having to pay for each visit, an employee is more likely to seek medical advice before an actual break-down takes place, thus avoiding a long lay-off that would be necessary if he had delayed until the disease had got out of hand. If consulted in time, a physician may be able to prevent an extended illness and premature death, especially if the disease is of slow development, as, for example, tuberculosis, cancer, or silicosis; if he is not consulted in time, the physician may follow the best medical procedure known and still be unable to restore the patient to health. Such cases are cited merely to illustrate the point that economic losses due to disease may be reduced even though illnesses may not actually be prevented; other opportunities of this sort will readily occur to those engaged in industrial medical work.

It is not the intention to imply that plant medical or safety services are profitable only when disability rates can be reduced. The total cost of a plant medical department may be less than the professional value of the medical service which a company is obligated to render by law or for its protection under the compensation laws. As an example, the cost of treatments given by the medical staff of an oil company for industrial injuries occurring among approximately 8,000 men employed in its refineries in one community was found to be considerably less than the cost of such services based on the average medical fees in the community. When two medical activities were considered on this basis, i. e., the treatment of industrial injuries and the physical examination of applicants for employment, a saving of 60 percent was indicated.[8]

SAVINGS TO THE EMPLOYER FROM REDUCTION IN SICKNESS

It is unfortunate that we do not know the cost to the employer of sickness and ill health among his employees. Insofar as the writer is aware, no detailed study has been made of the indirect or hidden costs of sickness and nonindustrial accidents. Some of the factors which have been included in the study of industrial accidents obviously apply also to sickness. In many instances the loss due to illness may be greater than that from industrial injuries, because the amount of absence from work occasioned by sickness is usually much more than the absenteeism caused by industrial accidents, especially

[8] Schoenleber, A. W.: How industrial medicine aids in management. Personnel Journal, vol. 14, nos. 7 and 8, January–February 1936, p. 298.

among women, whose lost time from sickness in certain companies has been found to be as much as 40 times the number of days lost from work on account of industrial accidents.

Among the items in the bill for sickness and nonindustrial injuries are the cost of time lost by other employees who stop work to assist or care for disabled fellow workers; time of foremen and supervisors in making arrangements for substitutes; selecting, training, or breaking in new workers to replace the incapacitated; cost of interference with production, failure to fill orders on time, loss of bonuses, or payment of forfeits; cost of continuing the wages of sick employees in full both before and after the period of disability, for their services may be worth only a part of their normal value when they are coming down with disease (if it is not characterized by sudden onset), or return to work when not yet fully recovered. Almost all industrial processes are probably slowed up at one time or another by the illnesses of managers, key men, or skilled workers. Also, a correlation has been found between the incidence of accidents and the physical condition of the worker. Persons in ill health appear to be prone to accident, as shown by the finding that those who have the most accidents are, on the whole, those who pay the most visits to the medical department for minor illnesses.[9]

In the absence of a detailed study of these costs, reliable estimates obviously cannot be presented. It may be assumed, however, that the cost to the employer is at least 1½ times the amount of the daily wage when experienced employees are incapacitated by sickness. If the average wage is $4 per day, a reduction in the annual sickness time-lost rate of two-thirds of a day per employee would save the employer $4,000 per year per 1,000 persons on the pay roll. Even with no decrease in the sickness time-lost rate, this amount could be saved by the prevention of premature mortality.[10]

This figure grossly underestimates potential savings achievable through health maintenance of key men, and the increased efficiency of the rank and file due to better health; but until the costs of illness are ascertained in more detail, this figure may suffice for calculating minimum expected savings.

Thus from a modest reduction of sickness and accident rates the savings to the employer may be expected to be at least $12,600 per annum per 1,000 employees. It appears, therefore, that an employer can afford to spend at least $12,000 per year per 1,000 employees for preventing accidents and conserving health when his industrial

[9] Newbold, E. M.: A contribution to the study of the human factor in the causation of accidents. Industrial Fatigue Research Board, Medical Research Council, Report No. 34. His Majesty's Stationery Office, London, 1926, p. 61.

[10] As an example of the value of industrial medical service in preventing premature mortality, an official of a corporation in New England stated verbally to the writer that his company's medical department had more than earned its entire cost over a period of several years by capable management of one emergency in which the life of an exceptiona'ly able and experienced executive was saved.

accident rate is considerably below the average for industries covered by workmen's compensation law, and when there are a negligible number of illnesses among his workmen attributable to occupational health hazards. When industrial accidents or disabling illnesses occur at average or above average frequency, an expenditure larger than that indicated above for health and safety work obviously is warranted.

ADDITIONAL SAVINGS IN ESTABLISHMENTS HAVING HEALTH HAZARDS OF OCCUPATIONAL ORIGIN

In addition to the minimum savings previously estimated, engineering and medical services may decrease operating costs through control or elimination of hazards to health due to the nature of the work or the working environment. The money value of such work may be ascertained for different establishments in accordance with the problems confronting them. In the States which have adopted legal measures providing for compensation for occupational diseases as well as for industrial injuries, the cost of the compensation insurance premium alone, without regard to the hidden or indirect costs of occupational disease, may justify from an economic standpoint the capital required to eliminate existing health hazards. In a relatively small establishment in Massachusetts in which the workers were exposed to silica dust, the management installed an efficient system of exhaust ventilation to remove the dust at its point of origin. This procedure, which virtually eliminated the hazard, enabled the company to cease paying an annual $50,000 compensation insurance premium while expenses of only $5,000 to $10,000 per year were incurred for engineering and medical check-up and for self-insurance. In States having no compensation laws, the costs of pending and potential suits under common law must be reckoned. For silicosis alone, pending damage claims are now estimated to be several hundred million dollars.

To these costs should be added the hidden expense due to physical impairment of the workers having diseases of occupation. In a recently published study of the health of anthracite coal miners, the United States Public Health Service found, from analysis of data relative to exercise tests and the extent of pathology revealed by physical examinations, that 12 to 64 percent of the men in the groups exposed to the higher concentrations of dust showed decreased capacity for work, as compared with 10 percent of the men at approximately the same ages who were not appreciably exposed to dust.[11] Although the output of employees having decreased capacity for work due to occupational disease has not been ascertained in com-

[11] Anthraco-silicosis among hard coal miners. Public Health Bulletin No. 221, Government Printing Office, Washington, 1936. Pp. 53 and 90-92.

parison with the work performed by able-bodied men, it seems apparent that the physical impairments of occupational origin constitute an item in operating costs which could be reduced by engineering and medical control of industrial hazards.

Savings of this sort may be regarded by some as limited to a few industries having well-recognized hazards to health. Such opinion may be due in part to the fact that vital statistics have not been developed enough to afford information concerning the effect of many occupations. Those studies which have been made in this country and abroad, however, indicate that the full effect of occupation on health has not been recognized even by many physicians and health workers. Clerical work, for example, is usually considered as fairly innocuous, as evidenced by the fact that industrial physicians rarely undertake studies of the health of clerical groups; yet, as far back as 1700, Bernardini Ramazzini called attention to a special hazard among clerks from sitting all day at desks. In 1934 the National Tuberculosis Association published a study of death rates by occupation based on data of the United States Census Bureau covering 10 selected States for the year 1930 which, it is interesting to note, in view of Ramazzini's observations, revealed a standardized mortality rate of 7.40 deaths per 1,000 male clerical employees at ages 15 to 65 as compared with 6.21 deaths per 1,000 male agricultural workers.[12] The odds against this difference being due solely to chance were found on computation to be literally millions to one. Although other influences, such as the factor of selection, for example, may be involved in the higher death rate of clerical than of agricultural workers, the difference in the rates is wide enough to warrant study and appropriate action to minimize the hazards of this as well as other occupational groups too frequently considered as being outside the pale of disease-preventive work in industry.

EXTENT OF DEVELOPMENT OF INDUSTRIAL HYGIENE PROGRAMS

A considerable amount of excellent work in the field of industrial hygiene has been carried on over the past 15 or 20 years, and a number of companies have developed far-reaching programs of benefit not only to their employees but also to their employees' families and to the communities in which they live. Programs of this nature, however, serve only a small minority of the industrial population, judging from the facts revealed in a recent survey of a typical industrial area in the United States.[13] About 5 percent of the 615 plants surveyed, and approximately 20 percent of the 28,686 workers employed in

[12] Whitney, Jessamine S.: Death rates by occupation. National Tuberculosis Association, N. Y., 1934, p. 17.

[13] Bloomfield, J. J., Johnson, W. S., and Sayers, R. R.: The potential problems of industrial hygiene in a typical industrial area in the United States. Public Health Bulletin No. 216. Government Printing Office, Washington, December 1934.

these factories were provided with the services of a safety director either on a part-time or full-time basis. As indicative of benefits to be derived from safety work administered by a director, analysis of the data collected showed that the percentage of persons exposed to unguarded moving machinery was less in practically all the plants having a safety director than in those not having one. Approximately 17 percent of the workers were provided with industrial medical service on a part-time basis, and only 15 percent had the services of a full-time physician. Industrial nursing service was available to 34 percent of the employees in the area surveyed.

Although 83 percent of the employees worked without benefit of industrial medical advice and care, 39 materials and conditions potentially hazardous on account of possible systemic poisoning were revealed by the survey. Inorganic dusts, carbon monoxide, and lead compounds were found to be the most important from the standpoint of the number of persons exposed. If one may regard these findings as typical, or at least as not erring grossly, it is apparent that the possibilities for saving dollars, quite aside from the humanitarian aspects of the problem, have scarcely been touched.

AMOUNT OF EXPENDITURE WARRANTED FOR HEALTH AND ACCIDENT PROTECTION

The expenditure of $12,000 annually per 1,000 employees, estimated as warranted from an economic standpoint, may be appreciably increased when even a small percentage of the workers handle materials or are engaged in processes which may affect health adversely. The size of the extra appropriation needed for protection of the exposed workers obviously depends on the severity of the hazard. The direct and hidden costs of a single minor hazard might easily total $8,000 per year, in which event an expenditure of $20,000 per annum per 1,000 employees would be warranted for adequate health and accident protection. Or, in the absence of any industrial health hazard, an appropriation of an additional $6,000 per year per 1,000 workers could be justified on the basis of its value to employees; for, as will be shown later, effective industrial medical service saves the workers at least $6.20 per capita per year.

HOW APPROPRIATIONS FOR INDUSTRIAL HYGIENE MAY BE SPENT TO BEST ADVANTAGE BY THE PLANT

Effective work in the field of industrial hygiene requires the services of an industrial physician, a safety and a sanitary engineer either on full or part time, depending on the number of employees and the nature and severity of the accident and disease problems to be solved.

A logical first step in the development of an industrial-hygiene program is a thorough analysis of the records of disability maintained

by the sick-benefit association, if such an organization is already functioning. If not, sickness and accident records should be instituted, as the value of records in disclosing the relative importance of different hazards and in evaluating the effect of welfare activities has been demonstrated many times. Analysis of disability statistics affords knowledge of the frequency and severity of specific diseases by sex and age and according to occupation, and when these rates are compared with the average frequency and severity of different types of illness among industrial workers, published in the Public Health Reports, the nature and extent of the sickness problem in any given industrial establishment is revealed.

In addition, a study by the industrial physician and safety and sanitary engineers of all potential accident hazards and all materials and conditions of employment which may ultimately affect health deleteriously, along the lines followed in the survey of a typical industrial area to which reference was made in footnote 13, will afford information as to situations requiring more detailed study and observation. Since it is usually impossible to tell by mere inspection of workrooms whether health hazards exist, the industrial sanitary engineer must obtain quantitative measurements, especially of the concentration of dust or toxic materials present in the atmosphere. With this information, in conjunction with knowledge of the toxicity of the materials studied, he can determine the extent of the hazard. Various methods of control adaptable to local plant conditions must then be evaluated, and a remedial program instituted. After suitable protective equipment has been installed, and after illumination, sanitation, and ventilation of the plant have been brought to a high standard of efficiency, a periodic check-up is required to determine whether certain changes should be made. For this purpose medical work is as important as engineering control. Periodic physical examinations of employees and analysis of the recorded findings, as well as the disability statistics for groups having different kinds of occupational exposure such as dust, fumes, heat, humidity, and wide changes in temperature (the usual concomitants of manufacturing processes), will reveal the problems needing further attention. Amelioration of the effect of existing hazards may also be obtained by deferring to the plant physician the determination of the type of work best suited to the physical condition of the individual workers. The preemployment examination and the periodic physical check-up with a few simple tests to determine the mental reaction to given circumstances afford a large part of the information needed for proper placement of workers.

The average cost of medical service, consisting of minimum equipment of a well-supplied dispensary and minimum personnel of a full-time trained nurse, with the service supplied only to employees of the

company, and the expenses paid wholly by the management, is reported by the National Industrial Conference Board to have been $5.10 per employee in the year 1930.[14] In the companies in which employees contributed to the cost of medical service, the cost per employee was $12.11, due largely, it is stated, to the extension of service to the employees' families.

The principal item in these costs is the salary of physicians and nurses, which made up about two-thirds of the total expenditure for medical service. The cost of safety and sanitary engineering service probably would not exceed $4.50 per employee per year. Thus from the estimated minimum profitable expenditure of $19,000 to $20,000 per annum per 1,000 employees for health and accident protection, a balance in excess of $9,000 to $10,000 per year per 1,000 workers is left for maintenance of the protective equipment and for amortization of the capital expenditures required.

ABSENCE DUE TO ILLNESS VERSUS VACATION

In view of the monetary savings estimated from a moderate decrease in the sickness time-lost rate, it may appear that a similar reduction in vacation time would also decrease employers' operating costs. There are certain important differences, however, which affect costs. Vacations are usually planned in advance so as to interfere as little as possible with the production schedule; sickness strikes suddenly and unexpectedly, often seriously disrupting an organization, especially when the number of cases reaches epidemic proportions. Furthermore, the seasonal peak of disability due to illness usually occurs in the late winter or early spring, when many industries are pushing production for the spring trade; vacations are most often taken during the summer slack in business. A few companies shut down their factories completely during the seasonal ebb in business activity to enable all employees to take vacations simultaneously, thereby saving the cost of light, power, and certain other items in the overhead. The stimulation effected by change in environment and the mental and physical refreshment resulting from vacations suited to the needs of the individual can scarcely be regarded, even from the economic standpoint, as "lost" time like that due to sickness.

SAVINGS TO EMPLOYEES FROM INDUSTRIAL MEDICAL SERVICE

The money value of industrial medical service to the employees may be estimated from the average annual per capita expenditure for medical care. Records of the costs of sickness were obtained from house-to-house canvasses in 130 communities at intervals of about 2 months during a 12-month period by the Committee on the

[14] Medical supervision and service in industry. National Industrial Conference Board, Inc., New York, 1931, p. 104.

Costs of Medical Care. Among white persons whose annual income was in the $1,200 to $2,000 range, the average charge per capita for medical care during a 12-month period was found to be $13.17.[15] This amount includes items which would not be covered by an industrial medical service. For example, the Committee found that hospitalized illness consumed about 50 percent of the total bill, and this proportion obtained without important variation in all income classes. However, about 20 percent of the $13.17, or $2.63 per capita, represented the amount spent for medical care on account of ambulatory cases (nondisabling, and disabling illnesses not requiring confinement to bed).[16] Such cases are usually under the care of the industrial physician. In addition, minor illnesses which necessitate confinement to bed for a few days are often treated under the direction of the plant doctor. From unpublished data of the Committee on the Costs of Medical Care it appears that the charges for disabilities of less than one week's duration in families whose annual income was $1,200 to $2,000 averaged about $1 annually per person in the population. Thus a total of $3.63 per year may be estimated as the amount spent by the average industrial worker for medical care which falls within the province of the industrial physician. These estimates are only approximate, because they are based on the experience of all members of families having the income specified, without regard to age and sex. No figures are available for the medical charges incurred by the head of the family on himself. However, it appears that the average expenditure for medical care of $3.63 per capita, for nondisabling sickness and for cases causing disability of less than 1 week's duration, does not grossly overstate the size of the medical bill incurred for such illnesses by the industrial worker employed in an establishment having no industrial medical service.

In addition to the estimated annual saving of $3,600 per 1,000 employees, from the services usually furnished by an industrial medical organization, the reduction in time lost on account of disability or an equivalent saving from a decreased mortality rate should be considered, even though it may take several years to effect a favorable change in the morbidity or mortality rate. If the sickness and nonindustrial accident time-lost rate is reduced by two-thirds of a day per year per person on the pay roll, as has been done in certain companies, the saving in wages at a value of $4 per day would be $2,600 per year per 1,000 employees. If the disability rate fails to decrease, this sum could be earned several times over by the saving of one life per year per 1,000 employees. Thus without adding anything to the average amount which workmen spend for medical care, they

[15] Falk, Klem, and Sinai: The incidence of illness and the receipt and costs of medical care among representative families. Committee on the Costs of Medical Care, Publication No. 26, 1933, p. 146.

[16] Ibid., Appendix table B-49, p. 302.

could employ a physician to serve them if the group approximated 1,200 to 1,300 persons, or could contribute about $4 per person per year for a rounded-out program of industrial medical and dental service as a mutual undertaking of employer and employee. On such an expenditure by employees a dividend of $2.60 per annum, a 65 percent return, could be expected within a few years from the moderate decrease in the average duration of disability previously discussed, or from a small curtailment of the mortality rate. These are minimum estimates; the potentialities of future developments in health work have been ignored. As one example of a cooperative activity which may prove to be of considerable monetary value both to employer and employee is the physical fitness examination and subsequent follow-up recently undertaken on an experimental basis by the Aetna Life Insurance Co.[17]

ESTIMATES SUMMARIZED

The estimated minimum monetary value to industry of medical and engineering services for the development of employee health and accident protection may be summarized as shown in table 1.

TABLE 1.—*Estimated minimum expectancy in savings to employer and to employees from indicated reduction of the accident rate and of the time lost on account of sickness (or an equivalent reduction in mortality), demonstrated as attainable, for establishments in which the industrial accident rate is considerably below the average and in which there are no occupational health hazards*

Items in the saving	Annual saving, per 1,000 employees
To the employer:	
Reduction of 7 compensable accidents from the present rate per 1,000 employees, or an equivalent decrease in noncompensable injuries and no-injury accidents which destroy property	$8,600
Reduction of two-thirds of a day in the sickness time-lost rate per 1,000 workers, or the equivalent in decreased mortality, estimated as worth to the employer 1½ times the amount paid in wages (average daily wage of $4 assumed)	4,000
Total to the employer	12,600
To the employees:	
Amount which employees spend for medical services which may be furnished by an industrial physician	3,600
Value of wages at $4 per day, saved by a reduction of two-thirds of a day in the sickness time-lost rate per 1,000 persons, or the equivalent in decreased mortality	2,600
Total to the employees	6,200
To both employer and employees	18,800

IMPORTANCE OF INDUSTRIAL ACCIDENT AND ILLNESS COSTS IN THE NATIONAL ECONOMY

The consumer seldom realizes the extent to which the costs of industrial accidents and sickness add to the price of products, or, stated in another way, decrease the purchasing power of the dollar.

[17] Described by Drs. W. R. P. Emerson and D. B. Cragin in "Health diagnosis in adults." Industrial Medicine, vol. 4, no. 1, January 1935.

The expenditure for medical care in the United States appears to have been approximately $3,600,000,000 in 1929.[18] If the indirect or hidden costs of sickness and accidents are assumed to be only 2.8 times the direct costs instead of 4.0 times as was found for *industrial* accidents, the annual bill to the Nation is about $10,000,000,000. An item of this magnitude obviously is an important factor in the cost of living.

One has to resort to the national debt to obtain figures large enough for comparative purposes. A 10-percent reduction in accidents and sickness, if maintained, would constitute a saving equivalent to liquidation, in slightly less than 3½ decades, of the present national debt of approximately $34,000,000,000; a 20-percent decrease would save enough to pay the entire sum in 17 years. A decrease of 10 to 20 percent in the incidence of accidents and in the time lost from sickness with accompanying prolongation of the average duration of life is not a visionary, impractical goal, judging from experience along that portion of the road in this direction which we have already traversed. The figures, sordid as they are in expressing health and life in terms of monetary units, nevertheless may afford a better sense of proportion, a more accurate conception of the relative importance of certain problems in the national welfare, if they call attention to the probability that an attainable curtailment of the present waste of vital assets would represent the equivalent in money value of complete liquidation of our huge national debt in less than two generations.

PLAGUE INFECTION DISCOVERED IN FLEAS AND LICE TAKEN FROM MARMOTS IN MONTANA AND IN A MARMOT IN UTAH

A report has been received, under date of August 10, 1936, from Surgeon C. R. Eskey, in charge of plague suppressive measures, San Francisco, Calif., that plague infection had been discovered in fleas and lice taken from ground hogs (marmots) which had been killed in Small Horn Canyon, Mont., about 12 miles southwest of Dillon, Beaverhead County. Following is Surgeon Eskey's report:

"Plague has been determined in both fleas and lice taken from 7 ground hogs (marmots) shot at the head of Small Horn Canyon, about 12 miles southwest of Dillon, Beaverhead County, Mont., July 25, 1936, by employees of the Rocky Mountain Laboratory. One hundred and fifty-three fleas and twenty-six lice were collected in separate bottles and inoculated into guinea pigs, which died in 6 and 3 days, respectively. Secondary inoculations and cultures gave typical plague reactions.

[18] Falk, Rorem, and Ring: The costs of medical care. The Committee on the Costs of Medical Care, Publication No. 27, 1933, p. 8.

"These findings are of interest because they provide the first direct evidence that plague exists among marmots in America and demonstrate that the infection may be recovered from lice as well as fleas taken from these rodents. Fatal epizootics have been noted among marmots in a number of localities in Western States, but no infected animal has yet been found."

The foregoing report has been supplemented by later information (dated Aug. 13) received from Surgeon Eskey in which he states that plague has been determined in a sick ground hog (marmot) killed on July 31, 1936, in Indian Creek Canyon, 14 miles northeast of Beaver, Beaver County, Utah. This is believed to be the first plague-infected marmot reported in the United States.

DIRECTORY OF WHOLE-TIME COUNTY HEALTH OFFICERS, 1936

The information contained in this directory of whole-time county health officers was obtained through questionnaires sent to each State department of health. For the purpose of insuring uniformity in the returns, a "whole-time" county health officer was defined as "one who does not engage in the practice of medicine or in any other business but devotes all of this time to his official duties." Similar directories have been issued annually since 1922, with the exception of 1932. In 1935 the directory was issued as Reprint 1704 from the Public Health Reports.

The publication of directories of State health departments was begun in 1912 and, with the exception of the year 1932, has been continued without interruption to the present time The 1935 directory was issued as Reprint 1724.

Directories of city health officers have been published annually since 1916, with the exception of the years 1932 and 1935, when funds were not available for this purpose. In 1934 the directory was issued as Reprint 1685 from the Public Health Reports.

State and county	Name of health officer	Post office	Official title
Alabama:			
Autauga	E. L. Trammell, M. D.	Prattville	County health officer.
Baldwin	S. A. Durick, M. D.	Bay Minette	Do.
Barbour	E. M. Moore, M. D.	Clayton	Do.
Blount	S. D. Sturkie, M. D.	Oneonta	Do.
Bullock	H. E. Barker, M. D.	Union Springs	Do.
Calhoun	G. A. Cryer, M. D.	Anniston	Do.
Chambers	C. E. Johnson, M. D.	Lafayette	Do.
Cherokee	S. C. Tatum, M. D.	Centre	Do.
Chilton	J. M. Kimmey, M. D.	Clanton	Do.
Cleburne	F. R. Wood, M. D.	Heflin	Do.
Coffee	H. T. Donovan, M. D.	Elba	Do.
Colbert	G. W. Warrick, M. D.	Tuscumbia	Do.
Conecuh	E. L. Kelly, M. D.	Evergreen	Do.
Coosa	W. D. Burkhalter, M. D.	Rockford	Do.
Covington	C. D. McLeod, M. D.	Andalusia	Do.
Crenshaw	J. O. Foster, M. D.	Luverne	Do.

State and county	Name of health officer	Post office	Official title
Alabama—Continued.			
Cullman	M. S. Whiteside, M. D.	Cullman	County health officer.
Dale	W. L. Orr, M. D.	Ozark	Do.
Dallas	L. T. Lee, M. D.	Selma	Do.
De Kalb	J. E. Dunn, M. D.	Fort Payne	Do.
Elmore	L. G. Cole, M. D.	Wetumpka	Do.
Escambia	E. F. Goldsmith, M. D.	Brewton	Do.
Etowah	C. L. Murphree, M. D.	Gadsden	Do.
Franklin	N. P. Underwood, M. D.	Russellville	Do.
Henry	P. M. Thompson, M. D.	Abberville	Do.
Houston	F. G. Granger, M. D.	Dothan	Do.
Jackson	G. E. Newton, M. D.	Scottsboro	Do.
Jefferson	J. D. Dowling, M. D.	Birmingham	Do.
Lamar	W. J. B. Owings, M. D.	Vernon	Do.
Lauderdale	W. D. Hubbard, M. D.	Florence	Do.
Lawrence	R. E. Harper, M. D.	Moulton	Do.
Lee	H. C. McRee, M. D.	Opelika	Do.
Limestone	W. A. Minsch, M. D.	Athens	Do.
Lowndes	E. F. Leatherwood, M. D.	Hayneville	Do.
Macon	Murray Smith, M. D.	Tuskegee	Do.
Madison	W. C Hatchett, M. D.	Huntsville	Do.
Marengo	E. T. Norman, M. D.	Linden	Do.
Marion	W. T. Burkett, M. D.	Hamilton	Do.
Marshall	Lee Weathington, M. D.	Guntersville	Do.
Mobile	O. L. Chason, M. D.	Mobile	Do.
Monroe	R. D. Neal, M. D.	Monroeville	Do.
Montgomery	J. L. Bowman, M. D.	Montgomery	Do.
Morgan	L. R. Murphree, M. D.	Decatur	Do.
Perry	J. R. Long, M. D.	Marion	Do.
Pickens	J. J. Croley, M. D.	Carrollton	Do.
Pike	W. H. Abernethy, M. D.	Troy	Do.
Randolph	W. E. Coleman, M. D.	Wedowee	Do.
Russell	M. L. Shaddix, M. D.	Phenix City	Do.
Shelby	H. C. Nickson, M. D.	Columbiana	Do.
Sumter	S. J. Williams, M. D.	Livingston	Do.
Talladega	J. H. Hill, M. D.	Talladega	Do.
Tallapoosa	C. C. Fargason, M. D.	Dadeville	Do.
Tuscaloosa	A. A. Kirk, M. D.	Tuscaloosa	Do.
Walker	A. M. Waldrop, M. D.	Jasper	Do.
Washington	I. C. Sumner, M. D.	Chatom	Do.
Wilcox	E. L. McIntosh, M. D.	Camden	Do.
Winston	S. W. Shelton, M. D.	Double Springs	Do.
Arizona:			
Cochise	R. B. Durfee, M. D.	Bisbee	Director.
Gila	G. F. Manning	Globe	Do.
Maricopa	A. N. Crain, M. D.	Phoenix	Do.
Pima	L. H. Howard	Tucson	Do.
Arkansas:			
Benton, Crawford, and Washington.	Fount Richardson, M. D.	Fayetteville	Do.
Ashley	A. M. Gibbs, M. D., C. P. H.	Hamburg	Do.
Clark	T. T. Ross, B. S., M. P. H.	Arkadelphia	Do.
Crittendon	B. M. Stevenson, M. D.	Marion	Do.
Garland	J. F. Merritt, M. D.	Hot Springs	Do.
Jackson	M. B. Owens, M. D.	Newport	Do.
Jefferson	W. H. Bruce, M. D.	Pine Bluff	Do.
Little River	J. W. Ringgold, M. D.	Ashdown	Do.
Mississippi	A. M. Washburn, B. S., M. D.	Blytheville	Do.
Ouachita	R. C. Kennerly, M. D.	Camden	Do.
Phillips	W. B. Bruce, M. D.	Helena	Do.
Pope	A. B. Tate, M. D.	Russellville	Do.
Pulaski	J. A. Summers, M. D.	Little Rock	Do.
Saline	D. W. Fulmer, M. D.	Benton	Do.
Sebastian	J. E. Johnson, M. D.	Fort Smith	Do.
Woodruff	J. F. Hays, M. D.	Augusta	Do.
Yell	J. K. Grace, B. S., M. D.	Danville	Do.
Monroe	*W. P. Scarlett, M. D.	Clarendon	Do.
Conway	*W. Myers Smith, B. S., M. D.	Morrilton	Do.
California:			
Alameda	I. O. Church, M. D.	Oakland	County health officer.
Contra Costa	W. A. Powell	Martinez	Do.
Fresno	W. F. Stein, M. D.	Fresno	Do.
Imperial	W. F. Fox, M. D.	El Centro	Do.
Los Angeles	John L. Pomeroy, M. D.	Los Angeles	Do.
Madera	L. A. Stone, M. D.	Madera	Do.
Monterey	R. M. Fortier, M. D.	Salinas	Do.
Orange	K. H. Sutherland, M. D.	Santa Ana	Do.
Riverside	W. A. Jones, M. D.	Riverside	Do.
San Bernardino	E. B. Godfrey, M. D.	San Bernardino	Do.
San Diego	A. M. Lesem, M. D.	San Diego	Do.

* Rockefeller fellowships; attending Harvard University.

State and county	Name of health officer	Post office	Official title
California—Continued.			
San Joaquin	J. J. Sippy, M. D	Stockton	County health officer.
San Luis Obispo	A. F. Gillihan, M. D	San Luis Obispo	Do.
Santa Barbara	R. C. Main, M. D	Santa Barbara	Do.
Stanislaus	E. F. Reamer, M. D	Modesto	Do.
Connecticut:			
Fairfield [1]	Lawrence E. Poole, M. D	Fairfield	Health officer.
West Hartford [1]	Harry B. Smith, M. D., M. P. H.	West Hartford	Director of health.
Delaware:			
Kent	E. F. Smith, M. D	Dover	County health officer.
New Castle	J. R. Downs, M. D	Newark	Do.
Sussex	F. I. Hudson, M. D	Georgetown	Do.
Florida:			
Escambia	Wm. H. Pickett	Pensacola	Director.
Jackson	F. V. Chappell, M. D	Marianna	Do.
Leon	L. J. Graves, M. D	Tallahassee	Do.
Georgia:			
Baldwin	O. F. Moran, M. D	Milledgeville	Commissioner of health.
Bartow	A. C. Shamblin, M. D	Cartersville	Do.
Bibb	J. D. Applewhite, M. D., M. P. H.	Macon	Do.
Chatham	Victor H. Bassett, M. D	Savannah	Do.
Clarke	W. W. Brown, M. D	Athens	Do.
Cobb	J. E. Lester, M. D	Marietta	Do.
Colquitt	T. E. Chesnutt, M. D	Moultrie	Do.
Decatur	M. A. Fort, D. P. H., M. D., Ph. G.	Bainbridge	Do.
De Kalb	J. R. Evans, M. D., Ph. G	Decatur	Do.
Dougherty	Hugo Robinson, M. D	Albany	Do.
Floyd	B. V. Elmore, M. D	Rome	Do.
Fulton	W. L. Gilbert, M. D	Atlanta	Do.
Glynn, McIntosh, Camden.	M. E. Winchester, C. P. H., M. D., D. P. H.	Brunswick	Do.
Grady	H. P. Rankin, M. D	Cairo	Do.
Hall	C. J. Wellborn, M. D	Gainesville	Do.
Jefferson	L. R. Bryson, M. D	Louisville	Do.
Jenkins	H. B. Senn, M. D	Millen	Do.
Laurens	O. H. Cheek, M. D	Dublin	Do.
Lowndes	G. T. Crozier, M. D., D. P. H.	Valdosta	Do.
Mitchell	C. O. Rainey, M. D	Camilla	Do.
Richmond	H. G. Callison, M. D	Augusta	Do.
Spalding	W. C. Humphries, M. D	Griffin	Do.
Sumter	A. J. Davis, M. D	Americus	Do.
Terrell	R. Frank Cary, M. D	Dawson	Do.
Thomas	J. R. Dykes, M. D	Thomasville	Do.
Troup	S. C. Rutland, M. D	LaGrange	Do.
Walker-Catoosa	Charles W. Folsom, M. D	LaFayette	Do.
Ware	George E. Atwood, M. D., D. P. H.	Waycross	Do.
Washington	O. L. Rogers, M. D	Sandersville	Do.
Indiana:			
Lake	William D. Weis, M. D	Crown Point	County health commissioner.
Iowa:			
Woodbury	Wallace S. Petty, M. D	Sioux City	County health officer.
Kansas:			
Lyon	C. H. Munger, M. D	Emporia	Do.
Sedgwick	J. C. Montgomery, M. D	Wichita	Do.
Shawnee	F. E. McCord, M. D	Topeka	Do.
Kentucky:			
Adair	N. A. Mercer, M. D., M. P. H.	Columbia	Do.
Allen	C. W. Holland, M. D	Scottsville	Do.
Anderson	S. R. Boggess, M. D	Lawrenceburg	Do.
Ballard	C. B. Billington, M. D	Wickliffe	Do.
Barren	W. M. Chapman, M. D	Glasgow	Do.
Bath	J. S. Goodpaster, M. D	Owingsville	Do.
Bell	A. D. Stacy, M. D	Pineville	Do.
Boyd	R. D. Higgins, M. D	Ashland	Do.
Breathitt	Earl E. Gambrill, M. D	Jackson	Do.
Butler	O. C. Threlkel, M. D	Morgantown	Do.
Caldwell	B. K. Amos, M. D	Princeton	Do.
Calloway	J. A. Outland, M. D	Murray	Do.
Carlisle	J. F. Harrell, M. D	Bardwell	Do.
Carter	Don E. Wilder, M. D	Grayson	Do.
Casey	J. W. Scudder, M. D	Liberty	Do.
Clay	L. H. Wagers, M. D	Manchester	Do.
Clinton	W. G. Morgan, M. D	Albany	Do.
Edmonson	H. H. Bishop, M. D	Brownsville	Do.
Elliott	R. E. Wehr, M. D	Sandy Hook	Do.
Estill	R. R. Snowden, M. D	Irvine	Do.
Fayette	Charles D. Cawood, M. D., C. P. H.	Lexington	Do.

[1] Town.

State and county	Name of health officer	Post office	Official title
Kentucky—Continued,			
Fleming	C. W. Christine, M. D.	Flemingsburg	County health officer.
Floyd	Marvin Ransdell, M. D.	Prestonsburg	Do.
Fulton	Hugh E. Prather, M. D.	Hickman	Do.
Gallatin	J. W. Miller, M. D.	Warsaw	Do.
Grant	N. H. Ellis, M. D.	Williamstown	Dol
Grayson	J. G. Samuels, M. D.	Leitchfield	Do.
Green	J. M. Dishman, M. D.	Greensburg	Do.
Greenup	Carl M. Gambill, M. D., M. P. H.	Greenup	Do.
Hart	Temporary vacancy	Munfordville	Do.
Henderson	J. Leland Tanner, M. D., M. P. H.	Henderson	Do.
Hickman	Chas. Hunt, M. D.	Clinton	Do.
Hopkins	C. R. Morton, M. D.	Madisonville	Do.
Jefferson	John D. Trawick, M. D.	Louisville	Do.
Kenton	H. C. White, M. D.	Covington	Do.
Knott	J. W. Duke, M. D.	Hindman	Do.
Knox	W. V. Bradshaw, M. D.	Barbourville	Do.
Laurel	G. S. Brock, M. D.	London	Do.
Lawrence	W. C. Gose, M. D.	Louisa	Do.
Lee	E. M. Brown, M. D.	Beattyville	Do.
Leslie	D. D. Turner, M. D.	Hyden	Do.
Letcher	R. D. Collins, M. D.	Whitesburg	Do.
Lincoln	K. T. Johnstone, M. D.	Stanford	Do.
Lyon	N. M. Atkins, M. D.	Eddyville	Do.
McCracken	R. E. Teague, M. D., C. P. H.	Paducah	Do.
McCreary	Temporary vacancy	Whitley City	Do.
McLean	----do	Calhoun	Do.
Madison	H. G. Wells, M. D., C. P. H.	Richmond	Do.
Magoffin	H. K. Bailey, M. D.	Salyersville	Do.
Marshall	S. L. Henson, M. D.	Benton	Do.
Martin	Wm. N. Keith, M. D.	Inez	Do.
Mason	O. M. Goodloe, M. D., M. P. H.	Maysville	Do.
Meade	O. R. Lynch, M. D.	Brandenburg	Do.
Menifee	E. T. Riley, M. D.	Frenchburg	Do.
Metcalfe	H. T. Carter, M. D.	Edmonton	Do.
Monroe	A. S. Yates, M. D.	Tompkinsville	Do.
Muhlenberg	Roy Orsburn, M. D.	Greenville	Do.
Nicholas	E. W. Atherton, M. D.	Carlisle	Do.
Ohio	A. D. Park, M. D.	Hartford	Do.
Owsley	J. R. Akers, M. D.	Booneville	Do.
Perry	D. D. Carr, M. D., M. P. H.	Hazard	Do.
Pike	Chas. P. Shields, M. D.	Pikeville	Do.
Powell	M. H. Skaggs, M. D.	Stanton	Do.
Pulaski	D. A. Reekie, M. D.	Somerset	Do.
Rockcastle	Walker Owens, M. D.	Mt. Vernon	Do.
Rowan	T. A. E. Evans, M. D.	Morehead	Do.
Scott	R. J. Griffin, M. D.	Georgetown	Do.
Spencer	M. W. Caskey, M. D.	Taylorsville	Do.
Todd	L. A. Crosby, M. D.	Elkton	Do.
Trigg	E. W. Sigler, M. D.	Cadiz	Do.
Trimble	J. J. Gerkins, M. D.	Bedford	Do.
Union	A. Y. Covington, M. D.	Morganfield	Do.
Warren	G. M. Wells, M. D.	Bowling Green	Do.
Wayne	Mack Roberts, M. D.	Monticello	Do.
Webster	C. M. Smith, M. D.	Dixon	Do.
Wolfe	J. L. Cox, M. D.	Campton	Do.
Louisiana: [1]			
Acadia	J. D. Hunter, M. D.	Crowley	Director.
Assumption	P. M. Payne, M. D.	Napoleonville	Do.
Avoyelles	L. W. Holloman, M. D.	Marksville	Do.
Caddo	W. J. Sandidge, M. D., C. P. H.	Shreveport	Do.
Caldwell	Thomas Burk, M. D.	Columbia	Do.
Catahoula	L. C. Spencer, M. D.	Harrisonburg	Do.
Claiborne	H. R. Marlatt, M. D., C. P. H.	Homer	Do.
Concordia	Jno. Schreiber, M. D.	Vidalia	Do.
De Soto	R. A. Tharp, M. D.	Mansfield	Do.
East Carroll	F. V. Boyd, M. D.	Lake Providence	Do.
Franklin	R. E. Applewhite	Winnsboro	Do.
Iberia	B. L. Stinson, M. D.	New Iberia	Do.
Iberville	J. C. Eby, Phar. D., M. D.	Plaquemine	Do.
Jefferson Davis	C. F. Lacey, M. D.	Jennings	Do.
Lafayette	A. J. Comeaux, M. D.	Lafayette	Do.
Lafourche	H. S. Smith, M. D.	Thibodaux	Do.
LaSalle	E. L. Miller, M. D.	Jena	Do.
Lincoln	R. H. Allen, M. D.	Ruston	Do.
Madison	E. S. Freeman, M. D.	Tallulah	Do.
Morehouse	N. P. Liles, M. D.	Bastrop	Do.
Natchitoches	W. W. Knipmeyer, M. D., C. P. H.	Natchitoches	Do.

[1] Parish.

State and county	Name of health officer	Post office	Official title
Louisiana—Continued.			
Ouachita	G. D. Williams, M. D.	Monroe	Director.
Pointe Coupee	W. L. Treuting, M. D.	New Roads	Do.
Rapides	B. J. Aymond, M. D.	Alexandria	Acting director.
Red River	Bernard Hochfelder, M. D.	Coushatta	Director.
Richland	R. O. C. Green, M. D.	Rayville	Do.
St. Landry	L. A. Masterson, M. D.	Opelousas	Do.
St. Martin	P. H. Fleming, M. D.	St. Martinville	Do.
St. Mary	W. W. Poimboeuf, M. D.	Franklin	Do.
Tensas	N. G. Norris, M. D.	St. Joseph	Do.
Terrebonne	M. F. Houston, M. D.	Houma	Do.
Washington	F. A. Williams, M. D.	Franklinton	Do.
Webster	W. C. Summer, M. D.	Minden	Do.
West Carroll	F. S. Williams, M. D.	Oak Grove	Do.
Maine: [3]			
Cooperative Health Union:			
Franklin	B. L. Arms, M. D.	Farmington	Do.
Hancock	Frank O. Alley, B. S.	Bar Harbor	Local health officer.
Motbov Union	H. L. Jackson, M. D.	Old Town	Do.
Oxford	T. S. Burr, M. D.	Rumford	Do.
Maryland:			
Allegany	J. P. Franklin, M. D.	Cumberland	Deputy State health officer.
Do	John M. Byers, M. D.	do	Assistant deputy State health officer.
Anne Arundel	John H. Janney, Jr., M. D.	Annapolis	Deputy State health officer.
Do	H. R. DuPuy, M. D.	do	Assistant deputy State health officer.
Baltimore	J. S. Bowen, M. D.	Towson	Deputy State health officer.
Do	Edward R. Davies, M. D.	do	Assistant deputy State health officer.
Calvert	I. N. King, M. D.	Prince Frederick	Deputy State health officer.
Caroline	Temporary vacancy		Do.
Carroll	W. C. Stone, M. D.	Westminster	Do.
Cecil	C. A. Kane, M. D.	Elkton	Do.
Charles	D. St. Clair Campbell, M. D.	La Plata	Do.
Dorchester	E. A. Jones, M. D.	Cambridge	Do.
Frederick	E. C. Kefauver, M. D.	Frederick	Do.
Garrett	E. C. Peck, M. D., M. P. H.	Oakland	Do.
Harford	T. A. Callahan, M. D.	Bel Air	Do.
Howard	W. J. French, M. D.	Ellicott City	Do.
Kent	Temporary vacancy	Chestertown	Do.
Montgomery	V. L. Ellicott, M. D., Dr. P. H.	Rockville	Do.
Prince Georges	A. B. Hooton, M. D.	Upper Marlboro	Do.
Queen Annes	J. A. McCallum, M. D.	Centerville	Do.
St. Mary	D. St. Clair Campbell	La Plata	Do.
Somerset	R. H. Johnson, M. D.	Princess Anne	Do.
Talbot	L. S. Welty, M. D.	Easton	Do.
Washington	W. R. Cameron, M. D.	Hagerstown	Do.
Wicomico	S. H. Hurdle, M. D.	Salisbury	Do.
Worcester	Bradford Massey, M. D.	Pocomoke	Do.
Massachusetts:			
Barnstable	Almon P. Goff, M. D.	Hyannis	County health officer.
Nashoba [4]	James O. Walls, M. D., C. P. H.	Ayer	Director of public health.
Southern Berkshire [4]	Harold W. Stevens, M. D.	Great Barrington	Medical director.
Michigan:			
Allegan	G. M. Byington, M. D.	Allegan	Director.
Barry	R. B. Harkness, M. D.	Hastings	Do.
Branch	F. S. Leeder, M. D., D. P. H.	Coldwater	Do.
Calhoun	M. R. Kinde, M. D.	Marshall	Do.
Eaton	J. W. Davis, M. D.	Charlotte	Do.
Genesee	D. C. Peterson, M. D., C. P. H.	Flint	Do.
Hillsdale	E. G. McGavran, M. D., C. P. H.	Hillsdale	Do.
Isabella	F. R. Town, M. D.	Mount Pleasant	Do.
Kent	J. D. Brook, M. D.	Grand Rapids	Do.
Midland	David Littlejohn, M. D., D. P. H.	Midland	Do.
Oakland	J. D. Monroe, M. D.	Pontiac	Do.
Ottawa	Ralph TenHave, M. D., C. P. H.	Grand Haven	Do.
Saginaw	William H. Pickett, M. D., C. P. H.	Saginaw	Do.
Van Buren	T. R. Meyer, M. D., D. P. H.	Paw Paw	Do.
Wexford	S. C. Moore, M. D.	Cadillac	Do.

[3] Township or district.
[4] District.

State and county	Name of health officer	Post office	Official title
Michigan—Continued.			
District health unit—	T. R. Laughbaum, M. D.	Lake City	Director.
Kalkaska.			
Crawford.			
Missaukee.			
Roscommon.			
District health unit—	Gladys J. Kleinschmidt, M. D., M. S.	West Branch	Do.
Alcona.			
Iosco.			
Oscoda.			
Ogemaw.			
District health unit—	Carleton Dean, M. D., C. P. H.	Charlevoix	Do.
Antrim.			
Charlevoix.			
Emmet.			
Otsego.			
District health unit—	G. B. Moffat, M. D., D. P. H.	Rogers City	Do.
Alpena.			
Cheboygan.			
Montmorency.			
Presque Isle.			
District health unit—	Guy R. Post, M. D., C. P. H.	White Cloud	Do.
Lake.			
Newaygo.			
Oceana.			
District health unit—	O. D. Hart, M. D., C. P. H.	Newberry	Do.
Luce.			
Mackinac.			
Schoolcraft.			
District health unit—	E. V. Thiehoff, M. D.	Gladwin	Do.
Clare.			
Gladwin.			
Arenac.			
Wayne County Health District, township of Grosse Pointe.	B. H. Warren, M. D.	Grosse Pointe	Do.
Villages of—			
Grosse Pointe Park.			
Grosse Pointe Farms.			
Grosse Pointe Shores.			
Grosse Pointe (city).			
Lochmoor.			
Minnesota:			
St. Louis	Carl A. Scherer, M. D.	Duluth	County health officer.
Mississippi:			
Adams	Alton R. Perry, M. D., M. P. H.	Natchez	Director.
Bolivar	R. D. Dedwylder, M. D.	Cleveland	Do.
Coahoma	N. C. Knight, M. D., C. P. H.	Clarksdale	Do.
Copiah	J. C. McGuire, M. D.	Hazlehurst	Do.
Forrest	B. D. Blackwelder, M. D., C. P. H.	Hattiesburg	Do.
Hancock	C. M. Shipp, M. D.	Bay St. Louis	Do.
Harrison	D. J. Williams, M. D.	Gulfport	Do.
Hinds	W. E. Noblin, M. D.	Jackson	Do.
Holmes	C. J. Vaughn, M. D., C. P. H.	Lexington	Do.
Humphreys	J. W. Barkley, M. D.	Belzoni	Do.
Jackson	R. G. Lander, M. D.	Pascagoula	Do.
Lamar	J. N. Mason, M. D.	Purvis	Do.
Lauderdale	D. V. Galloway, M. D., M. P. H.	Meridian	Do.
Lee	W. H. Cleveland, M. D.	Tupelo	Do.
Leflore	L. A. Barnett, M. D.	Greenwood	Do.
Lincoln	W. R. May, M. D., C. P. H.	Brookhaven	Do.
Marshall	V. B. Harrison, M. D., C. P. H.	Holly Springs	Do.
Monroe	C. H. Love, M. D.	Aberdeen	Do.
Pearl River	G. E. Godman, M. D.	Poplarville	Do.
Pike	T. Paul Haney, Jr., M. D., C. P. H.	McComb	Do.
Sharkey	A. K. Barrier, M. D.	Rolling Fork	Do.
Sunflower	H. B. Cottrell, M. D., C. P. H.	Indianola	Do.
Union	I. B. Trapp, M. D.	New Albany	Do.
Warren	F. Michael Smith, M. D.	Vicksburg	Do.
Washington	John W. Shackelford, M. D., M. P. H.	Greenville	Do.
Yazoo	H. L. McCalip, M. D., C. P. H.	Yazoo City	Do.

State and county	Name of health officer	Post office	Official title
Missouri:			
Buchanan	W. S. Hull, M. D	St. Joseph	Director.
Dunklin	Wheeler Davis, M. D	Kennett	Do.
Greene	R. L. Russell, M. D	Springfield	Do.
Jackson	J. T. Brennan, M. D	Independence	Do.
Marion	E. M. Lucke, M. D	Hannibal	Do.
Miller	L. M. Garner, M. D., C. P. H.	Tuscumbia	Do.
Montana:			
Cascade	F. L. Watkins, M. D	Great Falls	County health officer.
Gallatin	A. D. Brewer, M. D	Bozeman	Do.
Missoula	F. D. Pease, M. D	Missoula	Do.
New Hampshire:			
Concord	Travis P. Burroughs, M. D	Concord	Health officer.
Keene	Evan P. White, M. D	Keene	Do.
Manchester	Howard A. Streeter, M. D	Manchester	Do.
New Mexico:			
First Health District—Santa Fe, Rio Arriba, Taos.	E. F. McIntyre, M. D., B. S.	Santa Fe	District health officer.
Second Health District—McKinley, San Juan.	E. B. Beaver, M. D	Gallup	Do.
Third Health District—Bernalillo, Sandoval.	James R. Scott, M. D., Ph. D.	Albuquerque	Do.
Fourth Health District—Dona Ana, Otero, Lincoln, Sierra.	C. W. Gerber, M. D	Las Cruces	Do.
Fifth Health District—San Miguel, Mora, Guadalupe.	W. W. Johnston, M. D	Las Vegas	Do.
Sixth Health District—Chaves, Eddy, Lea.	O. E. Puckett, M. D	Carlsbad	Do.
Seventh Health District—Grant, Luna, Hidalgo.	Frank W. Parker, M. D	Silver City	Do.
Eighth Health District—Catron, Socorro, Valencia, Torrance.	Julian O. Long, M. D	Los Lunas	Do.
Ninth Health District—Colfax, Harding, Union.	Frank C. Diver, M. D	Raton	Do.
Tenth Health District—Curry, Roosevelt, Quay, DeBaca.	L. A. Dewey, M. D., B. S., C. P. H.	Portales	Do.
New York:			
Cattaraugus [1]	H. R. O'Brien, M. D., C. P. H., A. B., M. A.	Olean	Commissioner of health.
Columbia [1]	L. Van Hoesen, M. D	Hudson	Do.
Cortland [1]	M. R. French, M. D., A. B	Cortland	Do.
Suffolk [1]	A. T. Davis, M. D	Riverhead	Do.
Westchester [1]	M. Nicoll, Jr., M. D	White Plains	Do.
District—Herkimer, Madison, Oneida.	H. J. Ball, M. D	Utica	District State health officer.
District—Chenango, Delaware, Otsego, Schoharie.	R. D. Champlin, M. D., C. P. H.	Oneonta	Do.
District—Broome, Chemung, Steuben, Tioga, Tompkins. [2]	J. A. Conway, M. D	Hornell	Do.

[1] Under direct supervision of the county health commissioner and general supervision of the district State health officer.

[2] Under direct supervision of Dr. VanVolkenburgh and general supervision of Dr. Conway.

State and county	Name of health officer	Post office	Official title
New York—Continued.			
District	F. E. Coughlin, M. D., A. B., Dr. P. H.	Albany	District State health officer.
Albany.			
Columbia.[5]			
Greene.			
Rensselaer.			
District	A. S. Dean, M. D., B. S., Dr. P. H.	Buffalo	Do.
Cattaraugus.[5]			
Chautauqua.			
Erie.			
Genesee.			
Niagara.			
Orleans.			
Wyoming.			
District	M. D. Dickinson, M. D	New York City	Do.
Nassau.			
Suffolk.			
District	B. Diefendorf, M. D	Ticonderoga	Do.
Clinton.			
Essex.			
Franklin.			
Hamilton.[6]			
Warren.			
Washington.			
District	C. R. Hervey, M. D	Oswego	Do.
Cayuga.[7]			
Oswego.			
Wayne.			
District	F. W. Laidlaw, M. D	Middletown	Do.
Orange.			
Rockland.			
Sullivan.			
Ulster.			
Westchester.[5]			
District	B. E. Roberts, M. D., B. S	Poughkeepsie	Do.
Dutchess.			
Putnam.			
District	S. W. Sayer, M. D	Gouverneur	Do.
Jefferson.			
Lewis.			
St. Lawrence.			
District	P. J. Rafle, M. D., C. P. H	Syracuse	Do.
Cayuga.[7]			
Cortland.[5]			
Onondaga.			
Seneca.			
District	B. R. Wakeman, M. D	Hornell	Do.
Allegany.			
Livingston.			
Monroe.			
Ontario.			
Schuyler.			
Yates.			
District	J. S. Walton, M. D	Amsterdam	Do.
Fulton.[8]			
Hamilton.[6]			
Montgomery.[8]			
Saratoga.			
Schenectady.			
District	J. E. Perkins, M. D., Dr. P. H.	Amsterdam	Do.
Fulton.[8]			
Montgomery.[8]			
District	V. A. VanVolkenburgh, M. D., B. S., Dr. P. H.	Ithaca	Do.
Tompkins.[9]			
North Carolina:			
Beaufort	David Emerson Ford, M. D	Washington	County health officer.
Bertie	Frank H Garriss, M. D	Windsor	Do.
Bladen	Robert S. Cromartie, M. D	Elizabethtown	Do.
Buncombe	Howard L. Sumner, M. D	Asheville	Do.
Cabarrus	Daniel G. Caldwell, M. D	Concord	Do.
Columbus	Floyd Johnson, M. D	Whiteville	Do.
Cumberland	Malcolm T. Foster, M. D	Fayetteville	Do.
Davidson	Grover C. Gambrell, M. D	Lexington	Do.

[5] Under direct supervision of the county health commissioner and general supervision of the district State health officer.
[6] Long Lake and Indian Lake Townships under supervision of Dr. Diefendorf; remainder of county under supervision of Dr. Walton.
[7] Townships of Sterling, Victory, Ira, Conquest, and Cato under supervision of Dr. Hervey; remainder of county under supervision of Dr. Rafle.
[8] Under direct supervision of Dr. Perkins and general supervision of Dr. Walton.
[9] Under direct supervision of Dr. VanVolkenburgh and general supervision of Dr. Conway.

State and county	Name of health officer	Post office	Official title
North Carolina—Contd.			
Duplin	Ransom Lee Carr, M. D.	Kenansville	County health officer.
Durham	Jesse H. Epperson	Durham	Do.
Edgecombe	Lorenzo Lynn Parks, M. D.	Tarboro	Do.
Franklin	Richard Fenner Yarborough, M. D.	Louisburg	Do.
Gaston	Robert Edgar Rhyne, M. D.	Gastonia	Do.
Granville	Joseph A. Morris, M. D.	Oxford	Do.
Guilford	Roderick Mark Buie, M. D.	Greensboro	Do.
Halifax	Robert S. McGeachy, M. D.	Weldon	Do.
Hyde (Ocracoke Island)	Sigma Van Lewis, M. D.	Ocracoke	Health officer.
Lenoir	Zebulon Vance Moseley, M. D	Kinston	County health officer.
Mecklenburg	Edgar Hall Hand, M. D.	Charlotte	Do.
Moore	John Symington, M. D.	Carthage	Do.
Nash	Thomas O. Coppedge, M. D.	Nashville	Do.
New Hanover	Avon Hall Elliot, M. D.	Wilmington	County health officer.
Northampton	Marion Henry Seawell, M. D.	Jackson	Do.
Orange-Person	William P. Richardson, M. D.	Chapel Hill	Do.
Pitt	N. Thomas Ennett, M. D.	Greenville	Do.
Randolph	George Herbert Sumner, M. D	Asheboro	Do.
Richmond	Bennie B. Dalton, M. D.	Rockingham	Do.
Robeson	Eugene Ramsey Hardin, M. D.	Lumberton	Do.
Rowan	Charles W. Armstrong, M. D.	Salisbury	Do.
Rutherford	Robert M. Bardin, M. D.	Rutherfordton	Do.
Sampson	Wyman Plato Starling, M. D.	Clinton	Do.
Surry	Ralph J. Sykes, M. D.	Mount Airy	Do.
Vance	Zack Perry Mitchell, M. D.	Henderson	Do.
Wake	Alexander Chester Bulla, M. D.	Raleigh	Do.
Wayne	Samuel B. McPheeters, M. D.	Goldsboro	Do.
Wilkes	Albert Johnson Eller, M. D.	Wilkesboro	Do.
Wilson	Wade Hampton Anderson, M. D.	Wilson	Do.
Districts:			
Avery-Watauga-Yancey.	Clarence Hunt White, M. D.	Burnsville	District health officer.
Forsyth-Stokes-Yadkin.	John Roy Hege, M. D.	Winston-Salem	Do.
Haywood-Jackson-Swain.	Crete Nixon Sisk, M. D.	Waynesville	Do.
Ohio:			
Athens	J. M. Higgins, M. D.	Athens	County health officer.
Butler	C. J. Baldridge, M. D.	Hamilton	Do.
Clinton	W. K. Ruble, M. D.	Wilmington	Do.
Crawford	G. T. Wasson, M. D.	Bucyrus	Do.
Cuyahoga	Robert Lockhart, M. D.	Cleveland	Do.
Darke	W. D. Bishop, M. D.	Greenville	Do.
Delaware	B. B. Barber, M. D.	Delaware	Do.
Erie	F. M. Houghtaling, M. D.	Sandusky	Do.
Fayette	James F. Wilson, M. D.	Washington C. H.	Do.
Guernsey	D. L. Cowden, M. D.	Cambridge	Do.
Hamilton	E. H. Schoenling, M. D.	Cincinnati	Do.
Hancock	S. F. Whisler, M. D.	Findlay	Do.
Hocking	W. B. Lacock, M. D.	Logan	Do.
Huron	B. C. Pilkey, M. D.	Norwalk	Do.
Jefferson	J. P. Young, M. D.	Steubenville	Do.
Lorain	F. R. Dew, M. D.	Oberlin	Do.
Lucas	T. W. Mahoney, M. D.	Toledo	Do.
Madison	Robert Trimble, M. D.	London	Do.
Mahoning	G. Y. Davis, M. D.	Youngstown	Do.
Marion	N. Sifritt, M. D.	Marion	Do.
Medina	John L. Jones, M. D.	Medina	Do.
Meigs	W. S. Ellis, M. D.	Pomeroy	Do.
Mercer	F. E. Ayers, M. D.	Celina	Do.
Miami	E. R. Hiatt, M. D.	Troy	Do.
Montgomery	H. H. Pansing, M. D.	Dayton	Do.
Muskingum	Beatrice Hagen, M. D.	Zanesville	Do.
Perry	F. J. Crosbie, M. D.	New Lexington	Do.
Pickaway	V. D. Kerns, M. D.	Circleville	Do.
Preble	J. I. Nisbet, M. D.	Eaton	Do.
Richland	M. C. Hanson, M. D.	Mansfield	Do.
Ross	R. E. Bower, M. D.	Chillicothe	Do.
Seneca	D. W. Fellers, M. D.	Tiffin	Do.
Shelby	A. B. Lippert, M. D.	Sidney	Do.
Stark	Floyd R. Stamp, M. D.	Canton	Do.
Summit	R. H. Markwith, M. D.	Akron	Do.
Trumbull	L. A. Connell, M. D.	Warren	Do.
Washington	Alfred G. Sturgiss, M. D.	Marietta	Do.
Wayne	W. G. Rhoten, M. D.	Wooster	Do.
Wood	H. J. Powell, M. D.	Bowling Green	Do.
Wyandot	L. W. Naus, M. D.	Upper Sandusky	Do.
Oklahoma:			
LeFlore	Rush L. Wright, M. D.	Poteau	Do.
Seminole	George Hunter, M. D.	Wewoka	Do.

State and county	Name of health officer	Post office	Official title
Oregon:			
Clackamas	Courtney Smith, M. D.	Oregon City	County health officer.
Douglas	J. E. Campbell, M. D.	Roseburg	Do.
Jackson	A. N. Johnson, M. D.	Medford	Do.
Klamath	G. S. Newsom, M. D.	Klamath Falls	Do.
Lane	R. C. Romig, M. D.	Eugene	Do.
Marion	Vernon Douglas, M. D.	Salem	Do.
Multnomah	Harry R. Cliff, M. D.	Portland	Do.
Rhode Island:			
Jamestown	Mrs. Margaret Eddy	Jamestown	Health officer
North Kingstown	George L. Salisbury, M. D., D. V. M.	Wickford	Do.
South Carolina:			
Aiken	J. T. Hair, M. D.	Aiken	Do.
Anderson	E. E. Epting, M. D.	Anderson	Do.
Beaufort	S. Simons, M. D.	Beaufort	Do.
Berkeley	W. K. Fishburne, M. D.	Moncks Corner	Do.
Charleston	Leon Banov, M. D.	Charleston	Do.
Cherokee	E. P. White, M. D.	Gaffney	Do.
Clarendon	G. H. Zerbst, M. D.	Manning	Do.
Darlington	W. A. Carrigan, M. D.	Darlington	Do.
Dillon-Marion	H. F. Wilson, M. D.	Dillon	Do.
Dorchester	B. M. Montgomery, M. D.	St. George	Do.
Fairfield	J. L. Bryson, M. D.	Winnsboro	Do.
Florence	J. R. Claussen, M. D.	Florence	Do.
Georgetown	G. S. T. Peeples, M. D.	Georgetown	Do.
Greenville	Baylis Earle, M. D.	Greenville	Do.
Greenwood	J. E. Brodie, M. D.	Greenwood	Do.
Horry	P. H. Edwards, M. D.	Conway	Do.
Kershaw	A. W. Humphries, M. D.	Camden	Do.
Newberry	Claude Sease, M. D.	Newberry	Do.
Oconee	B. F. Sloan, M. D.	Walhalla	Do.
Orangeburg	G. C. Bolin, M. D.	Orangeburg	Do.
Pickens	W. B. Furman, M. D.	Pickens	Do.
Richland	R. W. Ball, M. D.	Columbia	Do.
Spartanburg	J. M. Beeler, M. D.	Spartanburg	Do.
Tennessee:			
Blount	A E. Hardison, M. D.	Maryville	Director.
Bradley	W. Carey Sanford, M. D.	Cleveland	Do.
Davidson	J. J. Lentz, M. D.	Nashville	Do.
Do	W. P. Parker, M. D., C. P. H.	do	Assistant director.
Gibson	F. L. Roberts, M. D., C. P. H.	Trenton	Director.
Do	Roscoe Faulkner, M. D.	do	Assistant director.
Giles	J. U. Speer, M. D.	Pulaski	Director.
Greene	R. S. Cowles, M. D.	Greeneville	Do.
Grundy	U. B. Bowden, M. D.	Pelham	Do.
Hamilton	J. C. Eldridge, M. D.	Chattanooga	Do.
Hardeman	R. L. Cobb, M. D.	Bolivar	Do.
Hardin	J. W. Erwin, M. D.	Savannah	Do.
Humphreys	J. C. Tatum, M. D.	Waverly	Do.
Knox	A. G. Hufstedler, M. D.	Knoxville	Do.
Lake	J. P. Moon, M. D.	Tiptonville	Do.
Lauderdale	R. B. Griffin, M. D.	Ripley	Do.
Lincoln	M. F. Brown, M. D., Ph. G., Phar. D., Ph. C.	Fayetteville	Do.
Maury	H. C. Busby, M. D., C. P. H.	Columbia	Do.
Monroe	D. M. Cowgill, M. D.	Madisonville	Do.
Montgomery	F. J. Malone, M. D.	Clarksville	Do.
Obion	W. B. Harrison, M. D.	Union City	Do.
Roane	J. C. Fly, M. D.	Kingston	Do.
Rutherford	J. B. Black, M. D., C. P. H., D. P. H.	Murfreesboro	Do.
Do	W. M. Dedman, M. D.	do	Assistant director.
Sevier	R. C. Kash, M. D.	Sevierville	Director.
Shelby	W. P. Moore, M. D.	Memphis	Do.
Sullivan	F. L. Moore, M. D., C. P. H.	Blountville	Do.
Do	W. F. Murphy, M. D., M. P. H.	do	Assistant director.
Sumner	H. M. Kelso, M. D., C. P. H.	Gallatin	Director.
Tipton	A. J. Butler, M. D., C. P. H.	Covington	Do.
Washington	W. L. Poole, M. D., C. P. H.	Jonesboro	Do.
Weakley	M. D. Ingram, M. D.	Dresden	Do.
Williamson	R. K. Gallaway, M. D., M. P. H.	Franklin	Do.
Wilson	B. W. Patton, M. D.	Lebanon	Do.
Districts:			
Anderson - Campbell.	C. B. Tucker, M. D., C. P. H.	Clinton	Do.
	H. S. Rule, M. D.	Jacksboro	Assistant director.
Bledsoe-Sequatchie	H. M. Roberson, M. D.	Pikesville	Director.
Carter-Unicoi	R. B. Howard, M. D., C. P. H.	Elizabethton	Do.
	J. Y. O'Daniel, M. D.	Erwin	Assistant director.
Claiborne-Grainger	A. B. Shipley, M. D.	Tazewell	Director.
Jackson-Fentress	F. B. Clark, M. D.	Gainesboro	Do.

State and county	Name of health officer	Post office	Official title
Texas:			
Cameron	William E. Spivey, M. D.	San Benito	Director.
Dallas	Horace E. Duncan, M. D., C. P. H.	Dallas	Do.
El Paso-Hudspeth-Culberson.	Thomas J. McCamant, M. D.	El Paso	Do.
Gregg	Thomas B. Wilson, M. D.	Longview	Assistant director.
Hidalgo	Drew R. Handley, M. D.	Edinburg	Director.
Nolan	E. W. Prothro, M. D.	Sweetwater	Do.
Potter	B. M. Primer, M. D., M. P. H.	Amarillo	Do.
Tarrant	Burke Brewster, M. D.	Fort Worth	Do.
Utah:			
Davis	Sumner Gleason, M. D.	Kaysville	Do.
Virginia:			
Albemarle	R. D. Hollowell, M. D.	Charlottsville	Health officer.
Alleghany-Rockbridge	R. P. Cooke, M. D.	Lexington	Do.
Arlington	P. M. Chichester, M. D.	Clarendon	Do.
Augusta	H. M. Wallace, M. D.	Staunton	Do.
Brunswick-Greensville-Mecklenburg.	T. H. Valentine, M. D.	Lawrenceville	Do.
Buckingham-Nottoway-Prince Edward.	W. A. Brumfield, M. D.	Farmville	Do.
Dickenson-Lee-Scott-Wise.	C. H. Reagan, M. D.	Norton	Do.
Fairfax	E. M. Holmes, Jr., M. D.	Fairfax	Do.
Halifax-Pittsylvania	D. C. Steelsmith, M. D., C. P. H.	South Boston	Do.
	W. H. Walcott, M. D.	Chatham	Assistant director.
Hanover	Linwood Farley, M. D.	Ashland	Do.
Henrico	J. N. Dudley, M. D.	Henrico C. H.	Do.
Isle of Wight-Nansemond.	Wm. F. Wild, M. D., C. P. H.	Suffolk	Do.
Montgomery	J. B. Porterfield, M. D.	Christiansburg	Do.
Norfolk-Princess Anne	J. Leake, M. D.	Portsmouth	Do.
Northampton	H. B. Magill, M. D.	Eastville	Do.
Peninsula Health District. Elizabeth City. James City. Warwick. York.	Geo. E. Waters, M. D.	Williamsburg	Do.
Southampton	P. P. Causey, M. D.	Courtland	Do.
Valley Health District. Greene. Madison. Page. Rappahannock. Rockingham. Shenandoah. Warren.	S. D. Gardner, M. D.	Harrisonburg	Do.
Wythe	D. H. Andrew, M. D.	Wytheville	Do.
Washington:			
Chelan	C. R. Fargher, M. D.	Wenatchee	County health officer.
Clallam	Leland E. Powers, M. D.	Port Angeles	Do.
Clark	Clyde H. Hutt, M. D.	Vancouver	Do.
King	Wallace D. Hunt, M. D.	Seattle	Do.
Snohomish	H. L. Eldridge, M. D.	Everett	Do.
Spokane	A. E. Lien, M. D.	Spokane	Do.
Yakima	Lloyd Moffitt, M. D.	Yakima	Do.
Walla Walla	J. E. Vanderpool, M. D.	Walla Walla	Do.
West Virginia:			
Berkeley	C. A. Thomas, M. D.	Martinsburg	Do.
Boone	R. L. Hunter, M. D.	Madison	Do.
Brooke	W. T. Booher, M. D.	Wellsburg	Do.
Fayette	H. H. Puckett, M. D.	Fayetteville	Do.
Hancock	T. E. Cato, M. D.	New Cumberland	Do.
Harrison	A. J. Kemper, M. D.	Clarksburg	Do.
Kanawha	John Thames, M. D.	Charleston	Do.
Logan	T. J. Farley, M. D.	Logan	Do.
Marshall	W. G. C. Hill, M. D.	Moundsville	Do.
Monongalia	R. C. Farrier, M. D.	Morgantown	Do.
Ohio	Reece M. Pedicord, M. D.	Wheeling	Do.
Preston	C. Y. Moser, M. D.	Kingwood	Do.
Raleigh	W. W. Hume, M. D.	Beckley	Do.
Wood	A. D. Knott, M. D.	Parkersburg	Do.

DEATHS DURING WEEK ENDED AUG. 1, 1936

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

	Week ended Aug. 1, 1936	Corresponding week, 1935
Data from 86 large cities of the United States:		
Total deaths	7,095	7,143
Deaths per 1,000 population, annual basis	9.9	10.0
Deaths under 1 year of age	497	537
Deaths under 1 year of age per 1,000 estimated live births	45	49
Deaths per 1,000 population, annual basis, first 31 weeks of year	12.8	11.9
Data from industrial insurance companies:		
Policies in force	68,393,465	67,973,558
Number of death claims	14,038	11,361
Death claims per 1,000 policies in force, annual rate	10.7	8.7
Death claims per 1,000 policies, first 31 weeks of year, annual rate	10.4	10.2

PREVALENCE OF DISEASE

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

UNITED STATES

CURRENT WEEKLY STATE REPORTS

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

Reports for Weeks Ended Aug. 8, 1936, and Aug. 10, 1935

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Aug. 8, 1936, and Aug. 10, 1935

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Aug. 8, 1936	Week ended Aug. 10, 1935	Week ended Aug. 8, 1936	Week ended Aug. 10, 1935	Week ended Aug. 8, 1936	Week ended Aug. 10, 1935	Week ended Aug. 8, 1936	Week ended Aug. 10, 1935
New England States:								
Maine	5	----	----	----	33	21	0	0
New Hampshire	1	----	----	----	2	2	0	0
Vermont	1	----	----	----	----	11	0	0
Massachusetts	7	6	----	----	89	32	0	1
Rhode Island	----	----	----	----	1	1	0	1
Connecticut	1	2	1	----	16	26	3	0
Middle Atlantic States:								
New York	17	9	[1] 2	[1] 5	223	280	11	16
New Jersey	1	6	6	3	50	41	1	1
Pennsylvania	13	29	----	----	73	76	5	2
East North Central States:								
Ohio	7	9	3	4	17	65	1	3
Indiana	8	9	4	14	1	8	3	0
Illinois	17	31	6	9	3	71	3	4
Michigan	4	14	----	2	8	93	2	2
Wisconsin	4	2	7	19	61	239	0	2
West North Central States:								
Minnesota	1	4	1	----	3	8	0	0
Iowa	3	3	2	2	3	4	4	2
Missouri	5	22	27	25	----	16	0	0
North Dakota	1	2	----	6	----	23	0	0
South Dakota	1	1	----	----	2	----	0	0
Nebraska	6	4	----	----	8	3	0	0
Kansas	6	5	1	----	----	----	0	0
South Atlantic States:								
Delaware	----	----	----	----	1	3	0	0
Maryland [2] [3]	8	3	2	1	30	10	2	3
District of Columbia [3]	1	----	----	----	7	----	0	0
Virginia [3]	10	16	----	----	14	13	6	0
West Virginia	3	14	----	47	3	4	2	3
North Carolina [3]	18	14	4	----	5	8	1	1
South Carolina	1	3	32	42	5	8	0	0
Georgia [4]	8	8	----	----	----	----	2	0
Florida [4]	6	9	1	----	----	2	2	1
East South Central States:								
Kentucky	2	13	----	----	14	18	13	2
Tennessee	8	9	13	3	5	1	2	1
Alabama [4]	9	18	11	----	1	5	0	1
Mississippi [3]	10	12	----	----	----	----	0	1

See footnotes at end of table.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Aug. 8, 1936, and Aug. 10, 1935—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Aug. 8, 1936	Week ended Aug. 10, 1935	Week ended Aug. 8, 1936	Week ended Aug. 10, 1935	Week ended Aug. 8, 1936	Week ended Aug. 10, 1935	Week ended Aug. 8, 1936	Week ended Aug. 10, 1935
West South Central States:								
Arkansas	3	8	1	4	----	3	0	2
Louisiana	5	9	6	4	5	2	0	0
Oklahoma [1]	4	7	11	29	1	4	0	0
Texas [4]	24	76	26	39	33	39	1	1
Mountain States:								
Montana [3]	1	4	----	----	1	8	2	0
Idaho [3]	----	----	----	----	4	3	0	0
Wyoming	1	1	----	----	1	8	0	0
Colorado	2	7	----	----	2	7	1	2
New Mexico	1	1	1	2	1	1	0	0
Arizona	3	1	7	4	28	----	0	1
Utah [3]	----	1	----	----	4	----	0	0
Pacific States:								
Washington	----	----	----	----	20	26	0	0
Oregon [3]	----	1	4	2	6	44	1	0
California	17	9	8	2	67	99	2	7
Total	254	402	187	268	851	1,336	70	60
First 32 weeks of year	14,796	17,719	141,500	103,767	269,437	694,433	5,902	4,087

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Aug. 8, 1936	Week ended Aug. 10, 1935	Week ended Aug. 8, 1936	Week ended Aug. 10, 1935	Week ended Aug. 8, 1936	Week ended Aug. 10, 1935	Week ended Aug. 8, 1936	Week ended Aug. 10, 1935
New England States:								
Maine	0	1	4	6	0	0	1	1
New Hampshire	0	5	1	2	0	0	1	1
Vermont	1	0	----	1	0	0	0	1
Massachusetts	2	74	46	35	0	0	4	3
Rhode Island	0	8	5	1	0	0	2	0
Connecticut	1	22	8	11	0	0	1	1
Middle Atlantic States:								
New York	8	158	111	100	0	0	13	29
New Jersey	0	13	14	13	0	0	4	6
Pennsylvania	3	8	111	56	0	0	22	10
East North Central States:								
Ohio	4	1	42	50	0	0	4	15
Indiana	1	1	23	12	0	0	7	6
Illinois	11	13	111	131	1	0	19	30
Michigan	3	14	76	47	0	0	6	9
Wisconsin	0	1	78	52	3	4	2	0
West North Central States:								
Minnesota	0	0	22	26	1	1	1	14
Iowa	1	0	27	16	1	7	3	4
Missouri	3	1	15	10	1	0	26	30
North Dakota	0	0	8	4	0	0	0	1
South Dakota	0	0	20	----	0	1	0	0
Nebraska	0	0	8	4	0	2	0	0
Kansas	0	2	31	17	1	1	4	16
South Atlantic States:								
Delaware	0	1	2	1	0	0	1	1
Maryland [2] [3]	1	4	10	10	0	0	8	19
District of Columbia [3]	0	4	1	5	0	0	1	2
Virginia [3]	2	68	15	7	0	0	35	45
West Virginia	2	6	9	21	0	0	11	26
North Carolina [3]	2	26	13	15	1	0	45	38
South Carolina	2	4	----	5	0	0	18	20
Georgia [4]	6	1	5	7	0	0	25	23
Florida [4]	0	2	2	3	0	0	3	1
East South Central States:								
Kentucky	4	15	7	15	1	0	42	86
Tennessee	26	1	3	7	0	0	40	71
Alabama [4]	26	1	8	5	0	0	36	13
Mississippi [3]	12	0	5	7	0	0	17	10

See footnotes at end of table.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Aug. 8, 1936, and Aug. 10, 1935—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Aug. 8, 1936	Week ended Aug. 10, 1935	Week ended Aug. 8, 1936	Week ended Aug. 10, 1935	Week ended Aug. 8, 1936	Week ended Aug. 10, 1935	Week ended Aug. 8, 1936	Week ended Aug. 10, 1935
West South Central States:								
Arkansas	0	2	5	----	0	2	15	51
Louisiana	1	5	17	4	0	0	39	14
Oklahoma [5]	0	0	10	8	0	0	49	57
Texas [4]	0	1	17	40	1	3	87	57
Mountain States:								
Montana [3]	0	0	3	1	8	0	2	3
Idaho [3]	1	0	7	4	1	0	1	0
Wyoming	0	0	9	4	2	0	0	1
Colorado	0	2	11	13	0	2	2	1
New Mexico	0	0	5	----	0	0	7	3
Arizona	0	0	1	1	0	0	4	1
Utah [3]	0	0	4	13	3	0	1	0
Pacific States:								
Washington	5	1	18	18	0	5	3	0
Oregon [3]	1	0	7	17	0	1	5	3
California	9	20	61	53	1	4	17	9
Total	138	486	1,016	878	26	33	634	732
First 32 weeks of year	1,220	2,801	182,973	179,431	6,204	5,290	6,333	8,518

[1] New York City only.
[2] Week ended earlier than Saturday.
[3] Rocky Mountain spotted fever, week ended Aug. 8, 1936, 19 cases, as follows: Maryland, 1; District of Columbia, 2; Virginia, 8; North Carolina, 5; Montana, 1; Idaho, 1; Oregon, 1.
[4] Typhus fever, week ended August 8, 1936, 45 cases, as follows: Georgia, 24; Florida, 6; Alabama, 9; Texas, 6.
[5] Exclusive of Oklahoma City and Tulsa.

SUMMARY OF MONTHLY REPORTS FROM STATES

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

State	Meningococcus meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
July 1936										
Arkansas	1	17	21	258	4	46	0	9	0	72
Connecticut	1	3	2	1	172	----	2	42	0	10
District of Columbia	5	44	1	----	165	----	0	15	0	5
Indiana	6	41	48	1	24	----	4	127	2	20
Iowa	2	15	----	5	13	----	1	145	48	5
Maine	1	2	----	1	367	----	7	39	0	3
Nebraska	3	15	----	----	24	----	0	62	19	3
North Carolina	14	51	2	----	31	125	6	57	1	84
Pennsylvania	19	108	----	3	1,451	1	5	807	0	54

July 1936

Anthrax:	Cases
Pennsylvania	2
Chicken pox:	
Arkansas	11
Connecticut	137
District of Columbia	11
Indiana	24
Iowa	26
Maine	34
Nebraska	17
Pennsylvania	749
Conjunctivitis:	
Connecticut	26

July 1936—Continued

Dysentery:	Cases
Connecticut (amoebic)	1
Maine (bacillary)	1
Pennsylvania (amoebic)	1
Epidemic encephalitis:	
Connecticut	1
District of Columbia	1
Indiana	1
Maine	1
Pennsylvania	1

July 1936—Continued

German measles:	Cases
Connecticut	170
Maine	17
Pennsylvania	353
Lead poisoning:	
Connecticut	1
Mumps:	
Arkansas	41
Connecticut	146
Indiana	26
Iowa	44
Maine	133

Summary of Monthly Reports from States—Continued

July 1936—Continued

	Cases
Mumps—Continued.	
Nebraska	31
Pennsylvania	556
Ophthalmia neonatorum:	
Pennsylvania	5
Paratyphoid fever:	
Connecticut	1
Iowa	2
Rabies in animals:	
Connecticut	2
Indiana	64
Rocky Mountain spotted fever:	
District of Columbia	1
Pennsylvania	2

July 1936—Continued

	Cases
Septic sore throat:	
Connecticut	10
Nebraska	10
Tetanus:	
Connecticut	2
Maine	1
Pennsylvania	1
Trachoma:	
Connecticut	1
Trichinosis:	
Connecticut	1
Undulant fever:	
Arkansas	9
Connecticut	17
Indiana	1

July 1936—Continued

	Cases
Undulant fever—Contd.	
Iowa	6
Maine	1
Pennsylvania	3
Vincent's infection:	
Maine	4
Whooping cough:	
Arkansas	4
Connecticut	245
District of Columbia	152
Indiana	115
Iowa	31
Maine	63
Nebraska	22
Pennsylvania	1,462

PLAGUE INFECTION IN PARASITES FROM MARMOTS IN MONTANA AND IN A MARMOT IN UTAH

Plague infection has been found in fleas and lice taken from marmots July 25, 1936, in Beaverhead County, Mont., and in a marmot killed July 31, 1936, in Beaver County, Utah. For details see page 1159.

CASES OF VENEREAL DISEASES REPORTED FOR MAY 1936

These reports are published monthly for the information of health officers in order to furnish current data as to the prevalence of the venereal diseases. The figures are taken from reports received from State and city health officers. They are preliminary and are therefore subject to correction. It is hoped that the publication of these reports will stimulate more complete reporting of these diseases.

Reports from States

	Syphilis		Gonorrhea	
	Cases reported during month	Monthly case rates per 10,000 population	Cases reported during month	Monthly case rates per 10,000 population
Alabama	1,042	3.85	339	1.25
Arizona	32	.70	85	1.86
Arkansas	194	1.03	116	.62
California	1,071	1.74	965	1.57
Colorado [1]				
Connecticut	240	1.45	96	.58
Delaware	88	3.64	50	2.07
District of Columbia [2]				
Florida [2]				
Georgia	1,080	3.71	505	1.73
Idaho	0		0	
Illinois	1,213	1.54	968	1.23
Indiana	98	.30	76	.23
Iowa [3]	117	.47	138	.56
Kansas	91	.48	56	.29
Kentucky	166	.62	207	.78
Louisiana	104	.48	78	.36
Maine	53	.66	42	.52
Maryland	673	4.03	172	1.03
Massachusetts	446	1.03	441	1.02
Michigan	473	.93	516	1.01
Minnesota	362	1.39	255	.98
Mississippi	1,219	5.93	1,875	9.12
Missouri	480	1.31	189	.51
Montana [3]	73	1.36	28	.52
Nebraska	27	.19	57	.41
Nevada [1]				
New Hampshire	15	.32	16	.34
New Jersey	465	1.10	202	.48
New Mexico	23	.53	19	.43
New York	7,419	5.68	1,816	1.39
North Carolina	1,480	4.48	447	1.35
North Dakota	7	.10	41	.60
Ohio [3]	728	1.06	272	.40

See footnotes at end of table.

Cases of venereal diseases reported for May 1936—Continued

	Syphilis		Gonorrhea	
	Cases reported during month	Monthly case rates per 10,000 population	Cases reported during month	Monthly case rates per 10,000 population
Oklahoma [2]	256	1.03	211	.85
Oregon	35	.35	123	1.24
Pennsylvania [4]	294	.30	177	.18
Rhode Island	112	1.59	46	.65
South Carolina	328	1.87	402	2.30
South Dakota	8	.11	25	.35
Tennessee	960	3.59	520	1.94
Texas	591	.97	167	.27
Utah [1]				
Vermont	21	.58	21	.58
Virginia	540	2.21	270	1.10
Washington	136	.85	208	1.29
West Virginia	185	1.04	109	.61
Wisconsin [5]	14	.05	96	.32
Wyoming [1]				
Total	22,959	1.86	12,442	1.01

Reports from cities of 200,000 population or over

Akron, Ohio	14	.52	11	.41
Atlanta, Ga. [3]				
Baltimore, Md	365	4.42	93	1.13
Birmingham, Ala	139	4.92	76	2.69
Boston, Mass	182	2.30	171	2.16
Buffalo, N. Y. [3]				
Chicago, Ill	457	1.28	299	.84
Cincinnati, Ohio [3]				
Cleveland, Ohio	152	1.63	75	.81
Columbus, Ohio	47	1.54	21	.69
Dallas, Tex. [3]				
Dayton, Ohio [3]				
Denver, Colo. [3]				
Detroit, Mich. [3]				
Houston, Tex. [3]				
Indianapolis, Ind	33	.87	41	1.09
Jersey City, N. J	1	.03	2	.06
Kansas City, Mo	53	1.26	8	.19
Los Angeles, Calif	398	2.78	313	2.19
Louisville, Ky. [3]				
Memphis, Tenn	213	7.98	67	2.51
Milwaukee, Wis	5	.08	19	.31
Minneapolis, Minn	106	2.18	115	2.36
Newark, N. J	227	4.90	76	1.64
New Orleans, La. [3]				
New York, N. Y	5,863	8.03	1,281	1.75
Oakland, Calif	40	1.32	39	1.29
Omaha, Nebr	5	.23	12	.54
Philadelphia, Pa	285	1.43	43	.22
Pittsburgh, Pa	69	1.01	24	.35
Portland, Oreg. [3]				
Providence, R. I	67	2.59	26	1.00
Rochester, N. Y. [3]				
St. Louis, Mo	110	1.32	87	1.04
St. Paul, Minn	37	1.31	29	1.03
San Antonio, Tex. [1]				
San Francisco, Calif	133	1.98	146	2.18
Seattle, Wash	96	2.53	144	3.79
Syracuse, N. Y	75	3.44	27	1.24
Toledo, Ohio	53	1.74	23	.76
Washington, D. C. [3]				

[1] Not reporting.
[2] No report for current month.
[3] Incomplete.
[4] Includes only those cases that enter the clinics conducted by the State department of health.
[5] Only cases of syphilis in the infectious stage are reported.

WEEKLY REPORTS FROM CITIES

City reports for week ended Aug. 1, 1936

This table summarizes the reports received weekly from a selected list of 140 cities for the purpose of showing a cross section of the current urban incidence of the communicable diseases listed in the table. Weekly reports are received from about 700 cities, from which the data are tabulated and filed for reference.

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Maine:											
Portland	0	------	0	0	3	0	0	0	0	11	17
New Hampshire:											
Concord	0	------	0	0	1	1	0	0	0	0	12
Nashua	0	------	--------	0	-------	0	0	-------	0	0	--------
Vermont:											
Barre	-------	------	--------	-------	-------	-------	-------	-------	-------	-------	--------
Burlington	0	------	0	0	0	0	0	0	1	1	6
Rutland	0	------	0	0	1	2	0	0	0	9	5
Massachusetts:											
Boston	3	------	1	35	15	17	0	11	0	56	184
Fall River	2	------	0	2	0	2	0	0	0	0	23
Springfield	0	------	0	0	0	2	0	2	0	1	28
Worcester	0	------	0	4	2	2	0	0	0	15	44
Rhode Island:											
Pawtucket	0	------	0	0	0	0	0	0	0	0	--------
Providence	0	------	0	2	1	1	0	2	0	13	74
Connecticut:											
Bridgeport	0	------	0	3	2	1	0	0	0	3	20
Hartford	0	------	0	0	2	0	0	0	0	3	35
New Haven	0	------	0	0	0	0	0	0	0	16	21
New York:											
Buffalo	0	------	0	27	4	8	0	10	1	8	137
New York	22	1	1	112	44	23	0	82	5	124	1,143
Rochester	0	------	0	1	7	2	0	0	0	5	67
Syracuse	0	------	0	5	0	4	0	0	0	9	22
New Jersey:											
Camden	0	------	0	1	0	0	0	0	1	3	23
Newark	0	------	0	10	7	3	0	4	1	26	76
Trenton	0	------	0	0	1	1	0	1	0	4	27
Pennsylvania:											
Philadelphia	0	------	0	14	9	19	0	24	4	85	365
Pittsburgh	0	------	3	1	4	11	0	7	0	88	142
Reading	0	------	0	1	0	0	0	0	1	8	19
Scranton	0	------	--------	0	-------	0	0	-------	0	0	--------
Ohio:											
Cincinnati	2	------	0	4	4	2	0	10	1	0	110
Cleveland	4	3	1	8	5	10	0	8	2	74	164
Columbus	0	------	0	3	2	1	0	5	0	11	60
Toledo	0	------	0	0	1	6	0	6	0	40	78
Indiana:											
Anderson	0	------	0	0	3	4	0	0	0	4	7
Fort Wayne	0	------	0	0	1	3	0	1	0	0	21
Indianapolis	0	------	0	0	11	2	0	5	1	6	80
South Bend	0	------	0	0	1	0	0	0	0	2	12
Terre Haute	1	------	0	0	0	0	0	0	0	0	22
Illinois:											
Alton	0	------	0	0	1	0	0	1	0	1	14
Chicago	5	1	1	3	18	54	0	34	2	129	548
Elgin	1	------	0	0	0	0	0	0	0	6	4
Moline	0	------	0	0	0	0	0	0	0	4	3
Springfield	0	------	0	0	0	0	0	0	0	0	13
Michigan:											
Detroit	1	------	0	4	10	22	0	10	2	165	212
Flint	0	------	0	0	1	2	0	3	0	6	20
Grand Rapids	0	------	0	0	0	1	0	0	1	3	30
Wisconsin:											
Kenosha	0	------	0	0	0	0	0	0	0	1	5
Milwaukee	0	1	1	3	5	16	0	0	1	46	82
Racine	0	------	0	0	0	1	0	0	0	0	8
Superior	0	------	0	0	0	2	0	0	0	0	6
Minnesota:											
Duluth	0	------	0	3	2	6	0	3	0	6	22
Minneapolis	0	------	0	2	2	3	0	1	0	7	80
St. Paul	0	------	0	2	3	0	0	1	0	9	57
Iowa:											
Cedar Rapids	1	------	--------	0	-------	0	0	-------	0	5	--------
Davenport	0	------	--------	0	-------	0	0	-------	0	3	--------
Des Moines	0	------	--------	0	-------	0	0	-------	0	0	31
Sioux City	-------	------	--------	-------	-------	-------	-------	-------	-------	-------	--------
Waterloo	0	------	--------	0	-------	1	0	-------	0	0	--------

City reports for week ended Aug. 1, 1936—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Missouri:											
Kansas City	0	----	0	1	3	5	0	1	0	1	98
St. Joseph	----	----	----	----	----	----	----	----	----	----	----
St. Louis	2	1	0	1	4	7	0	6	3	25	137
North Dakota:											
Fargo	0	----	0	1	0	0	0	0	0	0	7
Grand Forks	0	----	----	0	----	0	0	----	0	0	----
Minot	0	----	0	2	0	0	0	0	0	0	4
South Dakota:											
Aberdeen	0	----	----	0	----	0	0	----	0	0	----
Nebraska:											
Omaha	4	----	0	2	5	1	0	0	0	1	85
Kansas:											
Lawrence	0	----	0	0	0	0	0	0	0	0	4
Topeka	----	----	----	----	----	----	----	----	----	----	----
Wichita	0	----	0	0	4	1	0	0	0	1	24
Delaware:											
Wilmington	0	----	0	0	0	0	0	1	0	0	19
Maryland:											
Baltimore	2	----	0	27	6	6	0	8	4	108	167
Cumberland	0	----	0	1	2	0	0	1	0	0	17
Frederick	0	----	0	0	0	0	0	0	0	0	0
District of Col.:											
Washington	5	----	0	20	2	1	0	9	1	33	143
Virginia:											
Lynchburg	0	----	0	0	1	0	0	0	0	6	13
Norfolk	0	----	0	0	3	0	0	0	0	0	26
Richmond	0	----	0	0	1	1	0	6	0	0	58
Roanoke	0	----	0	0	0	0	0	1	1	0	12
West Virginia:											
Charleston	0	----	0	0	0	0	0	0	1	0	18
Huntington	0	----	----	0	----	1	0	----	0	0	----
Wheeling	0	----	0	3	1	0	0	1	0	0	25
North Carolina:											
Gastonia	0	----	0	0	0	0	0	0	0	0	----
Raleigh	0	----	0	0	1	0	0	2	0	0	22
Wilmington	0	----	0	0	0	0	0	0	0	0	6
Winston-Salem	1	----	0	0	2	2	0	2	1	0	13
South Carolina:											
Charleston	0	1	0	0	4	0	0	1	0	0	33
Columbia	----	----	----	----	----	----	----	----	----	----	----
Florence	0	----	0	0	1	0	0	0	0	0	14
Greenville	0	----	0	1	0	1	0	1	0	0	8
Georgia:											
Atlanta	1	1	0	0	2	2	0	7	3	0	81
Brunswick	----	----	----	----	----	----	----	----	----	----	----
Savannah	2	----	0	0	0	0	0	3	2	1	25
Florida:											
Miami	0	1	0	1	1	2	0	3	1	1	33
Tampa	1	----	0	0	2	0	0	0	0	1	19
Kentucky:											
Ashland	0	----	1	0	2	0	0	0	1	0	32
Covington	0	----	0	0	0	0	0	0	0	0	9
Lexington	0	----	0	0	1	0	0	1	0	0	21
Tennessee:											
Knoxville	0	1	1	0	1	0	0	3	3	0	33
Memphis	1	----	0	0	4	0	0	8	0	9	89
Nashville	0	----	0	1	3	0	0	4	2	0	55
Alabama:											
Birmingham	0	----	0	0	1	0	0	3	1	2	76
Mobile	0	----	0	1	1	0	0	2	0	0	19
Montgomery	0	----	----	0	----	0	0	----	1	0	----
Arkansas:											
Fort Smith	----	----	----	----	----	----	----	----	----	----	----
Little Rock	0	----	0	0	4	0	0	3	0	0	9
Louisiana:											
Lake Charles	0	----	0	0	0	0	0	0	0	0	3
New Orleans	5	2	1	4	11	0	0	9	1	26	139
Shreveport	0	----	0	0	3	0	0	2	10	0	30
Oklahoma:											
Oklahoma City	1	----	0	0	2	2	0	2	2	0	37
Tulsa	0	----	----	0	----	0	0	----	1	0	----

City reports for week ended Aug. 1, 1936—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Texas:											
Dallas	3		0	2	1	2	0	3	2	3	63
Fort Worth	1		0	1	0	0	0	2	0	0	31
Galveston	0		0	0	1	1	0	1	0	0	13
Houston	3		0	0	3	0	1	4	3	1	85
San Antonio	0		0	0	3	0	0	6	0	0	50
Montana:											
Billings	0		0	1	0	0	0	0	0	0	7
Great Falls	0		0	0	2	0	0	0	0	3	7
Helena	0		0	0	0	1	0	0	0	0	4
Missoula	1		0	0	1	0	0	0	0	0	8
Idaho:											
Boise	0		0	0	0	0	0	1	0	0	11
Colorado:											
Colorado Springs	0		0	1	0	4	0	1	0	0	7
Denver	2		0	4	5	0	1	3	0	37	9
Pueblo	0		0	0	0	4	0	0	0	1	10
New Mexico:											
Albuquerque	0		0	0	1	0	0	2	1	0	9
Utah:											
Salt Lake City	0		0	8	5	4	0	2	1	24	42
Nevada:											
Reno											
Washington:											
Seattle	0		0	12	4	3	0	5	1	9	85
Spokane	0		0	0	1	3	0	0	0	3	24
Tacoma	0		0	0	2	0	0	1	0	2	23
Oregon:											
Portland	0		0	0	4	3	0	3	0	1	80
Salem	0			1		1	0		1	2	
California:											
Los Angeles	3	10	1	16	12	10	0	22	1	56	306
Sacramento	0		0	0	0	6	0	0	1	16	23
San Francisco	0		0	5	5	14	0	10	1	8	152

State and city	Meningococcus meningitis		Poliomyelitis cases	State and city	Meningococcus meningitis		Poliomyelitis cases
	Cases	Deaths			Cases	Deaths	
New Hampshire:				District of Columbia:			
Concord	0	0	1	Washington	1	0	0
Massachusetts:				Virginia:			
Boston	2	0	1	Roanoke	0	0	1
New York:				Tennessee:			
Buffalo	1	0	0	Memphis	0	0	1
New York	4	3	2	Nashville	0	0	1
Rochester	0	0	1	Alabama:			
New Jersey:				Birmingham	0	0	5
Newark	1	0	0	Louisiana:			
Pennsylvania:				Shreveport	0	2	0
Philadelphia	0	1	0	Oklahoma:			
Pittsburgh	1	1	1	Tulsa	1	0	0
Ohio:				Texas:			
Cincinnati	1	0	2	Galveston	1	1	0
Cleveland	2	1	0	Montana:			
Illinois:				Missoula	0	0	1
Chicago	1	1	3	Colorado:			
Michigan:				Denver	1	0	0
Detroit	1	0	1	Washington:			
Minnesota:				Seattle	0	1	0
Minneapolis	1	0	1	Spokane	0	0	1
St. Paul	0	0	1	Oregon:			
North Dakota:				Portland	0	0	1
Minot	0	0	2	California:			
Maryland:				Los Angeles	2	1	4
Baltimore	1	1	1	San Francisco	0	0	1

Epidemic encephalitis.—Cases: Pittsburgh, 1; St. Louis, 1.
Pellagra.—Cases: Boston, 2; Wilmington, N. C., 3; Winston-Salem, 1; Savannah, 2; Birmingham, 1, New Orleans, 2; Dallas, 1; San Francisco, 1.
Rabies in man.—Deaths: New York, 1.
Typhus fever.—Cases: Norfolk, 1; Atlanta, 1; Savannah, 3; Miami, 1.

FOREIGN AND INSULAR

CANADA

Provinces—Communicable diseases—2 weeks ended July 25, 1936.—During the 2 weeks ended July 25, 1936, cases of certain communicable diseases were reported by the Department of Pensions and National Health of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Cerebrospinal meningitis			1	4						5
Chicken pox		6	2	87	211	32	68	29	18	453
Diphtheria		6	2	30	8	13	3	1	1	64
Dysentery				1	10					11
Erysipelas				1	5	5		6	3	20
Influenza									7	7
Measles		12	6	173	487	48	17	32	92	867
Mumps					134	12	6	4	28	184
Paratyphoid fever		1			2					3
Pneumonia	2				8		1		15	26
Poliomyelitis			1	1	2	3			2	9
Scarlet fever	1	6	9	71	122	21	16	53	20	319
Smallpox							2			2
Trachoma					1				1	2
Tuberculosis	6	69	41	120	94	22	12	3	43	410
Typhoid fever	1	4	8	33	8	3	3	2	1	63
Undulant fever				2	1					3
Whooping cough	10	5	2	135	232	14	3	16	38	455

PANAMA CANAL ZONE

Communicable diseases—April–June 1936.—During the months of April, May, and June 1936, certain communicable diseases, including imported cases, were reported in the Panama Canal Zone and terminal cities as follows:

Disease	April		May		June	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
Chicken pox	12		5		1	
Diphtheria	11		8		5	
Dysentery (amoebic)	26		39	2	42	1
Dysentery (bacillary)	5		4		2	1
Leprosy	1					1
Malaria	80	2	115		267	
Measles	6		7		1	
Mumps	2				1	
Paratyphoid fever	1	1				
Pneumonia		20		28		20
Relapsing fever	1					
Trachoma						1
Tuberculosis		34		31		33
Typhoid fever	1		1		2	
Typhus fever					2	
Whooping cough	6		5		6	

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

NOTE.—A table giving current information of the world prevalence of quarantinable diseases appeared in the PUBLIC HEALTH REPORTS for July 31, 1936, pages 1053-1067. A similar cumulative table will appear in the PUBLIC HEALTH REPORTS to be issued August 28, 1936, and thereafter, at least for the time being, in the issue published on the last Friday of each month.

Plague

Argentina.—According to information dated August 5, 1936, plague was reported in Argentina as follows: Tartagal, Salta Province, 4 cases; Taco Ralo, Tucuman Province, 1 case.

Hawaii Territory—Island of Hawaii—Hamakua District—Paauhau.—A rat found August 9, 1936, in Paauhau, Hamakua District, Island of Hawaii, Hawaii Territory, has been proved plague-infected.

United States.—Reports of plague infection in Montana and Utah appear on pages 1159 and 1160.

Smallpox

Argentina—Jujuy Province—Ingenio Esperanza.—Information dated August 5, 1936, states that 6 cases of smallpox were reported at Ingenio Esperanza, Jujuy Province, Argentina.

Mexico.—During the month of May 1936 smallpox was reported in Mexico as follows: Aguascalientes, Aguascalientes State, 2 cases, 1 death; Guadalajara, Jalisco State, 37 cases, 26 deaths; Toluca, Mexico State, 4 cases, 4 deaths; Tijuana, Lower California, 1 case; Mexico, D. F., 26 cases, 8 deaths; Puebla, Puebla State, 2 cases.

Typhus Fever

Mexico.—During the month of May 1936 typhus fever was reported in Mexico as follows: Aguascalientes, Aguascalientes State, 5 cases, 2 deaths; Mexico, D. F., 26 cases, 15 deaths; Toluca, Mexico State, 6 cases, 2 deaths; Puebla, Puebla State, 3 cases, 2 deaths; Queretaro, Queretaro State, 1 case; San Luis Potosi, San Luis Potosi State, 3 cases.

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